

ASK THE EXPERT:
EFFICIENCIES OF LAB AUTOMATION

PERSPECTIVE ON:
A CELL CULTURE LAB



PITTCON[®] 2014
CONFERENCE & EXPO

BUYERS GUIDE PULLOUT
WWW.LABMANAGER.COM

Lab Manager[®]

Run Your Lab Like a Business

Available on the
App Store

January | February 2014

Volume 9 • Number 1



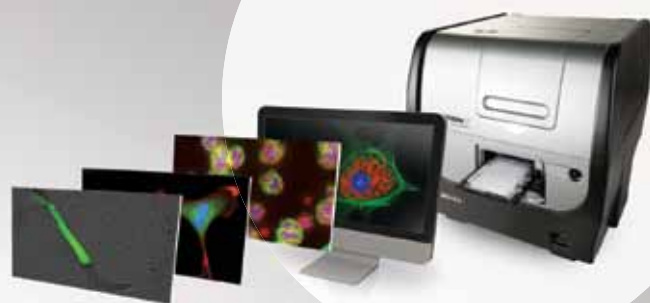
YOUR LAB, *Your Business*

MAXIMIZING YOUR LAB'S VALUE TO THE ENTERPRISE

**AVOIDING UV
EXPOSURE IN
THE WORKPLACE**

**PITTCON 2014
TECHNOLOGY
PREVIEW**

CYTATION|3
imaging reader



Win a Cytation 3 Cell Imaging Reader!

**Enter Our Think Possible
Application Contest!**

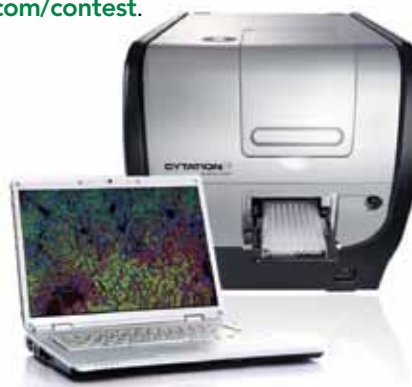


Cool

Quantitative & Qualitative Data for the Total Cell Picture.

The Cytation™ 3 Cell Imaging Multi-Mode Reader combines conventional multi-mode detection and digital microscopy in one compact instrument. Hybrid Technology™ allows for increased assay flexibility with high precision, and full automation shortens cell counting and image analysis times. Isn't it time you got the whole picture from your cells?

To see all it can do for cell-based applications, visit www.biotek.com/contest.



Think Possible

BioTek®



www.biotek.com



ELGA

In tune with your pure water needs

Introducing the pioneering PURELAB® Chorus range: innovation meets choice, a fresh new approach to the way you work.

It's your lab, your budget, your science, so shouldn't you be in control of the way you work? ELGA, market leader in laboratory water purification, has innovated a range of modular purification solutions that gives you the freedom to do just that. Are you ready to embrace the freedom of choice?

- Water purity? Only choose technologies suited to your science and application
- Future changes? Upgrade and re-configure as your needs evolve
- Challenging spaces? Fit your solution where you choose

Want to see more? Check out the PURELAB range
at www.elgalabwater.com/purelab-chorus

ELGA. Our innovation. Your choice.

877.315.3542 | Email: elga.usa@veoliawater.com

Visit us at Pittcon booth # 3616

 **VEOLIA**
WATER
Solutions & Technologies

10

Your Lab, Your Business

Science has always been the paramount focus of laboratory managers. But that's no longer sufficient. Now, lab leaders need to be profoundly conversant with the business side of their operations as well.

Bernard Tulsì

66

Perspective On: A Cell Culture Lab

Unexpected cell loss is the fear and challenge of those who work in cell culture labs. Cells are living organisms that can't be left on a shelf and forgotten about until needed. This makes the jobs of those who manage cell culture laboratories especially challenging.

Sara Goudarzi



BUSINESS MANAGEMENT

16 Drowning in Regulations

Government agencies and regulations are not going away, rather, there has been a huge proliferation of federal, state, and local laws and regulations that affect businesses, especially those in the technical and scientific arenas. Learn how to navigate the nether-world of agency regulations. **Vince McLeod**

LEADERSHIP & STAFFING

24 Mistake Happen

Making mistakes is part of doing business. If managers can perfect the art of handling mistakes properly, their credibility and reputation for talent management will increase as well as career opportunities within their organizations. **Lina Genovesi**

30 Political Science, Part II

Part one of this article ended with a discussion of politics in your department and how they can lead to a better understanding of the overall organization. The second part describes how to get political power, how to retain it, and how to use it—ethically and wisely. **Ron Pickett**

TECHNOLOGY

38 IT's Complicated

In the past, labs were identified by strange instruments, oddly shaped glassware, and peculiar smells. Today's laboratory instruments, which rely heavily on complex software to drive them, have forced previously isolated labs into a more dependent relationship with information technology. **Joe Liscouski**

44 Helium or Nitrogen, Tank or Generator?

Helium is commonly used as the makeup gas for flame ionization detection in gas chromatography; however, dramatic increases in cost and limited availability in recent years have led many chromatographers to use nitrogen in its place. Find out how to choose the optimum makeup gas for your GC application. **Peter Froehlich and Kim Myers**

HEALTH & SAFETY

52 Don't Get Burned!

Research laboratories are challenging places to work safely. This month the Safety Guys alert you to a potential significant hazard present in the workplace: UV radiation. Find out how to avoid accidents and injuries related to UV exposure in the lab.

Vince McLeod



LAB MANAGER AT PITTCON 2014

In this issue we bring you a taste of Pittcon 2014—set to take place March 2-6 in Chicago—by featuring products that will be at the show in our Technology News section. And of course, our team will be in Chicago next month, bringing you our annual Lab Manager Bootcamp. This year's Bootcamp, which takes place March 4, will feature ethics expert Frank Bucaro. Frank will help attendees gain a better understanding of the important role that ethics plays in the lab—both in terms of treating staff and customers fairly and in terms of the bottom line. If this sounds like something that would benefit you, registration is now open. Please check out the ad on page 119 for more info. And while at Pittcon, be sure to stop by the Lab Manager booth (# 2056) to say hello.

FIND OUR FAKE AD AND WIN! More info on page 120

2x
SECURITY

DUAL COMPRESSORS

B

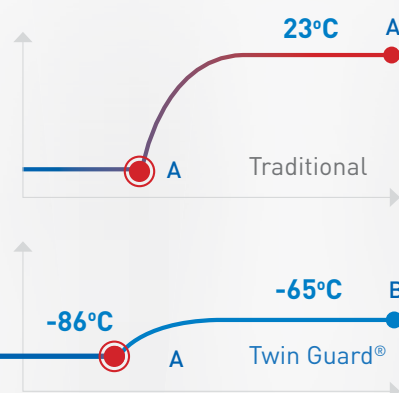
BACK UP

A

COMPRESSOR

Activate.

Sample protection with patented Twin Guard® Technology



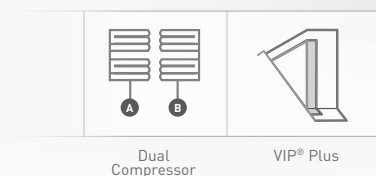
TWIN GUARD® Freezers

Power ON ultimate sample protection with patented Twin Guard® technology - two independent compressors can individually sustain ultra-low temperatures in the event of a failure. It's time to stop worrying about your freezer and make your next discovery.

#PowerYourDiscovery



www.TwinGuardSeries.com



Thermo
SCIENTIFIC

go
headless

Coming soon:
Thermo Scientific™
VersaCool™ Circulating
Refrigerated Bath

Visit booth 2441 at Pittcon
to see how you can
experience the benefits
of going headless.

get
more
benefits

Lab Manager®

Run Your Lab Like a Business

| | |
|---|------------|
| LAB MANAGER ACADEMY | 22 |
| ACCOUNTABILITY DOESN'T WORK IF YOU DON'T KNOW WHAT YOU BELIEVE | |
| Sam Silverstein | |
| SCIENCE MATTERS | 50 |
| WORKPLACE MISTAKES Mark Lanfear | |
| ASK THE EXPERT: | 56 |
| EFFICIENCIES OF LAB AUTOMATION | |
| Louis Scampavia, PhD, associate professor in the Department of Molecular Therapeutics at the Scripps Research Institute in Florida discusses how automation has been a critical part of their high-throughput screening activities. | |
| Tanuja Koppal | |
| PRODUCT FOCUS | |
| MICROSCOPES | 60 |
| GLOVE BOXES | 62 |
| POWER SUPPLIES | 63 |
| SHAKERS | 64 |
| SURVEY SAYS, ARE YOU IN THE MARKET FOR... | |
| HPLC SYSTEMS | 74 |
| MICROPLATE READERS | 76 |
| TITRATORS | 78 |
| TECHNOLOGY NEWS | 80 |
| The latest equipment, instrument, and system introductions to the laboratory market at Pittcon 2014.. | |
| MAINTENANCE MATTERS | 98 |
| BIOLOGICAL SAFETY CABINETS/DUCTLESS FUME HOODS | |
| HOW IT WORKS | |
| PURCHASING SECOND-HAND PHARMACEUTICAL & BIOTECH EQUIPMENT | 102 |
| AN AUTOMATED SAMPLE PREP WORKSTATION | 104 |
| PRE-OWNED EQUIPMENT MARKETPLACE | 121 |
| ADVERTISERS INDEX | 121 |
| PARTING POINTS | 122 |

Lab Manager® (ISSN: 1931-3810) is published 11 times per year; monthly with combined issues in January/February, by LabX, P.O. Box 216, 478 Bay Street, Midland, ON Canada L4R 1K9. USPS 024-188 Periodical Postage Paid at Fulton, MO 65251 and at an additional mailing office. A requester publication, Lab Manager, is distributed to qualified subscribers. Non-qualified subscription rates in the U.S. and Canada: \$120 per year. All other countries: \$180 per year, payable in U.S. funds. Back issues may be purchased at a cost of \$15 each in the U.S. and \$20 elsewhere. While every attempt is made to ensure the accuracy of the information contained herein, the publisher and its employees cannot accept responsibility for the correctness of information supplied, advertisements or opinions expressed. ©2013 Lab Manager® by Geocalm Inc. All rights reserved. No part of this publication may be reproduced without permission from the publisher.

WDS Canadian return: P.O. Box 216, 478 Bay Street, Midland, ON Canada L4R 1K9.

POSTMASTER: Send address changes to Lab Manager®, PO Box 2015, Skokie, IL 60076.



Lab Manager Magazine® is audited by BPA



Make Grainger Your Lab Partner

> QUALITY PRODUCTS

> VALUABLE SERVICES

> ONE DEDICATED SUPPLIER

Prepare for the GHS HazCom Rules

Comply with New Standardization for Chemical Labels and SDS Formats

LEARN MORE ABOUT GHS AT
GRAINGER.COM/LAB



VISIT US AT **PITTCON** MARCH 3-6 AT BOOTH #1804

GRAINGER
||| FOR THE ONES WHO GET IT DONE



Expanding responsibilities

Over the past few years, we've heard the broad business mandates: "Better, faster, cheaper," and "Do more with less." Besides the fact that they come with precious little guidance for carrying them out, these mandates also add a layer of stress and distract from other aspects of running a lab. For those whose careers stretch over decades, these new business demands may also make them long for the days when a scientist/manager's sole responsibility was to produce sound research results. But that's not the case anymore.

"To stay in the game, lab [managers] have to become quite adept at business-critical decisions, such as the correct balance between in-house testing and outsourcing, which has implications for recruiting, hiring and overall staffing. They have to keep acute focus on the supply chain, on their budgets, and the purchasing of capital equipment and consumables. Opportunities for profitable collaboration such as in benchmarking or the sharing of scarce resources have to be explored with vigor," says Bernard Tuli in this month's cover story.

In addition, this month's Technology article, "IT's Complicated," (page 38) tells of further breakdown of the wall between the lab and outside business entities: "Today's laboratory instruments, which rely heavily on complex software to drive them, have forced previously isolated labs into a more dependent relationship with information technology. With that relationship comes continual change and disruption as new laboratory systems require regular tweaks and upgrades. A far cry from the days when changes in the lab were controlled and agreed upon by the researchers who worked there."

As if developing greater business acumen and having to work with an IT team wasn't enough, this month's "Perspective on: A Cell Culture Lab" (page 66) reminds us of the important responsibility of employee training. Jennifer Miller, the Cell Culture Core (C3) laboratory manager at Chromocell Corporation (North Brunswick, NJ), "is responsible for ensuring that there is a properly-sized, fully-trained staff to handle the workload for her lab." But rather than bemoan the additional burden, Miller says about her company's college student interns, "We need to teach them all the best practices to work in the lab and on a team from the get-go to set them up for long-term success."

Anything else? you might ask. Well, in fact, yes. Namely, the responsibility for improving your lab's power efficiency. According to this month's Product Focus article on laboratory power supplies (page 63), Mark Swift says, "Lots of funding is tied to reductions in power usage, so there's a need [for lab managers] to see where they're starting from before they can put together a plan to reduce it."

Lastly on this expanding list of lab manager responsibilities is the issue of business ethics, which this year's Lab Manager Bootcamp presenter Frank Bucaro will address at Pittcon next month in Chicago. In that presentation, he will "show how ethics is a key ingredient in business and personal success, and will provide practical ideas to help with difficult decisions." Turn to page 119 to learn more and register.

With all of this on your plate, I hope your New Year's resolutions included the decision to face these new challenges with renewed vigor and commitment. And, just so you know, *Lab Manager* will be there to help.

Best,

Pamela Ahlberg
Editor-in-Chief

Correction: On page 53 of the December 2013 issue, we mistakenly identified Alex Spector as the president of pipettes.com, when the correct url is Pipette.com.

Editor-in-Chief Pamela Ahlberg
pam@labmanager.com
973.729.6538

Assistant Editor Rachel Muenz
rachelm@labmanager.com
888.781.0328 x233

Technology Editor Trevor Henderson
thenderson@labmanager.com
888.781.0328 x291

Contributors Angelo DePalma, PhD
Mark Lanfear
Sara Goudarzi
Tanuja Koppal, PhD
F. Key Kidder
Joe Liscouski
Vince McLeod, CIH
Ronald B. Pickett
Bernard Tuli
Mike May, PhD

Art Director & Production Manager Gregory A. Brewer
gregb@labmanager.com
888.781.0328 x241

Graphic Designer Danielle Gibbons
danielleg@labmanager.com
888.781.0328 x237

List Rental Jen Felling—Statistics
203.778.8700

Custom Article Reprints The YGS Group
labmanager@theysgroup.com
800.290.5460
717.505.9701 x100

Subscription Customer Service info@labmanager.com

Account Managers Edward Neeb
Northeast
edwardn@labmanager.com
860.350.2761

June Kafato
International
junek@labmanager.com
705.812.2332

Larry Frey
Southeast, Midwest & West
larry@labmanager.com
845.735.5548

Alyssa Moore
Mid-Atlantic
amoore@labmanager.com
610.321.2599

Business Coordinator Andrea Cole
andreac@labmanager.com
888.781.0328 x296

Published by LabX Media Group

President Bob Kafato
bobk@labmanager.com
888.781.0328 x223

Managing Partner Mario Di Ubaldi
mariod@labmanager.com
203.227.1390

General Manager Ken Piech
kenp@labmanager.com
888.781.0328 x226

Publisher Edward Neeb
edwardn@labmanager.com
860.350.2761

Take control of lab workflow

The hardest working LIMS in the industry now has advanced new tools and user-interface enhancements that improve laboratory process mapping, management and automation. SampleManager 11 puts decision-making power where it belongs, in the hands of users who can make logical choices about workflow, instrument integration and data reporting for management metrics or regulatory requirements. Workflow capabilities simplify implementation, allowing lab managers to easily model their processes in SampleManager. As laboratory needs evolve, workflows can be modified to change with them.

transform your business with SampleManager 11 LIMS

• thermoscientific.com/SM11

SampleManager 11 at a glance:

- Configurable workflow and extended lifecycle features
- Simplified Sample Login user interface providing easy access to frequently used functions
- Flexibility in splitting and merging aliquots and sub-samples
- User-Friendly Search Syntax, new Internet Explorer features and improved support for Windows 7 and 8
- Files, web links and attachments for any entity available for inclusion in reports



YOUR LAB, *Your Business*

**MAXIMIZING YOUR LAB'S VALUE TO
THE ENTERPRISE** by Bernard Tuls



Science has always been the paramount focus of laboratory managers. But that is no longer sufficient. Now, lab leaders need to be profoundly conversant with the business side of their operations as well.

So say lab sector researchers from Deloitte Consulting LLP, who note that lab managers and directors no longer have the luxury of concentrating solely on science while relying on other players in their organizations to administer processes and make strategic business decisions. In a 2011 business of science report that dealt with R&D leadership development, Deloitte consultants stressed that today's higher stakes make it imperative that lab leaders strive for the utmost operational efficiency while doggedly pursuing additional revenue streams.

To address productivity challenges, management consultants McKinsey & Company's 2009 "Successful Lab" initiative espoused productivity driven from the lab itself (bottom-up) after identifying several similarities in how 12 highly regarded academic researchers and 15 industry R&D labs successfully organized and managed their research.

The "Successful Lab" report noted, "Although the top labs were often conducting quite different types of research, elements of their approach in five areas—strategy decisions, talent management, portfolio and project management, problem solving, and collaboration—were remarkably similar.

"Be they in academia, the pharmaceutical industry, high technology, or industrial chemical manufacturing, top labs organize themselves to ensure that they have the right team working with a clear focus on a shared set of activities, and that researchers spend as little time as possible on administration and management. The result is higher productivity."

Without a doubt, most lab managers and directors need to evolve business and operational strategies to resemble those identified in the "Successful Lab" approach. To stay in the game, lab administrators have to become

"To stay in the game, lab administrators have to become quite adept at business critical decisions."

quite adept at business critical decisions, such as the correct balance between in-house testing and outsourcing, which has implications for recruiting, hiring and overall staffing. They have to keep acute focus on the supply chain, on their budgets, and the purchasing of capital equipment and consumables.

Opportunities for profitable collaboration such as in benchmarking or the sharing of scarce resources have to be explored with vigor.

In essence, there is a pressing need to apply key business principles in all aspects of laboratory operations. "There are lots of opportunities now for labs to achieve cost savings and actually improve their performance, turnaround times, and labor savings by using Six Sigma, Lean, and automation tools," says Eleanor Herriman, managing director, advisory services, G2 Intelligence.



Ready for Reading

Eppendorf PlateReader AF2200

The new Eppendorf PlateReader AF2200 is specially designed for UV/Vis and fluorescence readings in 6 to 384-well format.

The system is developed to simplify set-up procedures and data analysis. This makes your daily lab work easier.

- > Plate reader for UV/Vis absorption and fluorescence intensity (top and bottom reading)
- > Pre-programmed applications for quick start including basic data analysis
- > Eppendorf accessories from microplates to the micro-volume measuring plate



www.eppendorfna.com/detection • 800-645-3050

The quest for greater business success in the lab could be facilitated on a number of fronts, according to Herriman. “One of the keys could be training people to perform in multiple roles. This could help to balance workflow—staff who are too narrowly trained limit productivity and affect operational flexibility,” she says.

In the same vein, she says, “There is clearly a greater need for efficiency in the use of instrumentation; performing multiple tests on a single piece of equipment provided capability is not exceeded.” Noting that the end goal should not necessarily stop with sending out a report with test results, Herriman says that better use of laboratory information systems and the data generated is critical.

By some estimates, the pursuit of greater efficiency and additional sources of income by labs became most pronounced around the 2008 economic downturn. Kim Shah, director, marketing and new business development at Thermo Fisher Scientific, recalls a spike in the number of customers seeking assistance to improve the efficiency of their instrumentation and software systems, investments that were linked to both their labs and their corresponding business. Shah notes that most requests carried a note of urgency, “At that point they were not getting any additional money from their companies to make more investments.”

Around that time Thermo introduced its CON-NECTS technology solution, which became an installed-base play for customers seeking substantive improvements, according to Shah. Designed around a combination of productivity technology, consultations, and implementation expertise, the solution facilitated or improved connections among instrumentation and software systems and decision-making entities, which resulted in greater efficiency and savings.

In addition, Thermo ramped up in two supporting areas: Integration Manager and Data Manager, which enabled customers to examine workflows, samples, and human interactions to identify error-prone or backlogged areas, essentially solving a key piece of their data flow problem.

About a year ago, Thermo Fisher worked in conjunction with the Gartner Group and some customers’ information technology (IT) teams to address emerging

questions about the integration of mobile, robotic, and dashboard technologies, among others, into the laboratory environment—essentially, the paperless lab.

This concept goes beyond reducing paper, a laudable goal itself. As Shah notes, the real issue is the transformation of businesses so that labs become the center of many operations. “In the businesses we work with, the lab is the focal point. It is where the raw materials coming in are tested and where the quality of finished goods going out is controlled. It is the place where you make or break your company’s reputation.”

The key message is, “Think about automation, innovation, integration, and finally about business intelligence—those are the four pillars on which to base your strategies to achieve your goals,” says Shah.

“The real issue is the transformation of businesses so that labs become the center of many operations.”

Trish Meek, director, product strategy, life sciences at Thermo Fisher Scientific, says, “We are involved with several paperless lab initiatives with several of our lab customers as well as with companies outside

our base.” She says that several of their contract testing customers are already running their labs like businesses. “In our life sciences customer base, we see customers grappling with the question of how to become as operationally efficient as possible.”

Meek notes that the value of laboratories is fundamentally based on the data they create. She recognizes a shift now in life science labs from a preoccupation with the generation of results from a quality control (QC) perspective to greater interest in predictive analytics in addition to QC and process monitoring. She says that labs are able to take another look at their operations and figure out how they want to leverage existing technologies and fundamentally supply data to the business. The focus now is to be as operationally efficient as possible and to reassess the data being created in order to maximize their value to the business, according to Meek.

“The reason the paperless lab is coming into focus in recent times is that paper really represents a gap in the integration between systems,” says Colin Thurston, director, product strategy, process industries at Thermo Fisher Scientific. He says paper represents an error-prone,

See us at
PITTCON
Booth 2248

Systems, Support & Service, Oh My!

For your analytical testing needs,
there's no place like Metrohm.

Manual and Automated Systems for:

- Titration
- Ion Chromatography
- Near-Infrared Spectroscopy
- Electrochemistry
- Voltammetry
- Process Analytics
- Complete line of accessories
& reagents

Local expert applications
support & service too!

www.metrohmusa.com

 **Metrohm**

US 866-METROHM (638-7646)
Canada 866-260-6069

9702.A1.102/LAM-114 © 2014 Metrohm USA, Inc.



low-tech way to transfer information from one place to another, adding, "Paper is an indicator of an inefficient process."

While the paperless lab is an attractive goal, "We are not there yet," says Paula Hollywood, senior analyst, ARC Advisory Group. "The prospect is intriguing, and it would certainly help eliminate some manual errors, but until we get over the issue of security on the Internet, I don't think we will ever be truly paperless," says Hollywood.

One of the fundamental questions for lab managers is to figure out their product offering, according to Thurston. He says that the product is not just a tested sample; it is actually providing information to the rest of the business in an efficient, accurate, and timely manner and enabling the business as a whole to derive value from the information. If labs can be positioned as a key part of the future growth of businesses, then companies will continue to invest in them, says Thurston.

On the question of labs tapping additional revenue streams, Herriman says that there is tremendous value in the data generated by diagnostic labs, one of her specialties. Lab data combined with clinical data either from administrative claims

or electronic medical records (EMRs) are "unbelievably potent," she says. "Lab data is probably a greater predictor of health outcomes than any other data, and it is data that healthcare payers really need."

"If labs can be positioned as a key part of the future growth of businesses, then companies will continue to invest in them."

"It is important for lab managers and directors to realize the value of this data and not just give it away, essentially. Information and data in the healthcare world are key assets, and lab managers should add value and become purveyors of this tremendous, high-quality asset," says Herriman.

She notes that some larger healthcare operations are already using lab-generated data to enhance decision making in their care management processes. For diagnostic labs in general, she adds, "If you can impact outcomes, the reward will be much greater than if you are just delivering the results of tests. Labs need to examine how they can leverage their data and turn that into revenue. Find a way to provide customers with superior laboratory information and services and you will thrive—it's that simple."

Broadening the scope of the benefits of lab-generated data, industry analyst Hollywood says, "Make the information that labs produce useful not just in the laboratory but also to the enterprise so that you increase the value to the enterprise by making it visible and more valuable to the whole enterprise."

Hollywood believes that a key aspect of lab efficiency revolves around asset management and the maintenance of equipment. "Maintenance is often seen as a stepchild and takes a back seat to operations. Until recently, it was seen as a cost center rather than a profit center. But this is shifting, and maintenance

NEW
at PITTCON
Booth # 2802

For all your Titration & HPLC accessory needs

pH Buffer Capsules
- Dissolves Quickly
- Preservative Free

Quick COD Analyzer
Fast, accurate and easy
to use with coulometric titration

Ammonia Analyzer
Coulometric Titration
for Ammonium-Nitrogen

Smart Caps
For HPLC Solvent
and Waste Containers

is becoming a partner of operations; keeping equipment well maintained increases its value to the enterprise."

There seems to be a fundamental status issue with labs as a whole, according to Hollywood. "For a lab to become elevated in importance, the role it plays in the enterprise needs to be elevated to a strategic level."

"I don't think that's the case at the moment. I am thinking in particular of QA/QC labs in manufacturing environments—in that context, I don't think it is viewed as a critical part of the enterprise," says Hollywood.

"For a lab to become elevated in importance, the role it plays in the enterprise needs to be elevated to a strategic level."

She says that a good start to running labs as businesses is to raise their importance in the enterprise. "And, in the lab itself, raise the strategic value of maintenance to [being on a] par with operations."

Hollywood says that today there's considerable need for labs to be run in a more businesslike manner. "Lab managers may not necessarily be trained as managers. In labs within engineering operations, they tend to be process engineers, and they may be brilliant engineers but not necessarily good managers."

"Generally, it is not absolutely necessary for a laboratory manager to know how to run all the tests. What he needs to know is how to motivate people, how to keep the lab operational, and how to keep the supply chain moving," says Hollywood.

She says that proper selection of equipment, software, and communication tools is crucial and will be even more critical in the

future. "Laboratories are a critical piece in the generation of big data, and it is necessary to have the right tools to analyze the data and come up with meaningful findings. It is critical, but not just inside the lab; it needs to go outside the lab to elevate the value of that information to the entire enterprise."

Bernard Tuls is a freelance writer based in Newark, Del. He may be contacted at btulsi@comcast.net or by phone at 302-266-6420.

SUPERIOR TEMPERATURE TECHNOLOGY FOR A BETTER LIFE



The Power of Thermodynamics™

Recirculating Chillers The F500 from JULABO

The FL and F series from JULABO are cutting-edge recirculating chillers suitable for a wide range of cooling tasks in laboratories and industrial environments up to 20kW.

The F500 has 500W cooling power at 20 °C, compact design and low energy consumption - ideal for optimizing distillation and extraction applications, among many others.

Contact us for a consultation and take advantage of a 15% discount valid through February 28.

Julabo
THE TEMPERATURE CONTROL COMPANY



**15%
Discount**

DROWNING IN REGULATIONS

LIKES, TWEETS, AND OTHER WAYS TO NAVIGATE THE NETHERWORLD OF AGENCY REGULATIONS by Vince McLeod

Every laboratory manager and company executive has had these thoughts at some point: “Another regulation. OMG. What do they want now? Will the government ever leave us alone? How am I ever going to get anything done?” Admit it. Haven’t you felt buried in regulations at some time in your career? But face it, government agencies and regulations are not going away. Perhaps, if we lived in a utopia and every employer and corporation did everything they could to protect workers and the environment, we wouldn’t need any regulations. Unfortunately, that is not the reality of the world we live in.

The reality is that in recent years we have seen a huge proliferation of federal, state, and local laws and regulations that affect businesses, especially those in the technical and scientific arenas. With the rapid growth and intense competition in the research areas of genetically modified organisms, recombinant DNA, cancer agents, and nanomaterial, to name a few, we have seen a corresponding increase in the number of vast and complex regulations and the creation of new agencies as governmental oversight tries to keep pace with technology and scientific developments.

The big two

So, we see there is a plethora of government agencies that we may have to deal with, depending on our institution’s research focus or the company’s operations. These might include the Department of Agriculture, Centers for Disease Control and Prevention, Food and Drug Administration, Department of Homeland Security, National Institutes of Health, Nuclear Regulatory Commission, and Health and Human Services, to name a few of the biggest players. However, to distill things down to the essential, we would venture to say that 90 percent of all business and institutional regulatory dealings will involve two main agencies: the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA).

The Occupational Safety and Health Act¹ and thus the Occupational Safety and Health Administration was created by President Nixon in 1970, in response to intense public outcry regarding worker deaths and injuries. OSHA’s mission is to

“ensure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance.”² The ultimate goal of OSHA is to prevent tragedies like the Texas City Disaster,³ where the detonation of more than 2,300 tons of ammonium nitrate fertilizer killed 581 and injured more than 5,000 while destroying the seaport in 1947. Granted, OSHA has had a lot to tackle, dealing with everything from asbestos to *Yersinia pestis*. Yet given the very recent West Chemical and Fertilizer Company explosion that leveled a small Texas town, killing 15 and injuring 200 in April 2013,⁴ we see that even after forty-plus years of OSHA we still have a long way to go when it comes to protecting workers and the public.

Similarly, the Environmental Protection Agency (EPA) was started under President Nixon in 1970; it was created with the signing of the National Environmental Policy Act. The EPA’s mission is to simply “protect human health and the environment.”⁵ In order to accomplish this, the agency develops and enforces regulations protecting the air, water, land, and endangered species. The agency has worked diligently to identify, clean up, and prevent damage from sites like the Love Canal,⁶ where Hooker Chemical dumped 21,000 tons of toxic waste between 1942 and 1953, and the Big River Mine Tailings⁷ site in Missouri, where St. Joe Minerals Corporation disposed of 50,000 cubic yards of lead mine tailings from 1929 to 1958. Even so, as with OSHA, after forty-plus years of environmental protection we still have tragedies like the 2010 BP-Deepwater Horizon disaster, where an explosion and fire on the offshore drilling platform killed 11 workers, injured another 16, sank the platform, and allowed oil to spew into the Gulf of Mexico for 87 days, causing one of the worst environmental disasters in our nation’s history.⁸

How do we comply and stay current?

Our long and storied past of environmental and safety disasters solidifies the fact that government regulation and oversight are not going away anytime soon. According to Robin Fray Carey, posting on Social Media Today, “Nothing better





POLYPROPYLENE

RUST-FREE, METAL-FREE PRODUCTS

setting the standard in demanding environments

NuAire® Polypropylene Fume Hoods and Casework are constructed from primarily stress relieved, fully seam-welded, and reinforced white polypropylene. NuAire® polypropylene products are the perfect choice for long-lasting, highly corrosive-resistant, metal-free applications.

- *Highly corrosive resistant with high temperature and tensile strength*
- *Chemical resistance to organic solvents and degreasing agents as well as electrolytic attack*
- *Lightweight, stain resistant with a low moisture absorption rate*



Find your perfect piece of polypropylene laboratory equipment by visiting www.nuaire.com/04814



Manufactured and Assembled in the USA.

 /nuaire  @nuaire  /nuaire  /nuaire

2100 Fernbrook Lane | Plymouth, MN 55447 | U.S.A. | 763.553.1270 | WWW.NUAIRE.COM

demonstrates the ongoing need for continued government oversight than the recent explosions in the Gulf, preceded spectacularly, with even more fatalities, by BP's Texas City disaster in 2005.⁹ Therefore, we should only expect that regulations will continue to multiply and the list of laws affecting research laboratories and associated business activities will grow longer.

As illustration of this fact, consider the summary table of just the OSHA and EPA regulations taken from the 1995 edition of *Prudent Practices in the Laboratory*.¹⁰ It lists 38 separate regulations and standards most laboratories deal with on a regular basis.

The average laboratory manager cannot possibly maintain knowledge of and familiarity with all these regulations. Larger institutions will most certainly have a specialized department of environmental health and safety (EH&S) professionals serving as in-house consultants, regulators, or resources. But small to mid-level facilities that do not have such a department probably require the laboratory managers or even individual researchers to seek advice from EH&S professionals at sister or companion institutions, hire private EH&S consultants, or contact regulatory agencies directly for support and guidance.

No matter how your organization has decided to deal with regulations, it is very important that the institution, whether academic or corporate or even governmental research, maintains compliance. Noncompliance with environmental, health, and safety regulations can result in serious civil penalties (fines up to \$25,000 per day per offense) as well as criminal charges. Violation of environmental, health, and safety rules also poses unnecessary

risks and endangers employees and the surrounding communities. Furthermore, should this information "get out" and reach the public, the institution's reputation and commitment toward environmental health and safety will be damaged, thus exposing the entity to serious economic repercussions.

Although keeping up with regulations and maintaining compliance seems daunting, there are new technologies available to assist and support your efforts. We are referring to the use of social media on the Internet. The savvy lab manager or researcher will enhance his or her success and reduce the time needed with efficient use of these platforms. Beware, however, the regulators can and are using these same tools to help accomplish their missions as well.

What is social media?

Social media refers to media websites of a social nature; Internet-based sites where communities of people create, share, and discuss information and ideas. Social media platforms run on Web-based servers, allowing users to generate and "post" content that is read, shared, discussed, and built on by others. They promote interaction by engaging users to create content, participate in discussions, and comment on each other's postings. Depending on interest, they are used by the public in general or by small, focused user groups devoted to a specific topic.

The benefits of social media include:

- Allowing the use of more than one type of content alternative; i.e., they embrace a wide variety of formats, including text, video, photos, audio, PDF files, and even PowerPoint presentations.
- Allowing cross-platform interaction through sharing, email, and feeds.
- Versatility and ease of access with many types of devices, from desktop computers, laptops, and netbooks to tablets and smartphones.
- Stimulating and encouraging communication and engagement by taking place in real time or over time and providing one-to-one, one-to-many, or many-to-many interactions.
- Enhancing and expediting the dissemination of information by the sheer speed and breadth of the different platforms.

Social media, by its nature, can have an enormous impact on both sides of the regulatory

CLEANair comes in SMALL PACKAGES!

Our **Extract-All™** portable air cleaning systems offer a high level of filtration in a compact design.

Portable & Bench-top
Fume Extractors

Ductless Fume Hoods

Self-Supporting Exhaust Arms

Oil Mist Collectors

Welding Fume Collectors

Portable Powder
Dust Collectors



Extract-All™
An exclusive Air Impurities
Removal Systems, Inc. brand

Providing Clean Air Solutions
for over 25 years!



800.236.1889  www.airsystems-inc.com

www.labmanager.com



WWW.RURO.COM

Laboratory Information Bliss™



*Laboratory Information
Management System*



*Frozen Sample Tracking
and Management*



*Animal Colony
Management*



*Electronic Laboratory
Notebook*

Through modern solutions, RURO's partners are prepared for adversity and have the tools needed to remain competitive in the scientific industries of today.

Rely on one of the fastest growing providers of information management solutions that has helped more than a thousand labs worldwide.

Contact us at:

888-881-RURO (7876)
301-639-5546

sales@ruro.com

RuRo Laboratory Information Bliss™
www.ru-ro.com

Visit www.RURO.com for more information

RURO, FreezerPro, LIMS 24/7, Limfinity are registered trademarks of RURO Inc.

Compliance:

FDA 21 CFR Parts 11, 21, 58, 210, 211, 820
cGLP/cGMP (Good Laboratory Practice and Good
Manufacturing Practice)
Section 508 Accessibility Guidelines
HIPAA Accountability Act of 1996
HIPAA Patient Safety and Quality Improvement Act
of 2005 (Patient Safety Act)

Compatibility:

PC/MAC
 Tablet
 Smartphone
 Web-based



As the challenges grow, so does The Baker Company.

It's an evolution guided by the integrity we're known for.

We are building on our achievements, adding capabilities and products distinguished by the same uncompromised engineering and quality.

Thousands of researchers around the world depend on us, and we will stay worthy of their trust. Because we want to go wherever the challenges are greatest.



BAKER

Environments For Science™

compliance equation. Social media are used by both those in the regulated community and, more and more, the regulators themselves. OSHA's use of social media is an excellent example. In a recent interview, Dr. David Michaels, as the assistant secretary of labor and the head of OSHA, stated that he is a believer in "sunshine being the best disinfectant."⁹ Putting that disinfectant to good use, OSHA now publishes information via social media press releases, revealing companies and their violations. On the flip side, OSHA is also "virtually" rewarding companies with good safety and compliance records as well as working with the National Safety Council to improve the distribution of best practice information.

We can see from OSHA's example the power of social media and the many ways it can be used. Here are a few other examples:

- The Centers for Disease Control and Prevention provides seasonal health and safety tips, such as information on influenza, as well as facts from their latest research on cancer and other diseases.
- The Environmental Protection Agency tweets on how you can get involved in their strategic plan for climate change, find the latest information for your state, or learn about the latest innovative water technology.
- The Department of Homeland Security allows people to find overseas travel alerts, check terrorism alerts, or engage with others on their cyber security blog.

The possibilities are endless. By using social media tools, you can focus your interests and stay current on the latest facts, changes in regulations, and any alerts or warnings that might be announced.

The rapidly expanding social media explosion is not without its drawbacks. The openness of the platforms raises questions regarding the reliability and trustworthiness of the posted information. More important, it presents new challenges for government agencies and employers to develop and enforce policies on their use. The overall health and evolution of society depends on transparency, accountability, and trust in our leaders to make decisions that protect the public health and environment. These decisions must be based on good, unbiased, objective science that is unaffected by political or commercial influences.

Government scientists provide critical expertise, and strong communication policies ensure that good scientific information reaches those who need it. To this end, the Union of Concerned Scientists recently published a follow-up report grading government agency transparency and communication policies.¹¹ Agency policies were graded on six critical points: clearness and consistency, protectiveness of scientific free speech, safeguards against abuse, consistency with legal

requirements, openness and timeliness, and dealing with misconduct and disputes. It is worth a read. And while you are there, you should take a look at their model media policy.¹²

References

1. *Occupational Safety and Health Act of 1970*. United States Department of Labor, Occupational Safety and Health Administration. Washington, DC. 1970. http://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=oshact
2. *About OSHA*. United States Department of Labor, Occupational Safety and Health Administration. Washington, DC. 2013. <https://www.osha.gov/about.html>
3. *Texas City Disaster*. Wikipedia, Wikimedia Foundation, San Francisco, CA. December 2013. http://en.wikipedia.org/wiki/Texas_City_disaster
4. *West Fertilizer Plant's Hazards Eluded Regulators for Nearly 30 Years*. Caroline Fairchild, Huffington Post, 22 April, 2013. http://www.huffingtonpost.com/2013/04/22/west-fertilizer_n_3134202.html?utm_hp_ref=tw
5. *Our Mission and What We Do*. United States Environmental Protection Agency. Washington, DC. 2013. <http://www2.epa.gov/aboutepa/our-mission-and-what-we-do>
6. *Love Canal*. Wikipedia, Wikimedia Foundation, San Francisco, CA. December 2013. http://en.wikipedia.org/wiki/Love_Canal
7. *Red, White and Deadly: 8 of the Worst American Superfund Sites*. Kelly Zhou, Takepart, Participant Media. Los Angeles, CA. 2013. <http://www.takepart.com/photos/worst-superfund-sites/big-river-mine-tailings--st-joe-minerals-corpmissouri>
8. *Deepwater Horizon Investigation*. British Petroleum. September 2010. http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/incident_response/STAGING/local_assets/downloads_pdfs/Deepwater_Horizon_Accident_Investigation_static_presentation.pdf
9. *A Federal Agency Looks to Social Media: An Interview with David Michaels of OSHA*. Robin Fray Carey, Social Media Today. November 2010. <http://socialmediatoday.com/robin-carey/233362/federal-agency-looks-social-media-interview-david-michaels-osh>
10. *Prudent Practices in the Laboratory*. National Academies Press. Washington, DC. 1995. http://www.nap.edu/openbook.php?record_id=4911&page=199
11. *Grading Government Transparency*. Union of Concerned Scientists. Cambridge, MA. March 2013. http://www.ucsusa.org/assets/documents/scientific_integrity/grading-government-transparency-report.pdf
12. *Grading Government Transparency – Model Media Policy*. Union of Concerned Scientists. Cambridge, MA. March 2013. http://www.ucsusa.org/assets/documents/scientific_integrity/ucs-model-media-policy.pdf

Vince McLeod is an industrial hygienist certified by the American Board of Industrial Hygiene, and the senior industrial hygienist in the University of Florida's Environmental Health and Safety Division. He has 25 years of occupational health and safety experience at the University of Florida, and he specializes in conducting exposure assessments and health hazard evaluations for the university's 3,000-plus research laboratories.



DRIERITE
www.drierite.com

Desiccants to dry solids, liquids and gases.

DRIERITE

W.A. Hammond
DRIERITE CO., LTD.
937-376-2927
www.drierite.com



ACCOUNTABILITY DOESN'T WORK IF YOU DON'T KNOW WHAT YOU BELIEVE

By Sam Silverstein

People say they want to be accountable. Organizations use the word “accountability” in their value statement. Leaders complain about a lack of accountability today. Accountability just doesn’t work.

Accountability doesn’t work when you don’t know what you believe and it doesn’t flow from the top. Printing the word on a piece of paper that is circulated to staff and clients does not create accountability. Demanding that everyone within the lab is more accountable won’t get much in the form of results.

Accountability only works when it starts at the top. The leader in any organization must be the first person that shows they value everyone around them. They must be the first person that leads by serving. The leader must know what they believe and then make decisions based on those beliefs. Accountability becomes the natural outflow from doing these things.

When the CEO of an organization sets the pace then—and only then—can we expect the executive team to follow along. It is then the CEO’s responsibility to make sure

that everyone on his or her team sees what is modeled, understands it, and lives it. Once the executive team is making decisions based on the beliefs of the organization, they will live and model accountability. Then, we can expect the leadership team that reports to them to be accountable. It is the responsibility of everyone on the executive team to make sure that everyone reporting to them both understands what is being modeled and lives it. And so it goes.

The goal is to understand that accountability is the outflow from leading from a set of proven beliefs and then basing decisions on those beliefs. Leaders must start at the top and model the desired attribute and then help others live that attribute as well. Great

the time.” Accountability is an all or nothing set of beliefs and actions. The problem with some leaders is that they make exceptions. Some rules are not made to be broken or even stretched. Accountability is one of them. If you value people you value them all of the time. If you serve others and not your ego then that is the way you always are. It is the “grey” area that trips up many leaders.

People find security in absolute. Our commitment to accountability must be absolute. We master it, model it and mentor it to those around us. When we know our beliefs, lead from them and then live an accountable life, we can ask more of others and we step up to help them as well. Only then does accountability really work.

“An accountable leader can never ask of anyone else what he/she is not willing to do themselves.”

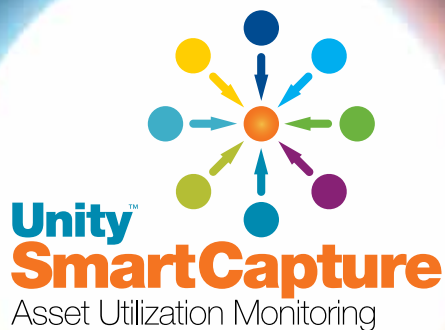
organizations have great leaders and the ideals and philosophies of those leaders cascade down through the organization. An accountable leader can never ask of anyone else what he/she is not willing to do themselves.

The other killer of accountability is that accountability is an absolute. We cannot be accountable “some of

Sam Silverstein is an entrepreneur, business expert, international author, and certified speaking professional. He has a Business degree from the University of Georgia and an MBA from Washington University. He is married with four children and currently resides in St. Louis, MO. Visit www.samsilverstein.com to learn more.

LABCAST

Be sure to attend Sam Silverstein’s Lab Manager Academy webinar, “No More Excuses!” on Wednesday, March 5 (or afterward at www.labmanager.com/noexcuses, to watch the archived video).



because knowledge is power

SmartCapture — Business Intelligence for Smarter Decisions

SmartCapture™ technology empowers you to make smart laboratory decisions based on real instrument and equipment usage information. Finally, a solution that provides data across all makes and models.

The Power to Do More

Unity Lab Services' proven expertise combined with SmartCapture automatic data collection provides knowledge to:

- Balance instrument workload
- Identify redeployment opportunities
- Optimize instrument and equipment service levels

Enabling you to reduce downtime risk, cut capital expenditures and decrease equipment maintenance costs.

Ask how SmartCapture can drive cost savings, improve lab productivity and power smart lab decisions.



Contact us today

www.unitylabservices.com/smartcapture

Unity™ Lab Services
Part of Thermo Fisher Scientific

MISTAEKS HAPPEN

STRATEGIES FOR HANDLING THEM THE RIGHT WAY **by Lina Genovesi**



Making mistakes is part of doing business. As Albert Einstein stated, “Great leaders allow their people the freedom to make mistakes. Anyone who has never made a mistake has never tried anything new.”

Many managers recognize that properly handling mistakes is an attractive managerial quality, whether it is handling the mistakes of a subordinate or their own mistakes. If managers can perfect the art of handling mistakes properly, their credibility and reputation for talent management will increase as well as career opportunities within their organizations.

Mistakes of the subordinate

Many managers recognize that mishandling the mistakes of subordinates may affect the work quality of the entire team. Mishandling mistakes can result from overcorrecting or undercorrecting. Overcorrecting mistakes may cause subordinates to be too afraid to make mistakes and cause them to hide mistakes, making correction more difficult. For fear of taking risks, they also may take a wait-and-see attitude, letting opportunities pass by rather than contributing to change initiatives. Undercorrecting mistakes may cause subordinates to keep making mistakes and cause top performers to begin doubting the value of good work and lose their enthusiasm.

In the book *The Coach: Creating Partnerships for a Competitive Edge*, authors Steven Stowell and Matt M. Stracevich advocate a process based on an “eight-step coaching model.” This coaching model serves as a communication road map between a manager and a subordinate and can be adapted to handling mistakes.

The coaching model follows a support-initiate concept, which requires the manager to be a strong supporter of the subordinate while initiating a rigorous problem-solving discussion. The support-initiate concept requires the manager

to demonstrate the ability to be firm and fair and to push at the right time while remaining flexible.

The coaching model has eight steps.

STEP 1: Be Supportive

Step 1 sets the tone for any coaching discussion between a manager and a subordinate. The perception of the subordinate of the level of support coming from the manager determines the success of the coaching discussion. Thus, to improve on the effectiveness of the process, the manager must increase the level of support as perceived by the subordinate, while initiating a strong and clear problem-solving discussion without being punitive or demeaning to the subordinate. Step 1 includes ten supportive behaviors:

1. **Collaboration/Flexibility.** The manager and subordinate share responsibility for assignments and tasks in handling the mistake.
2. **Help/Assistance.** The manager is willing to provide the subordinate with resources and be available to the subordinate for future consultation.
3. **Empathy/Understanding.** The manager treats the feelings, concerns, and difficulties of the subordinate with dignity.
4. **Value Recognition.** The manager is willing to express appreciation and belief that the subordinate is an important part of the team. This contributes to the positive sense of self-esteem of the subordinate.
5. **Listening/Interaction.** The manager is willing to give the subordinate his or her full attention and gives the subordinate time to express ideas, reactions, and suggestions.
6. **Recognition.** The manager recognizes the interests, individual needs, objectives, and aspirations of the subordinate.

The more
you investigate,
the better
STARLINE Plug-In
Raceway looks.

Sure, it may look like other raceway products. But STARLINE® Plug-In Raceway has the unique ability to add or relocate plug-in modules anywhere on the raceway quickly and easily, eliminating panel boards and the associated costs of reconfiguring circuits, receptacles and wiring. To learn how we can meet the power distribution needs of universities, labs and research environments, visit **StarlinePower.com**.

STARLINE®
PLUG-IN RACEWAY



7. Positive Feedback/Credit. The manager is willing to give the subordinate credit for specific past achievements.
8. Encouragement/Optimism. The manager is willing to reassure the subordinate that the situation can be resolved.
9. Positive Exchange. The manager is willing to focus on the issues in a nonthreatening and nonjudgmental way.
10. Openness. Where applicable, the manager is willing to accept responsibility for contributing to the situation and does not blame it all on the subordinate.



SIMDOS® 02

FINE DOSING/METERING PUMP

FOR AGGRESSIVE & CORROSIVE LIQUIDS

- 0.03 - 999 ml dosing volume
- 0.03 - 20 ml/min flow rate
- Simple and intuitive operation
- Adaptable to fluid characteristics
- Self priming, can run dry
- Various control options
- Splashproof IP65, small footprint

knfusa.com/SIMDOS02

SIMDOS® is a registered trademark of KNF Flodos AG.

STEP 2: Define the Topic and Needs

Step 2 is the first substantive problem-solving step. The purpose of Step 2 is to allow the manager to prepare the subordinate for change.

The manager may find the following guidelines helpful:

- Not starting the discussion with an accusation
- Giving the subordinate time to react, vent, or defend
- Being specific, descriptive, and nonhostile
- Being on the lookout for preliminary excuses and justifications that indicate that the subordinate is beginning to deal with the reality of the situation
- Restating the information and responding authentically if the subordinate has trustworthy information
- Stating or restating expectations to achieve mutual understanding and to allow the manager and subordinate to express their perceptions

STEP 3: Establish Impact

In Step 3, the manager establishes the impact of the situation on the subordinate with the manager explaining to the subordinate that he or she should consider revising the actions that resulted in the mistake.

The intended impact of Step 3 is to help the subordinate assess the impact of the actions leading to the mistake and their effect on personal goals, other coworkers, and the operations of the organization; to create self-motivation to sustain the change process; and spark the search for new plans and actions.

STEP 4: Plan of Action

In Step 4, the manager has a choice of creating a plan for the subordinate or negotiating a plan with the subordinate. A manager may feel the need to dictate a plan to the subordinate and ask the subordinate for his or her commitment. A manager must be willing to relax the need for control. Provided the subordinate is willing to be responsive, the manager must be willing to act as a catalyst and a facilitator.



SmartFreezer

The Single Solution for Automated Liquid Nitrogen Storage



- New SmartFreezer 2.0 — Faster, Quieter, Smarter
- -180°C automated robotic sample storage and retrieval
- Options for 1.4 mL or 2.0 mL vials
- Smartfreezer is powered by RURO's FreezerPro™ software which is currently used by more than 1000 lab businesses and regarded as one of the world's premier sample management systems
- -80°C Model Also Available

Contact us at:

888-881-RURO (7876)
301-639-5546

sales@ruro.com

RuRo Laboratory Information Bliss™

Visit www.RURO.com for more information

Compliance:

FDA 21 CFR Parts 11, 21, 58, 210, 211, 820
cGLP/cGMP (Good Laboratory Practice and Good Manufacturing Practice)
Section 508 Accessibility Guidelines
HIPAA Accountability Act of 1996
HIPAA Patient Safety and Quality Improvement Act of 2005 (Patient Safety Act)

Compatibility:

PC/MAC
Tablet
Smartphone
Web-based



The plan needs to be specific, simple, clear, and feasible. In addition, the manager needs to set timetables and clearly understood goals. The manager should also encourage the subordinate to provide ideas on how to reach the goals. The more input from the subordinate on the plan, the more likely the subordinate will feel part of the plan and will take ownership of the results.

STEP 5: Make a Commitment

In Step 5, the manager will get a commitment from the subordinate about his or her willingness and obligation to respond positively. Such a commitment is an indication that the subordinate is taking ownership of and responsibility for acting on the plan as designed.

STEP 6: Confront Excuses

In Step 6, the manager is willing to convey a determination to act on the plan without showing insensitivity, harshness, or unreasonableness.

A number of excuses can develop at any time in the process. Excuses may surface at the onset to justify why things are happening in a way or may surface during discussions of the plan for action. These excuses may create problems for the manager, as they may interfere with future progress.

The challenge for the manager is to keep the discussion on track and not focus on the excuses. However, excuses may be helpful, as they can provide an opportunity for the manager and the subordinate to foresee problems and make contingency plans.

STEP 7: Clarify Consequences

In Step 7, the manager clarifies any consequences if a subordinate performs or does not perform under a plan. A manager must assess the strength of the commitment of the subordinate. If the manager perceives the commitment to be weak, the manager should emphasize the negative consequences. If the manager perceives the commitment to be strong, the manager should focus on the positive consequences for the subordinate.

STEP 8: Persevere

In Step 8, the manager demonstrates perseverance during and after the meeting with the subordinate. During the meeting with the subordinate, the manager must highlight a continuing commitment to the subordinate. After the meeting with the subordinate, the manager's follow-up actions become an important indicator of the manager's willingness to persevere with the process.

As part of persevering with the process, the manager must continue renewing the commitment of the subordinate and make any necessary revisions to the plan.

Mistakes of the manager

Many managers recognize the fact that mishandling their own mistakes may affect the work quality of the entire team and undermine their role as effective managers. Therefore, many managers recognize the importance of mastering the art of handling mistakes and turning them into leadership opportunities.

In his book *Failing Forward: Turning Mistakes into Stepping Stones for Success*, John Maxwell looks at making mistakes in a positive light and states, "In life, the question is not if you will have problems but how you are going to deal with your problems. Are you going to fail forward or backward?"

The concept of failing forward is that a manager may stumble with a mistake, but as long as the manager does not land on his or her back and stay there, there is progress in handling the mistakes.

Below are guidelines for managers for handling their own mistakes.

STEP 1: Learn from the Mistake

The manager is willing to recognize that he or she made the mistake, look objectively at the mistake, recognize the wrong done, and understand the impact of the mistake.

BROOKFIELD

When you really
need to know
the flow of your
POWDER...

PFT™
Powder Flow Tester

IDEAL FOR MANUFACTURERS
who process powders daily
and have flow problems with
bins, hoppers, silos and feeders

QUICK & EASY ANALYSIS
of flow behavior using proven
scientific method ASTM D6128

UNIVERSITY DISCOUNT PROGRAM
Special Offer - 30% OFF



See us at Pittcon
Booth #1443

STEP 2: Own Up

The manager is willing to be held accountable and to admit to making the mistake. The manager is willing to express openly any lessons learned from the mistake.

STEP 3: Fix the Mistake

The manager is willing to do what it takes to rectify the mistake. The manager must establish a timeline for action and follow up and must communicate to the leadership the progress made. If the manager has the option of brainstorming with the team on handling the mistake, the manager must not lose sight of the fact that fixing the mistake as a team may quickly rectify the mistake and provide leadership opportunities for the manager.

STEP 4: Place Safeguards

The manager is willing to put safeguards in place to ensure that neither the manager nor subordinates will repeat the same mistake. The manager is willing to document the safeguards to help other managers and subordinates learn from the mistake that the manager made.

STEP 5: Apologize

The manager is willing to apologize. A proper apology includes admitting the mistake, apologizing for making the mistake, acknowledging what went wrong that caused the mistake to occur, and attesting to a plan to fix the mistake on a specific timeline.

STEP 6: Keep Perspective

The manager is willing to keep the mistake in perspective and move forward without fear of making another mistake.

Mistakes are the usual bridge between inexperience and wisdom. If managers and subordinates do not make mistakes, it is likely that they are not trying outside their comfort zone, and that in itself is a mistake. Sandy Weill once stated, "I believe in letting people know that if they make a mistake, it's not the end of the world. What would be the end of the world is making a mistake and hiding it. If people are not willing to make mistakes, they're never going to make any right decisions. On the other hand, if they make mistakes all the time, they should go work for a competitor."

Lina Genovesi, PhD, JD, can be reached at lina.genovesi@gmail.com or by phone at 609-462-4337.



Discover SP-D 80
Digestion

Discover SP-X

- Extraction
- Hydrolysis
- FAME

Inorganics or Organics Digestion or Extraction

Our new fast, accurate Discover SP-D 80 and SP-X are simply the easiest-to-use sample preparation systems available.

Visit our **BOOTH #2031** at Pittcon to learn more.

CEM
www.cem.com

POLITICAL SCIENCE

PART II

GETTING, USING, AND RETAINING POLITICAL POWER ETHICALLY AND WISELY

by Ron Pickett



Part one of this article (December 2013, p. 24) ended with a discussion of politics in your department. We hope you have considered the questions and the implications of the answers.

- **Do people vie for visibility?**
- **Is there an attitude of competition that goes beyond healthy and is counterproductive?**
- **Do some people complain about unfairness or inequitable treatment by the senior staff?**
- **Is the organizational chart wildly different from the way things really work?**
- **Have major changes been instituted recently, or are changes imminent?**

These same factors can lead to a better understanding of the overall organization. The previous article described the way that politics emerges in an organization and the bases of political power. Part two will describe how to get political power, how to retain it, and how to use it—ethically and wisely.

Why do politicized environments arise? They are usually caused by:

- **Ambiguous goals—Lack of clarity and agreement about the reasons for existence of the organization**
- **Subjective assessments—Reliance on appraisals that are not based on data**
- **Scarce resources—Insufficient staff, funding, or time**
- **Organizational change—Variation from the established routine, new equipment, reorganization, leadership changes, and certain external changes that have a major impact on the organization**

When these conditions and situations exist—and it seems they are always in evidence—wise managers pay special attention to the level of political activity in their organization and take action to improve the communication, involve the staff, and spend additional time working with the staff.

Keys to gaining and keeping political power

1. Overcome your personal resistance.

The first step in becoming more politically savvy is accepting the inevitability of politics. Managers who deny that politics exists or who try to behave as though the organization operates the way it is drawn out on the org charts are doomed to experience frequent disappointment, frustration, limited success, and restricted progress.

2. It IS ethical! (Or can be.)

A number of years ago I was involved in a major change effort in a large bureaucratic organization. As a member of a working group tasked with designing a new staff development and training program, I spent a lot of time initially in informal conversations with the opinion leaders and opinion detractors—the people who were going to object to anything that was proposed [because] it would impact the status quo that was their ‘rice bowl.’ I built a coalition that included people from both groups, and together we forged a new program design. We made sure that we used an organizational change model that had been successful recently, we kept the power allocation and resources as unchanged as possible, and we appealed to a higher purpose where there was common agreement when conflicts began to emerge. All in all it was a highly successful project that was easy to implement because of the support from a variety of sources and the consistency with the norms and values of the organization.

This story sounds like manipulation, and to a certain extent it is. However, the “ethical” use of political power is always for the good of the organization, not for self-aggrandizement.

Here is a description of the differences in two applications of power—personal power and socialized power—as described by David McClelland.

Personal power—Power that is gained and used to further one’s own goals and agendas.

Work Smarter, Not Harder

with Automated Sample Prep Systems

and Dependable Consumables from Environmental Express®.



Automating the sample preparation process to change the balance of time in the laboratory is a good investment to:

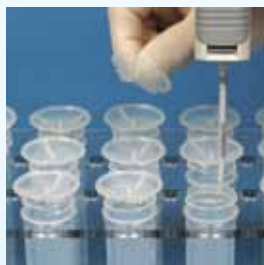
- Improve productivity
- Improve data quality and reliability
- Improve safety
- Facilitate reporting

See Us
at **PITTCON**
Chicago, IL
Booth 2435!



Don't miss this opportunity to meet our team and learn more about:

- AutoBlock® Plus for Automated Metals Digestions
- SPE-Express® for automated extraction through evaporation of Oil and Grease



**ENVIRONMENTAL
EXPRESS**

Socialized power—Managers and leaders who use socialized power tend to:

- **Be hesitant about expressing power in a direct interpersonal way**
- **Exercise power for the benefit of others**
- **Make others feel strong and competent**
- **Realize that most victories must be carefully planned**
- **Develop group goals**
- **Demonstrate concern about reaching group goals**
- **Have as a personal motto “I want to have impact for the group.”**

This divergent categorization of a person's attitude about power is especially important for the exercise of political power. The more that one's power base is employed as socialized power, the more likely it is to be used. In fact, it may be unethical to avoid political power, because you will not be as effective in getting things done.

3. Self-assessment and monitoring.

Most human beings are unable to examine and assess their impact on others. The way we are seen by others, our image, and our impression are always hidden from direct view—even our reflection in a mirror is reversed. That's why we are surprised and intrigued by our image on a VCR or our voice on an audiotape. Developing the ability to pick up the subtle clues about our impact is an important part of becoming effective in organizational politics.

Here are some hints for self-assessment:

- **Be objective in interpreting your performance appraisals—what are they really telling you?**
- **Review all the surprises you have had lately, including surprises about the impact you have on others. Why were you surprised?**
- **Talk to your mentor or trusted friends. Ask for straight comments.**
- **Take a course that will provide specific, instrumental feedback.**

Sources of political power

In the previous article I described the sources of political power as:

- **Access**
- **Independence**
- **Contribution**
- **History—personal and departmental**
- **Management style**
- **Department size and type**
- **Associates**
- **Political sense**
- **Self-promotion**
- **Self-assessment**

This list provides you with tickets to becoming increasingly politically effective.



No matter where you are in your career, the educational content at KnowledgeLab 2014 will provide the skills, best practices and strategies you are looking for as a laboratory leader. Connect your education needs with the domains and competencies in CLMA's *Body of Knowledge* to pinpoint the sessions that will help grow your ability to lead your laboratory to success!

Visit clma.org to register for KnowledgeLab 2014. And, learn more about the CLMA Leadership Curriculum – programming specifically designed for new managers and experienced leaders! Early registration discounts available through Friday, March 28.

May 4-7, 2014

**Rio All-Suites Hotel and Casino
Las Vegas, Nevada**

Political tactics

To make effective use of the sources of power from the above list, you will need to learn and apply some specific tactics. Review the following list and select some of the tactics that you are comfortable using and that fit the norms in your organization:

1. Use posturing; make a good impression, but not at someone else's expense.
2. Get actively involved in networking and public relations.
3. Recruit a good mentor.
4. Make your supervisor look good.
5. Collect and use social IOUs.
6. Maintain self-control.
7. Avoid making enemies—unless there is a very good reason.*

8. Use character assassination or sabotage as a last resort.*

Here are some influence strategies that will increase your access to sources of power:

- **Rational persuasion**—logical arguments and factual evidence
- **Inspirational appeal**—arousal of enthusiasm by appealing to values
- **Consultation**—seeking participation in planning
- **Ingratiation**—getting someone in your debt
- **Exchange**—offering an exchange of favors
- **Personal appeal**—appeals to feelings of loyalty or friendship
- **Coalition**—seeking the aid of others
- **Legitimizing**—pointing to organizational policies, rules, practices, or traditions
- **Pressure**—demands, threats, persistent reminders, nagging

—Yukl and Tracey (1992)

**These two tactics frequently elicit an emotional response when I discuss this topic with a group of managers. I'm tempted to take them off the list, but there are certain extreme situations I have been in where there was no choice but to take decisive and strong action to overcome the unethical use of political power by another member of the organization. Don't use these techniques except in extreme circumstances, but realize they are available if needed.*

READY...

SET...

GO!



VIAFLO ASSIST

Convert your multichannel pipette into an automated system for best results and unmatched ergonomics.

INTEGRA

www.integra-biosciences.com

Keeping your department politics-free (relatively!)

At the end of the previous article, I suggested a review of your department to assess the level of political activity that exists. Here are some ideas for reducing the impact of politics and keeping politics out of your department.

- **Keep communication open.**
- **Listen! Listen for meaning beyond the words.**
- **Get the most objective performance appraisal system you can, or keep yours as objective as possible.**
- **Be sensitive and thoughtful in instituting change.** Think about who is going to lose and who is going to gain.
- **Share the wealth/spotlight.** Push your staff members into more visible situations.
- **Empower your staff.**

An organizational politics competency model

Note: While this example is for a very different group—architects—you may find the following description and the website that describes a competency model for politics to be of interest.

What you know: Organizational webs of influence

- **Understand the networks of influence in the organization.**
- **Identify what various stakeholders' concerns and values are.**
- **Think about these in relation to effectively achieving the desired outcomes of the laboratory system.**

What you do: Influence without authority

- **Influence others to achieve outcomes, getting things done in the organization even though you do not have direct authority over the people who contribute most to the success or failure of the system.**

What you are: Politically astute

- **A very positive, passionate attitude**
- **Flexibility and openness to ideas and organizational forces**
- **Integrity of purpose and sound ethics**
- **Good interpersonal skills and the ability to communicate to a variety of audiences, to persuade and influence, align and motivate**

Quick keys to political success

Four keys to becoming a successful organizational politician:

1. **Be right**—Successful organizational politicians are usually right in their recommendations and counsel. They and their advice are respected because they work hard to understand the issues, they do their homework, and they express their opinions with clarity and forcefulness.
2. **Choose your battles**—Before you leap into the fray with all guns blazing, make sure that this is a battle you should be in. Make sure that this is a fight you need to be a part of and that it is one you can either win or make points with your participation. Your increasing power will make you want to use it often. If a particular battle does not fit these criteria, stand on the sidelines and watch what happens and learn.
3. **Monitor your words**—Be careful that your joking response to a question doesn't come back to you as a factual statement. Be judicious in your comments and asides. As your influence and visibility grow, your words become more important and will be noticed by both friends and foes.
4. **Assess your motives**—To become politically effective and maintain a political base, it is essential to objectively assess your motives. Because we humans are experts at self-deception and delusion, this is one of the



PRO Scientific Shaking
Your lab equipment experts.

PRO Scientific is a global leader in manufacturing of shaking, stirring and mixing equipment.



View our entire shaking, stirring and mixing product lists online.

www.proscientific.com **1.800.5.THE.PRO**
sales@proscientific.com 8 4 3 7 7 6

most difficult challenges for managers. Why are you doing something, really? What are your motives, and are they for the good of your group or for personal aggrandizement? Remember that power is seductive and as you become more politically astute and involved, it is easy to forget that it is your influence—not your wonderful self—that people are courting!

Summary

Politics is a fact of life in industry, academia, the military, religious institutions, and even in health care.

Remember these seven major ideas:

1. Politics exists in organizations.
2. Politics can be understood.
3. Politics can be managed.
4. Denial won't make politics go away.
5. You can become a better organizational politician.
6. Learn to use this reality for the benefit of your department (socialized power).
7. Monitor your personal reaction.

References:

Kennedy, Marilyn Moats. *Office Politics: Seizing Power, Wielding Clout*, Warner Books, New York, NY. 1980.

Pickett, R. "Understanding and Using Organizational Politics." CLMR, Mar-Apr, May-Jun, 2004.

http://www.bredemeyer.com/pdf_files/PoliticsCompetency.PDF

<http://www.politicalsavvy.com/>

Ronald B. Pickett is an organizational effectiveness consultant based in Escondido, Calif. He can be reached by e-mail at RonP70000@aol.com or by phone at 760-738-8638.

Don't use outdated methods!

NOW AVAILABLE!

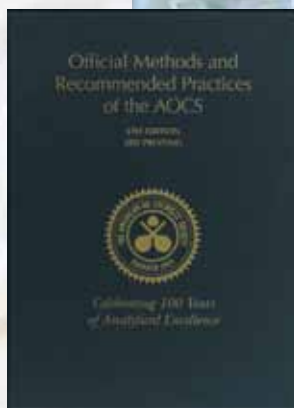
Official Methods and Recommended Practices of the AOCS, 6th Edition, 3rd Printing

The *Official Methods and Recommended Practices of the AOCS* contains currently recognized methodology required for proficiency testing in the Laboratory Proficiency Program (LPP), as well as AOCS Laboratory Certification. Additionally, AOCS methods are internationally recognized for trade, and several are listed by the Codex Alimentarius Commission. Worldwide acceptance has made *AOCS Methods* a requirement wherever fats and oils are analyzed.

Having current AOCS Methods is one of the requirements for ISO 17025 accredited laboratories. You can update your 2nd Printing by ordering the 2013–2014 Additions and Revisions today!

Learn more: <http://www.aocs.org/Methods/>

Call: +1 217-693-4803 | Fax: +1 217-693-4847 | Email: orders@aocs.org



**TECHNICAL
SERVICES**



Thermo Scientific LIMS Play a Key Role in Food and Beverage Safety

By Colin Thurston, Thermo Fisher Scientific

For businesses, the costs of food and beverage recalls are significant and extend far beyond the hard costs of pulling product off shelves and scrapping inventory. Erosion of consumer confidence and loss of brand equity have consequences that are much farther-reaching and infinitely more costly.

Whether it's a jar of tomato sauce or a bottle of soda, delivering a safe and consistently high-quality product is nothing short of miraculous. Between regulations imposed externally to a brand's self-imposed quality control processes, there are many checkpoints—some would say fail points—along the path from farm to fork or stream to straw.

The farm to fork pathway is complex, and without a powerful, yet efficient system of record it would be impossible for a brand to manage quality and ensure compliance while still leaving some margin for profit. Thankfully, that's precisely what a Laboratory Information Management System (LIMS) does.

Traceability is the Key

Traceability hinges on the thorough documentation of the entire production and distribution chain, so that if evidence emerges about contamination a product can, in the words of U.S. Food & Drug Administration, be “traced back to a common source or forward through distribution channels.”

A good product tracking system enables rapid response in case a foodborne illness occurs or a contaminated product is identified. Any delay in the process increases the chance of public harm and, of course, harm to the producer's brand.

A LIMS is central to a “good product tracking system.” It not only captures and manages vital data at multiple stages of the production process, it also enables information to be stored securely for nearly instant access when needed. And, because the LIMS enables manufacturers to capture data electronically, sample data isn't prone to errors common in paper-based systems.



From ingredient identification analysis and microbiology tests to pesticide analysis and foreign body testing, the LIMS tracks everything so that producers can monitor and report on complex processes with a few mouse clicks.

Overseeing Batch Relationships

Thermo Scientific LIMS solutions enable producers to effectively manage batch relationships between raw materials, processed materials and packaged goods, enabling analysts to identify which batches are affected by any contamination and automatically suspend release of a product during investigation. LIMS are designed to manage and control the quality assurance process, organizing and storing analytical data and facilitating the conversion of data to usable information. This process is fully automated, ensuring that any samples that fall outside acceptable limits are highlighted, prompting immediate investigation before product has been released to consumers.

LIMS Solutions in Action

Molkerei Alois Müller (UK) is a European-based leader in dairy products. The Müller UK site specializes in yogurt products, from low-fat offerings to yogurt and cereal combinations.

Transitioning from a manual, paper-based system to one that automates nearly every quality control (QC) sample check and reporting process was a massive undertaking for Müller UK. But with its UK production exceeding 1.8 billion pots of yogurt per year, the company had reached a scale that could no longer support a manual system. Thermo Scientific LIMS was implemented to help manage this growth.

For Müller UK labs, a LIMS is much more than a laboratory data system. It is a reputation management and growth management solution, enabling the company to ensure consistent quality, product safety and industry compliance while continuing to stretch toward its growth goals.

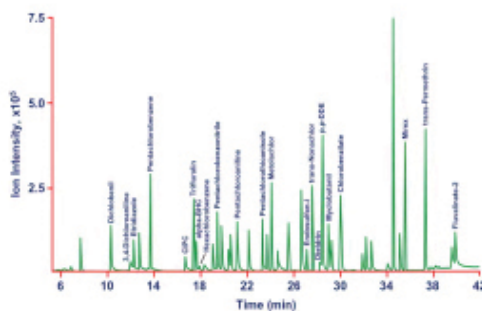
Food Safety Analysis Report

Thermo
SCIENTIFIC

Invoicing Address:
395 Royal Oak Lane
New Orleans, LA 15235

Pesticide Report

Date: Monday, March 03, 2008
Sample: Sample-28-02-2008-(1)
Method: Pesticides
Analyst: Don Crossett
Sample Collection Date: 2/25/2008 00:00:00
Sample Arrival Date: 2/28/2008 16:41:38
Sample Storage: 4 deg C **Signed:** drc
Sample Analysis Date: 2/28/2008 16:47:14



| Internal Standards | R.T. | QIon | Response | Conc. Units |
|------------------------|-------|------|----------|--------------|
| 1) D8-Naphthalene | 7.53 | 136 | 256561 | 0.50 µg/ml |
| 8) D10-Acenaphthene | 12.58 | 164 | 153677 | 0.50 µg/ml |
| Target Compounds | R.T. | QIon | Response | Conc. Units |
| 2) Monolinuron IP frag | 6.85 | 153 | 551 | 5.76 ng/g |
| 3) Linuron IP fragment | 9.40 | 187 | 181 | 3.45 ng/g |
| 4) Dichlorobenzene | 10.06 | 171 | 405876 | 1681.04 ng/g |
| 5) 3,4-Dichloroaniline | 11.75 | 163 | 118083 | 1334.43 ng/g |

Signed: _____
Laboratory Director



Food recalls impact bottom line, erode brand value and reduce shareholder value, so the traceability of raw materials and ingredients used across food production and distribution process is essential.

The LIMS offers considerable benefits:

- Less error-prone paperwork and expedited testing
- Real-time, automated entry and processing of laboratory data
- Fast access to results without requiring a high degree of technical expertise
- Real-time availability of analytical results, which has increased productivity and efficiency
- Immediate notification of any non-conforming samples, enabling quarantine of batches before they are released to customers

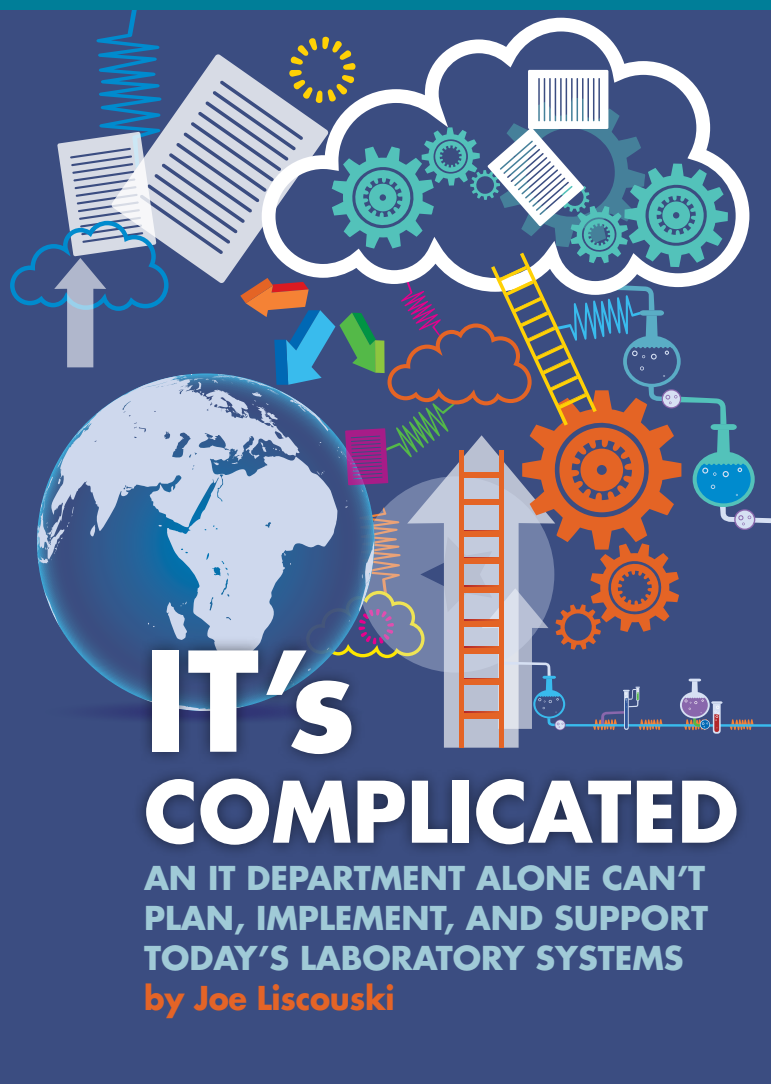
The Right Choice

Food recalls impact bottom line, erode brand value and reduce shareholder value, so the traceability of raw materials and ingredients used across food production and distribution process is essential. A LIMS provides a level of confidence that the brand and company revenues will not be adversely affected by any non-conformance issues and reduces the likelihood that contaminated product will reach the consumer. Automation, reliability, security and defensibility are all just words until an incident occurs. While the benefits of a LIMS go far beyond traceability alone – *the impact on quality and consistency cannot be overstated* – the measure of protection it provides each day is vital to industry as its products make the miraculous journey from farm to fork or stream to straw.

For more information about LIMS in food and beverage production, visit www.thermoscientific.com/foodsafetyresources

Colin Thurston is the Director of Product Strategy for Process Industries, Informatics, Thermo Fisher Scientific.

For more information, please visit www.thermoscientific.com/informatics or contact marketing.informatics@thermofisher.com.



In the past, labs were identified by strange instruments, oddly shaped glassware, fume hoods, peculiar smells, and black-topped workbenches with lots of drawers. To those in the lab it was comfortable; to those from other departments it was curious. But today's laboratory instruments, which rely heavily on complex software to drive them, have forced previously isolated labs into a more dependent relationship with information technology. With that relationship comes continual change and disruption as new laboratory systems require regular tweaks and upgrades. A far cry from the days when changes in the lab were controlled and agreed upon by the researchers who worked there.

There are several issues that complicate the use of information technology in lab work:

- The nature of lab work
- Unplanned software/hardware changes that can disrupt lab operations
- The need for computer-based systems and equipment to support lab operations
- The size of the organization relative to the size of the lab staff
- The nature of the organization's mission: is it research-based, or do the labs play a supporting role (QC in manufacturing, testing labs supporting a product development operation)?

Lab staff are used to working with complex instrumentation and are comfortable with devices that they have been educated to work with, where they understand both the theory and the practical use. They have the science down but have only user-level education on computer systems that are associated with the device. In many cases they need a better understanding of how things work in order to get the most benefit from them.^{1,2} Once they get a system set up and working, they would like it to keep functioning that way.

Unfortunately, computer applications are built on layers of software from more than one vendor, and any component of that structure can change at the vendor's discretion or in response to a need or security threat. The farther down that structure you go, the more frequent the changes, particularly as the industry shifts from annual updates to subscription services with updates on an as-needed basis. If the top-level applications don't keep up with changes and testing, things become unstable.

The growing sophistication of lab equipment, the increasing level of skills needed to work with it, and the complexity of lab software systems are forcing changes in how labs work. Labs can't afford to have highly skilled science specialists supporting lab systems. Information technology specialists need to fill that role. Simply saying that doesn't identify a complete solution to the problem.

Just as a science specialist's ability to solve instrument computer or informatics problems decreases as you move down through the layers of software, the typical IT specialist's abilities wane as you move through the hardware and software to the science application layers. There is an area where a specialist with combined science and IT backgrounds is needed to understand and solve problems. Is the problem the application, the computer, the cabling? If the equipment doesn't work, no matter where the problem lies, the work doesn't get done. We need people who can address both the science and the IT components to keep things working. That need will become more acute as the integration of lab functions takes place through software systems. We began a discussion of lab-IT relationships in a previous article³ and the subject has been noted in other forums.⁴



SPE-DEX[®] 4790 Provides Versatile Extractions



Visit us at
Pittcon 2014,
Booth #3414

Extraction of semivolatile compounds or Oil & Grease, compliant with modern regulatory methods, can be automated using the SPE-DEX 4790 Extraction System. Solid phase extraction (SPE) provides advantages over older methods such as liquid-liquid extraction and allows more automation to be incorporated into the process.

- Fast and easy to keep clean, reducing costs
- Handles the dirtiest samples, increasing confidence
- Processes the sample from the original sample bottle and automatically rinses, ensuring accuracy
- Up to 8 modules can be used with one controller for true walk away operation!

And many other features to make your extraction more efficient and *prepare for better results!*



PREPARE FOR BETTER RESULTS

For more info contact sales@horizontechinc.com or visit us at www.horizontechinc.com • +1 603.893.3663



LAB WATER SOLUTIONS



Are you debating between
Quality or Price?

**GET
BOTH!**

**QUALITY, AFFORDABLE
WATER PURIFICATION PRODUCTS
AND
TECHNICAL EXPERTISE**

Contact Aries FilterWorks
for the laboratory water solutions
that best fit *your* needs!

856-768-9600
ariesfilterworks.com

Made in USA

The popular myth is that lab people and IT people don't understand each other. If your view of IT is people who talk about hardware and operating systems and couch everything in three-letter acronyms, you have a point. Their point of view and responsibilities are to keep the computers and corporate information/infrastructure working. There are examples where lab and IT have forged good working relationships. How? By taking a realistic look at how work gets done and what is needed to be successful and by working out a partnership that leads to mutual success.

Lab managers and staff have to realize that software systems—from informatics through sample handling/preparation—are tools that can be successfully applied to laboratory work. That means learning more about the capabilities and limitations of the systems so that you can make informed choices about how you want your lab to function and what elements can be brought to bear to make that solution work. Making those decisions falls squarely in lab management's lap because we are talking about how the lab is going to operate. It requires an understanding of current lab operations, methods, instrumentation, and staff and of how the lab and its workflow are going to change over the next few years—these are lab business decisions. Traditional corporate IT isn't going to help with that.

The people you need to partner with are those who are willing to meet in your

“Labs can't afford to have highly skilled science specialists supporting lab systems.”

lab and act comfortable with lab equipment. These are people who have strong IT backgrounds, can meet and speak with you on your terms, understand what you need to do, and then will work with you to get the job done. They may rely on traditional corporate IT to back them up on some issues. Some companies are hiring people with lab experience to fill those positions and act as analysts/intermediaries between the labs and corporate IT. We have seen job descriptions that require “some lab experience” or “three to five years' lab experience” for IT positions; make sure the lab experience is appropriate for the kind of work you are doing (you may ask whether you can be part of the interviewing group). If that isn't happening within your company, hire an outside firm with the expertise you need. Above all, make sure people are properly educated.

Part of that expertise is project management. You may not find everything you need in one person; a small team may be needed, or get them educated to fill in gaps. The number of people you need to support the lab is not a function of the number of people in the lab but of the complexity and sophistication of the operations.

Traditional IT works with a limited number of applications spread over a large number of people. If you think in terms of office applications, you may need a support person for every so many users—they are all doing the same thing, and it is something the support people use as well. As you move into high-end database systems, the numbers change, requiring more support people. Lab systems become complex very fast. Database systems, instrument data collection, and connecting an instrument system to a LIMS or ELN really ramp up the support requirements, even if you have support contracts with the

What makes Glass Expansion different?

We are the world leader in the design of ICP sample introduction systems. The ICP that you are using now almost certainly incorporates sample introduction components based on original Glass Expansion designs.



We have a full staff of technical people to assist you. We have our own laboratory with four ICP spectrometers (ICP-OES and ICP-MS) and you can count on expert advice on your application from our experienced technical staff.



We provide a unique no-risk guarantee. If you find one of our products unsuitable in any way, you can return it for a credit or refund.



We provide rapid delivery. Most items are held in stock and we ship immediately after receiving your order.

To request a copy of our catalog, or sign up for our newsletter, please visit our website:

Glass Expansion
4 Barlows Landing Road
Unit 2A • Pocasset • MA 02559, USA
Toll Free Phone: 800 208 0097
Telephone: 508 563 1800
Facsimile: 508 563 1802
Email: geusa@geicp.com
Web: www.geicp.com



GLASS EXPANSION
Quality By Design

Reinventing Fat Analysis

Save time, labor and the risk of human error with the Soxtec™ 8000

- Fully automated solvent extraction
- Simple solvent addition
- Individual self-adjusting hotplates
- Compatible with the Hydrotec™ for fully automated acid hydrolysis
- Follows AOAC and EPA methods



Learn how the Soxtec™ 8000 will make your life easier at
www.foss.us/soxtec



Booth #1814

vendor. (They'll support their stuff but not how you use it or what it is connected to, although some of that is changing with vendors providing support contracts for equipment from any source.) If your lab falls within a regulated environment, you've added another dimension of complexity.

Most educational programs (articles, webinars, seminars) for lab managers stress personnel management. It is certainly appropriate, but in the modern lab where IT plays a significant role it isn't sufficient. Your people skills will have benefits as you work with a team to do an effective job of planning, designing, and implementing systems.

Planning and designing are critical skills. For most lab instruments, planning revolves around add-ons, repairs, and replacements as the nature of the scientific work changes. Information systems are different. In a highly competitive environment, products may be updated at least on an annual basis if not more frequently. These systems don't work in isolation but can connect to each other as well as to your instrumentation. Planning has to be done to meet both near-term and long-term requirements, including anticipating what your lab's needs might be a couple of years out—you don't want to spend months implementing something only to discover that a change is coming and it might negate some of what you've done.

The skills needed will vary among different members of the team:

Lab manager or lab technology planner

- An understanding of lab technologies (note: this includes sample prep and robotics) —instruments, data systems, and informatics—*strong background*
- Project management—the actual project work may be done by a Lab-IT specialist or an analyst; however, you should know enough to understand the subject and the implications behind techniques and methodologies so that you can make sure what is being done makes sense—*moderate to light background*
- Good negotiating, management, people, and problem-solving skills—while technical issues will have to be addressed, most of the time-consuming issues are those involving people—*strong background*

Lab-IT, business analyst

- An understanding of lab technologies, both instruments and data systems—*lighter background, sufficient to have a basic understanding of what is being discussed and the implications*
- An understanding of lab information technologies—*strong, particularly on functionality, application, and interaction; this is a significant part of your value to the team*
- Project management—this is your job—*strong*
- Good negotiating, management, people, and problem-solving skills—while technical issues will have to be addressed, most of the time-consuming issues are those involving people—*strong background; you may be the focus of problem solving*

Implementation specialist

- An understanding of lab technologies, both instruments and data systems—*light background, sufficient to have a basic understanding of what is being discussed and the implications*
- An understanding of lab information technologies—*strong, particularly on databases, systems communications, and application programming interfaces; this is a significant part of your value to the team*
- Project management—*moderate to light*
- Ability to work with people and have problem-solving skills—while most of your work will be technical, you have to be able to work with other team members—*good background*

In order for this team to work effectively together, they have to talk to each other regularly. If you are purchasing equipment, let them know what you are planning before making a purchase decision—they may have concerns that can impact the success of the installation, operations, and support. If there are information infrastructure changes going on, again, talk to each other and discuss their impact before they happen. Get together periodically and discuss upcoming plans, changes, what is working or not. If you are having vendors in for presentations, get team members involved to keep them informed about products and technologies; don't limit presentations to vendors—have presentations from other sources to provide different perspectives and viewpoints.

Information and automation technologies will transform the lab in more than one dimension. They bring significant benefits, at the cost of growing and developing people beyond their comfort zones. There are plenty of examples of things going badly, but there are also examples of things working well. Being prepared to do it right has a big payoff.

References:

1. Hinshaw, John V. "Finding a Needle in a Haystack," LCGC Asia Pacific, Vol 8 Num 1, March 2005, pp. 24-29.
2. Stevenson R., Gras R., Lee M. "The Future of GC Instrumentation from the 35th International Symposium on Capillary Chromatography," *American Laboratory*, Vol 43 Num 9, September 2011, pp. 4-8.
3. Liscouski, J. "Labs Are from Mars, IT Departments Are from Venus," *Lab Manager*, Jan-Feb 2013, Vol. 8 Num 1, pp. 30-33.
4. <http://theintegratedlab.com/2011/12/peace-in-our-time-rd-and-the-it-department/>
5. <http://www.InstituteLabAuto.org>

Joe Liscouski is the executive director of the Institute for Laboratory Automation,⁵ (a nonprofit organization). He specializes in helping labs understand and apply technologies to lab work. The institute provides online courses to support this work. Joe can be reached at j.liscouski@InstituteLabAuto.org.



RDM INDUSTRIAL PRODUCTS, INC.

Manufacturer-Direct & Distributor for Peripheral Products...
Custom Built Laboratory Furniture & More !!



Many Styles
Available ...

- Laboratory Casework
- Laboratory Tables
- Exhaust Fume Hoods
- Laminar Flow Workstations
- Cleanroom Furniture
- Static Control Furniture
- Ergonomic Furnishings
- Mobile Carts
- Industrial-Duty
- Custom & Standard Designs

SINCE 1977

www.labspaceolutions.com
877-777-9130



Laboratory Furnishings



Stainless Solutions...

Wood or Steel...




QUALITY • SERVICE • TIMING

We also offer Seating, Carts, Shelving, Cabinets and Much More...



HELIUM OR NITROGEN, TANK OR GENERATOR?

CHOOSING THE OPTIMUM MAKEUP GAS FOR GC WITH FLAME IONIZATION DETECTION by Peter Froehlich and Kim Myers

Helium is commonly used as the makeup gas for flame ionization detection in gas chromatography; however, dramatic increases in cost and limited availability in recent years have led many chromatographers to use nitrogen in its place. While nitrogen can be supplied via an in-house nitrogen generator or from tanks from an external supplier, the use of an in-house generator can provide the necessary gas on a 24/7 basis with a significant increase in safety and convenience. In addition, the use of an in-house generator can provide the gas at a lower cost than tank gas and reduce the impact on the environment, as heavy tanks need not be transported from a bottling site.

“A finite amount of helium is available and is dependent on the extraction of natural gas.”

The flame ionization detector (FID) is commonly used in gas chromatography (GC) and can detect almost all organic compounds; it is especially useful for monitoring compounds with a high carbon concentration. Compounds that are eluted from the column are ionized using a hydrogen/oxygen flame, and the resultant ion current is monitored. The optimum flow rate for the detector is 50 to 500 mL/min, significantly greater than the typical flow rate for the optimization of the chromatographic separation (1 to 2 mL/min). A makeup gas is added to the eluant stream as it departs from the column

to increase the flow rate in the detector and to ensure a sufficient stream of electrons to ionize the eluant and maximize the sensitivity of the detector.

Nature of the makeup gas

The makeup gas should contain low levels of compounds that can be ionized by the flame so that the background signal is minimized, and it should not react with the eluant or the ions that are formed in the flame. Historically, helium has been used as the makeup gas.

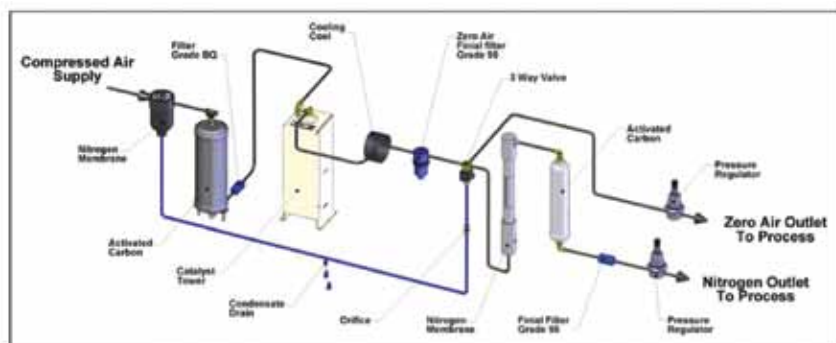
Helium is generated by the radioactive decay of thorium and uranium. Trace levels of helium are present in the atmosphere, and significant levels are found in natural gas in some gas fields. Helium is isolated from natural gas by fractional distillation. In the US, helium is extracted from natural gas in Texas, Kansas, Oklahoma, and Wyoming, and the U.S. Department of the Interior's Bureau of Land Management maintains a strategic stockpile (the National Helium Reserve) to provide a reliable supply. A finite amount of helium is available and is dependent on the extraction of natural gas. In recent years, the draw-down has been significantly greater than its replenishment, resulting in limited availability and higher cost.

Many chromatographers use nitrogen as a makeup gas, as it is readily available, inexpensive, and improves the shape of the flame in the FID, enhancing the sensitivity. High-purity nitrogen can be generated via the fractional distillation of air and is supplied in a high-pressure tank.

As an alternative, nitrogen can be generated in-house from compressed air.

How does an in-house N₂ generator isolate N₂ from compressed air?

The design of a typical in-house nitrogen generator (Parker Balston Model MGG-2500) is presented in Figure 1.



▲ Figure 1. Design of a typical in-house nitrogen generator for makeup gas and zero air for a flame ionization detector for gas chromatography.

“Many chromatographers use nitrogen as a makeup gas, as it is readily available, inexpensive, and improves the shape of the flame in the FID, enhancing the sensitivity.”

In-house generation of nitrogen consists of seven stages:

- 1) *Prefiltration*—A high-efficiency coalescing filter is used to remove water, oil, and particulate matter (to 0.01 μ) from compressed laboratory air to avoid damaging downstream components. The water and oil are removed from the filter by an automatic drain.
- 2) *Adsorption of volatile organic compounds*—Activated carbon is placed upstream of the catalyst to remove trace amounts of halogenated hydrocarbons and other volatile organic compounds that could poison the catalyst. If halogenated hydrocarbons are present in the compressed air at a level exceeding 5 ppm, an auxiliary activated carbon scrubber can be used to avoid poisoning the catalyst.
- 3) *Particulate filtration*—A BQ-grade filter (99.99% efficient at 0.01 μ) is placed after the activated carbon filter to ensure that activated carbon particles are removed from the stream.
- 4) *Hydrocarbon removal*—A cartridge heater in a stainless steel vessel with a proprietary catalyst blend oxidizes the hydrocarbons in the air into CO_2 and H_2O , resulting in a concentration of less than 0.05 ppm as methane.

Dispense...

Acetone to Xylene...
and everything in-between!
...safely, accurately & reliably.

BRAND Dispensette® bottletop dispensers

- Dispense most lab reagents
- Deliver accurate & precise volumes
- Increase laboratory safety

See our Dispenser Selection Guide
at www.brandtech.com/dispselect



Lab Rats Trust BrandTech®!

Special promotions at
www.brandtech.com

BRANDTECH®
SCIENTIFIC, INC.

Toll Free (888) 522-2726
www.brandtech.com

Put a Better Balance in Your Lab

Shimadzu first introduced analytical balances in 1925. Over the decades, Shimadzu's continuous research and improvement has produced patented technology and innovations. Engineered with UniBloc one-piece manufacturing, today's balances are **ideal for QA/QC and R&D applications in a wide range of industries** – from pharmaceutical and food to chemical, environmental, and electronics.



Shimadzu balances offer:

- Rapid response times
- Precise results
- Stable performance
- Excellent durability
- Easy operation
- Stable temperature characteristics
- Windows®Direct Communication – eliminates data input errors and offers unmatched application flexibility

Select **Shimadzu Balances** for:

Speed • Durability
Stability • Functionality
Easy Operation
Reliability

For more information, call
(800) 477-1227 or visit

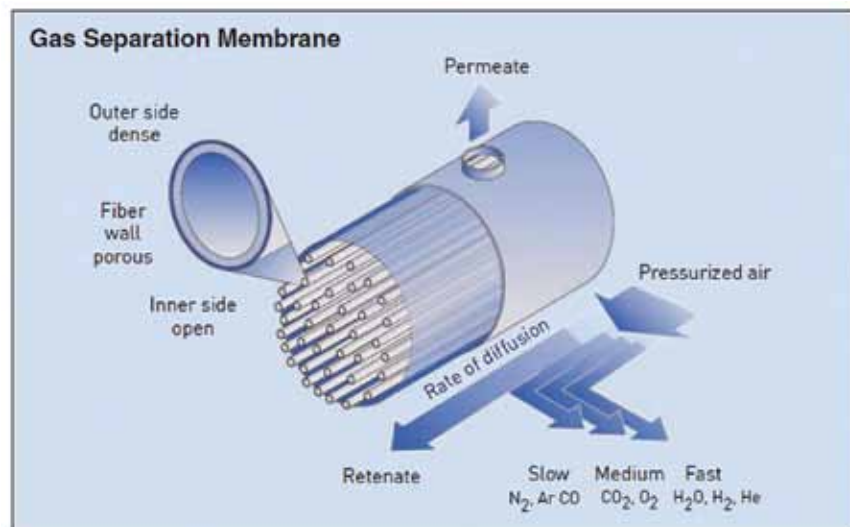
www.ssi.shimadzu.com/balances

Shimadzu Scientific Instruments
7102 Riverwood Dr., Columbia, MD 21046

- 5) *Cooling*—A copper coil allows the makeup gas to cool after passing through the heated catalyst module.
- 6) *Filtration*—The cooled gas is passed through an ultrahigh-efficiency membrane to remove particulate contamination in the gas from the catalyst module.

“Because the in-house generator is hard-plumbed into the GC, makeup gas is available on a 24/7 basis.”

- 7) *Nitrogen purification via a semi-permeable membrane*—A hollow fiber membrane separates the nitrogen from the other gases in the compressed air. Air flows through the tube as shown in Figure 2. Gases that permeate at a rapid rate (CO_2 , O_2 , H_2 , H_2O , He) are removed from the compressed air at a higher rate than nitrogen is. A single-membrane fiber has a very small internal diameter and a nitrogen module with a large number of fibers bundled together to provide a large surface area and to generate high nitrogen output.



▲ Figure 2: Separation of nitrogen via a membrane.

The nitrogen obtained from an in-house generator is 99.9999+% pure with respect to hydrocarbons (measured as methane) and 99+% pure with respect to oxygen. In addition to providing N_2 , zero air that contains <0.05 ppm of hydrocarbon (measured as methane) is generated to support the FID flame, eliminating the need for any cylinders to operate the FID.

The purified makeup gas is ported directly to the detector using a permanent connection to provide gas on a 24/7 basis with no user interaction. The generator provides warnings if the air supply falls, excessive airflow is observed, or the temperature of the catalyst heater is incorrect.

Advantages of an in-house N₂ generator

| | In-House Generation | Bottled Supply |
|--|--|--|
| Safety | <ul style="list-style-type: none"> Maximum pressure ca 100 psi Low flow rate In-house system can be directly ported to detector | <ul style="list-style-type: none"> Maximum pressure ca 2000 psi. Hazards in Moving Tanks Asphyxiation potential |
| Convenience | <ul style="list-style-type: none"> Gas is available on a 24 hour/7 day basis with minimum user interaction Simple annual maintenance | <ul style="list-style-type: none"> Tanks must be changed on a periodic basis User must ensure sufficient gas is available for a series of analyses |
| Cost | <ul style="list-style-type: none"> Can pay for itself in 1 year Low running costs | <ul style="list-style-type: none"> Requires transport of tanks (back and forth) Energy required for fractional distillation of air |
| Environmental Issues | <ul style="list-style-type: none"> Uses compressed laboratory air and electricity | <ul style="list-style-type: none"> Maximum pressure ca 100 psi Low flow rate In-house system can be directly ported to detector |
| Contamination Issues | <ul style="list-style-type: none"> In-house unit is directly ported to GC and never changed | <ul style="list-style-type: none"> Potential of foreign material entering detector when tank is replaced |
| Gas Purity (Hydrocarbon level) | <ul style="list-style-type: none"> Unit provides 99.9999+% N₂ Alarm if hydrocarbon oxidizer not at optimal temperature | <ul style="list-style-type: none"> Analyst must depend on supplier |

▲ Table 1. Comparing in-house generated N₂ with bottled gas.

There are many advantages to using an in-house makeup gas generator instead of tank gas for FID detection in gas chromatography. (Table 1).

Safety—When an in-house generator is employed, it is hard-plumbed directly into the gas chromatograph and delivers nitrogen at a flow and a pressure that meet the needs of the detector. The maximum pressure at the

Better Data... Faster.

VARIO® vacuum pumps automate your evaporations

- Improve reproducibility by avoiding operator error
- Protect samples from bumping
- No test runs, oversight or programming
- Finishes up to 30% faster
- Logs process parameters

Self-regulating vacuum. Just press START.



The VACUUBRAND
PC3001 VARIO^{PRO}
1.5 Torr, 33 lpm

vacuubrand

www.vacuubrand.com

info@vacuubrand.net

Phone: (888)882-6730

Mills, Grinders & Sieve Shakers



Solutions in Milling & Sieving

part of **VERDER**
scientific

If you are looking for a complete line of products for sample preparation and particle analysis, look no further than RETSCH.

- Mills and grinders for all solid sample types
- Widest range of sieve shakers in the market
- Fast, reproducible results every time



www.retsch.com

outlet is dependent on the inlet air pressure, and the maximum flow rate is 400 mL/min. In contrast, when a tank is used, the maximum pressure is upward of 2,000 psi. There is a significant hazard in transporting a tank from the storage area to the laboratory and connecting it to the chromatography system. Serious personal injury and/or damage to the facility could occur if control of the tank is lost during transportation or installation. If the tank valve is damaged, a large amount of nitrogen gas could escape into the laboratory, potentially causing an asphyxiation hazard.

Once an in-house generator is installed and plumbed into the GC, it can provide the makeup gas with essentially no user interaction.

Convenience—Because the in-house generator is hard-plumbed into the GC, makeup gas is available on a 24/7 basis. In contrast, when a tank is used, the operator must monitor the level of gas to ensure that there is a sufficient amount to perform the desired analyses (e.g., if an overnight series of analyses is to be performed). An in-house generator can produce sufficient N₂ for several detectors.

Cost—An in-house generator can provide makeup gas at a considerably lower cost than that of tank gas. The generator described above requires 100 V/4 amps. If it is used on a 24/7 basis at a power cost of 10c/kwh, the approximate cost per day is \$1.15. In contrast, when tank gas is used, the facility must bear the direct cost of the tank and demurrage charges. In addition, use of a tank involves incidental costs such as the cost of the time required to obtain and install a tank, order new tanks, maintain inventory, and related activities. While the actual cost savings from the use of an in-house generator depend on a broad range of factors, many users report that the payback period is a year or less and the overall operating costs can be reduced by 50 percent or more.

Environmental—The use of an in-house generator has a significant benefit to the environment because it uses a minimal amount of energy. In contrast, when a gas tank is employed to supply makeup gas, air must be cooled for fractional distillation; once the purified nitrogen is obtained, it must be compressed and tanks must be transported from the supplier's site to the end user. Similarly, once a tank is emptied, it must be returned for refilling; transportation of tanks requires a significant amount of energy.

Elimination of contamination—An in-house generator eliminates the possibility of introducing foreign materials when a new tank is installed. When a tank is used to provide nitrogen, the user must periodically break the connection between the supply and the detector to install a new tank, potentially leading to the introduction of materials into the atmosphere, which could have a deleterious effect on the FID measurement.

Conclusion

The limited availability and increased cost of helium have prompted many chromatographers who use FID detectors to switch to N_2 for makeup gas. While high-purity nitrogen tanks are available, the use of an in-house generator provides a number of significant advantages. An in-house generator eliminates the safety issues related to handling gas tanks and is much less expensive; many users report that an in-house system pays for itself in less than a year. Once an in-house generator is installed and plumbed into the GC, it can provide the makeup gas with essentially no user interaction. Because the generator is plumbed directly into the GC, the possibility of contamination is dramatically reduced, while it is possible that foreign materials could enter the detector when tanks are replaced.

Peter Froeblich, Peak Media can be reached at pfpeakmedia@gmail.com or by phone at 508-528-6145.

Kim Myers, Parker Hannifin Corporation, can be reached at kmyers@parker.com or by phone at 800-343-4048.

Furnaces & Ovens

CARBOLITE®
Leading Heat Technology

part of **VERDER**
scientific

If you are looking for a complete line of furnaces & ovens for heat treatment, look no further than CARBOLITE.

- Temperature range from 20 °C to 1,800 °C
- Chamber, tube and application specific furnaces
- Customized solutions and modifications



www.carbolite.com

WORKPLACE MISTAKES

By Mark A. Lanfear



Making a mistake here and there is the hallmark of human existence. None of us is perfect, and we can't get everything right all the time. In our personal lives, the ramifications of making mistakes might involve deep humiliation or embarrassment at worst. Who, after all, wants their loved ones or friends to know how much they messed up? Luckily the fallout from those mistakes is usually short-lived because the situation was just that—personal. Our loved ones and friends are much more willing to forgive those times when things go wrong because of mistakes (if we're lucky!).

But what about when things go wrong on the job as a result of someone making a mistake? Some mistakes in the workplace may indeed be small and embarrassing and may take little recovery time. Some mistakes, however, can be much more serious and lead to huge ramifications that aren't so easily fixed.

This is especially true in the life sciences and in the lab, complex work environments where the potential for human error can be great. What if, for instance, a mistake involves a drug for human consumption? Suddenly, the mistake becomes much more serious because other people could be affected in tangible ways. These are the kinds of mistakes that are the most dangerous—and it's why both managers and workers need to have an intelligent way of approaching workplace mistakes in order to lessen the pain all around.

First and foremost, there must be the recognition that the scientific world is indeed complex and rife with opportunities for human workers to make human mistakes. Both managers and workers need to recognize this phenomenon to begin with, because if everyone thinks they are invincible on the job, the possibilities for making critical mistakes can be high.

If, however, a mistake has been made, it is critical to own up to it. As humans, we naturally push against this. We may want to blame circumstances or other people. We may feel the need to get defensive. But these reactions only mask the truth, which is the fact that a mistake has been made. When we own up to a mistake right away, it lessens the time needed to fix it. It can also convince coworkers of your competence, because competent people make mistakes all the time—but they're also capable of making things right.

Next, don't underestimate the power of a sincere apology. As humans we tend to see apologies in the workplace as a sign of weakness. But especially for those directly affected by a mistake, an apology can actually lessen the blow and diffuse the situation as well as prove that you're the kind of employee who cares about making a bad situation better. Indeed, you might find out in the future that when you apologize on the job for a genuine mistake, the outcome may not be as bad as you thought it was going to be.

Of course, the way management handles mistakes will also weigh heavily on the outcome if a serious mistake has been made. The best managers will always recognize that their employees are human and that mistakes are inevitable. They will want to foster an environment where initial reaction to a mistake is not anger but almost a kind of gratitude if an employee is willing to own up to it. Ultimately this approach best utilizes everyone's time in the case of a mistake, as the fix can be put in motion quickly and everyone can move on.

Some mistakes, as I said earlier, can be very serious. Many will not be easily fixed. Some may be indicative of a larger workplace problem that extends beyond the individual employee making the mistake. But these first few fundamental steps to approaching a mistake will make almost any situation better from the start—and will assure everyone in the workplace that the organization is capable of dealing with any kind of problem effectively.

Mark Lanfear is a global practice leader for the life science vertical at Kelly Services, a leader in providing workforce solutions. He has operated clinical trials around the world for almost two decades. In addition, Mark is a featured speaker at many life science industry conferences and a writer for life science periodicals. He can be reached at MARL773@kellyservices.com or 248-244-4361.

General Purpose Water Baths. New features. New look. New price.

The built-in timer, user-settable temperature presets and clear, hinged gable cover make these stylish new General Purpose Water Baths highly versatile.



Visit us at Booth 3202

Circulating Baths. With award-winning, space-saving designs, PolyScience Circulating Baths are one of the best lab partners you'll ever have.



Our icon-driven SmartTouch interface leads you through menus, functions and options, enabling you to make any adjustment, even with your gloves on.

The Swivel 180™ Rotating Controller lets you move the extra large temperature display independently from the bath, allowing you to position the reservoir in the best location and still read the display clearly.



PITTCON®
CONFERENCE & EXPO 2014

Circulating Baths | Water Baths |
Chillers | Specialty Baths
www.polyscience.com • 1.800.229.7569

DON'T GET BURNED!

AVOIDING UV EXPOSURE IN THE WORKPLACE

by Vince McLeod

Research laboratories are challenging places to work safely. This month the Safety Guys alert you to a potential significant radiation hazard present in the workplace: UV. UV is short for ultraviolet light. And most of us remember from high school science class that UV represents a small band on the electromagnetic spectrum and that the sun is our largest source of UV. Perhaps many of us work with UV daily and are well versed in the science of electromagnetic radiation. But even so, we'll begin with a basic UV review.

UV is a form of nonionizing radiation found within the electromagnetic spectrum between X-rays and visible light, and is generally divided into three classes based upon wavelength: UV-A with a wavelength of 315 to 400nm (black light); UV-B with a wavelength from 280 to 314nm (erythermal), prevalent in sunlight; and UV-C with a wavelength from 100 to 280nm (germicidal), used by the germicidal lamps found in biosafety cabinets and laminar-flow hoods. The sun is a major source of UV-A and UV-B. UV-C is almost never observed in nature because it is absorbed completely in the atmosphere before reaching the Earth's surface.

Let's take a look at the indoor stuff

Hazards of UV do not distinguish between work and home, and in addition to sunlight, UV sources are found in the workplace, including in labs, mechanical rooms, and shops. Sources include some biosafety cabinets, certain types of handheld light sources, transilluminators, cross-linkers, and some laboratory instruments, such as spectrophotometers. We do see the occasional accident report resulting from non-sunlight UV exposure. According

to the Health Physics Society:¹ "Accidental UV overexposure can injure unaware victims due to the fact UV is invisible and does not produce an immediate reaction... Reported UV accident scenarios often involve work near UV sources with protective coverings removed, cracked, or fallen off. Depending on the intensity of the UV source and length of exposure, an accident victim may end up with a lost-time injury even though he or she was totally unaware of the hazardous condition."

UV germicidal lamps, such as in biosafety cabinets, are designed to emit UV-C radiation because of its ability to kill bacteria. Welding operations, though not common in the lab, can be found associated with maintenance activities, and also produce UV-C. In humans, UV-C is typically absorbed in the outer dead layers of the skin. Overexposure to UV-C can cause corneal burns, commonly termed welders' flash. UV burns to the eye are often described as a "sand in the eye" feeling and are often reported to be very painful. No one should ever work in a biosafety cabinet (BSC) with the UV lamps on, and in reality, the UV lamps should not be on when the room is occupied. Transilluminators or UV light boxes are used for visualization of DNA on gels. They typically look like flat boxes with glass tops and have UV lamps inside. The glass top allows the light to shine on the gel, causing the DNA to "glow," but this also potentially exposes the user. To reduce risk of injury, most models today come equipped with a shield to block the UV light. For older models, there are various types of after-market shields that can be attached that may also provide good protection. We have heard of accidents in which lab workers have used inappropriate shielding, thinking it was rated



WHAT DOES FLOW SCIENCES DO?

FSI encloses processes where hazardous materials are being weighed, transferred, manipulated, or transformed. The equipment that FSI encloses varies from balances, titrators, blenders, mills, and other process equipment to analytical testing, forensics, medical processes, chemotherapy, nanotechnology, and many other containment needs. Protection is paramount to Flow Sciences, as the containment solutions provide personnel protection for operators, product protection for processes, or in some cases, both personnel and product protection simultaneously.

WHO IS A FLOW SCIENCES CUSTOMER?

Anyone that works with APIs, chemical agents, or biological agents that can cause harm to the individual or the process that they work with.

THE HYBRID ISOLATOR EXCLUSIVE TO FLOW SCIENCES, INC.

ACHIEVE CONTAINMENT AT OR
NEAR ISOLATOR LEVELS AT A
FRACTION OF THE COST



ENGINEERING
SAFETY
FOR THE
CONTAINMENT
OF YOUR
APPLICATION

FLOWSCIENCES.COM
1-800-849.3428

VISIT BOOTH 954
AT PITTCON 2014
TO FIND OUT MORE

STANDARD ENCLOSURE SOLUTIONS

ETA

TOP MOUNT BALANCE



EHA

HYBRID ISOLATOR



END

NITROGEN PURGE



EVP

PROCESS EQUIPMENT



EVA

VENTED BALANCE



CUSTOM ENCLOSURE SOLUTIONS



BENCHTOP / SCALE UP



CONTAINED ENVIRONMENTAL
SYSTEMS



NANOTECHNOLOGY



PILOT PLANT /
MANUFACTURING



LAB AUTOMATION /
ROBOTIC EQUIPMENT



SPECIALTY HOODS



SAFETY TIP

REQUIRE THAT ALL ACCIDENTS BE REPORTED, EVALUATED, AND DISCUSSED AT DEPARTMENTAL SAFETY MEETINGS *By James. A. Kaufman*

While having no accidents isn't necessarily a good indication that everything's ok, having them go unreported makes the matter worse. The reporting of all accidents is extremely important. Every accident is an opportunity to improve your safety program, to learn how to do a better job, and to protect your workers and facilities.

Since accidents happen relatively infrequently, particularly in smaller organizations, keep track of the incidents and close calls/near-misses as well. These are the events where matters of inches or seconds were the difference between nothing happening, a minor mishap, and a major disaster. The rule of thumb is that there are three hundred minor incidents for each major one. Think of all you could learn from having a chance to review the close calls. When organizations provide an easy way for employees to self-report and share accounts of close calls and near-misses, the frequency of accident invariably goes down.

The safety committee should get copies of each accident or incident report and review it carefully. They should conduct an investigation of the event so that it can be correctly evaluated and the proper corrective action taken to prevent a reoccurrence. Don't go around

looking for someone to blame. Looking to place blame is the quickest way to convince people that they shouldn't talk about what happened, to avoid telling the truth, or to have a loss of memory.

Then, the event should be brought to the attention of the rest of the people in your organization at a departmental safety meeting or by other means so that they too can learn from the experience. Photographs of injuries and property damage are graphic reminders of the consequences of carelessness, unsafe work conditions, and unsafe work practices.

At Cornell University, a review of the lab accidents for the prior several years revealed a pattern. There was one particular undergraduate lab experiment that was responsible for a disproportionate number of accidents. Changing the experiment helped to reduce the accident frequency.

Consider having an accident/incident report form for your employees and students to fill out. In the case of students, it will help them to develop an appreciation for this recordkeeping aspect of safety.

Source: Kaufman, James A., Laboratory Safety Guidelines - Expanded Edition, The Laboratory Safety Institute, www.labsafetyinstitute.org.

for UV when, in fact, it was not. The UV shields/covers should be checked regularly for cracks or other damage.

Access to rooms with open-source transilluminators should be controlled and posted with a warning sign indicating that face and other skin protection is needed to enter when a transilluminator is in use. The protection required is standard laboratory apparel and includes a fully buttoned lab coat, gloves, long pants, and closed-toe shoes. While working with UV radiation sources, lab workers must be careful to prevent gaps in clothing that will expose the skin, such as around the neck and wrists. In addition to the standard lab attire, a polycarbonate face shield labeled for UV protection (as opposed to just glasses/goggles) should be worn to protect the eyes and face. It is not uncommon for lab workers to receive facial burns in the areas not covered by the goggles or glasses.

One more consideration is that there are many common medications that increase an individual's photosensitivity and resultant susceptibility to UV-related

burns. You should review all your medications with your pharmacist or physician to determine if any of them increase your risk for UV-induced damage.

In the United States, occupational exposure guidelines for UV radiation have been established by the American Conference of Governmental Industrial Hygienists.² Handheld meters for measuring UV radiation are commercially available, but expert advice from a qualified industrial hygienist or health physicist is recommended to ensure selection of the correct detector and diffuser for the UV wavelengths emitted by the source.

You might be in for a burn

Exposure to sunlight can be a concern for anyone working in outdoor locations, even those with responsibilities for brief outdoor activities. The exposure guidelines for the general public for sun exposure are certainly applicable to the workplace as well. There is plenty of literature and general information on the use of protective cloth-

ing and sunscreens, and on limiting exposure in the middle of the day. The American Cancer Society³ offers the guidance summarized below to help prevent skin cancer:

Cover up: Wear long pants and long sleeves when working in the sun. There are now good lightweight fabrics that are cool yet provide good UV protection.

Use a sunscreen with a sun protection factor (SPF) of 15 or higher: The SPF number only indicates the protection against UV-B rays. Sunscreens labeled as “broad-spectrum” protect against both UV-A and UV-B radiation, but there is no standard system for measuring protection from UV-A rays at this time. Products that contain avobenzone (Parsol 1789), ecamsule, zinc oxide, or titanium dioxide are likely to offer some protection against most UV-A rays.

Be sure to apply the sunscreen properly: Always follow the label directions. Almost all sunscreens require reapplication for effective protection throughout the day.

Wear a hat: A hat with at least a 2- to 3-inch brim all around is ideal because it protects areas often exposed to the sun, such as the neck, ears, eyes, forehead, nose, and scalp.

Wear sunglasses that block UV rays: Long hours in the sun without protecting your eyes increase your chances of developing eye disease. UV-blocking sunglasses can help protect your eyes from sun damage.

Limit direct sun exposure during midday: Another way to limit exposure to UV light is to avoid being outdoors in intense sunlight for too long. UV rays are most intense during the middle of the day, usually between the hours of 10 AM and 4 PM. If possible, schedule outdoor work in the early morning and late afternoon instead. Note: This can also help limit heat exposure.

We have just gotten warmed up

There is no excuse or need for any excess UV exposure in the lab, as it is so easily controllable. We all like some rays of sunshine in our lives, and we would never suggest a vampire-like existence (we Safety Guys do get our share of outdoor time in Florida, surfing, biking,

sailing, and kayaking), but we have learned to limit our exposures to the harmful UV rays through timing, sunscreens, effective clothing, and shade. We hope you do the same. Until next issue remember—SAFETY FIRST!

References

1. *Ultraviolet Radiation*, Gary Zeman, Health Physics Society, MacLean, VA. August 2011 <http://hps.org/hpspublications/articles/uv.html>
2. *Threshold Limit Values and Biological Exposure Indices*, American Conference of Governmental Industrial Hygienists, Cincinnati, OH. 2011 <http://www.acgi.org/>
3. *Be Safe in the Sun*, American Cancer Society, Atlanta, GA. 2013 <http://www.cancer.org/healthy/besafeinthesun/>

Vince McLeod is an industrial hygienist certified by the American Board of Industrial Hygiene, and the senior industrial hygienist in the University of Florida's Environmental Health and Safety Division. He has 25 years of occupational health and safety experience at the University of Florida, and he specializes in conducting exposure assessments and health hazard evaluations for the university's 3,000-plus research laboratories.

Perfect Fit for Lyophilized Moisture Analysis

GREEN

alternative to Karl Fischer Titration



| Karl Fischer | | Vapor Pro® 3100L | |
|--------------|-----------|------------------|-----------|
| Result (ppm) | Test time | Result (ppm) | Test time |
| 47 | 6:53 | 51 | 12:32 |
| 58 | 7:30 | 74 | 14:36 |
| 67 | 7:04 | 53 | 12:20 |
| 79 | 7:46 | 78 | 15:08 |
| | | 69 | 13:18 |

Average
S.D.
RSD

| | |
|------|------|
| 62.8 | 65.0 |
| 13.6 | 11.0 |
| 21.6 | 16.9 |

Table 1. Comparative results of TPU testing

The development of an alternative to Karl Fischer moisture analyzer has been achieved, and can be used for moisture specific analysis of medical device grade resins. The Computrac® Vapor Pro® 3100L moisture analyzer successfully uses Relative Humidity sensor technology for selective and accurate moisture measurement. The instrument reduces the use of hazardous organic solvents makes it an environmentally friendly alternative, when compared to current Karl Fischer technology. The results between the two methods of detection of H₂O content for three separate resins, TPU, PC, and nylon 6/6 strongly correlate, with the Vapor Pro® 3100L providing real-time data that can be used to provide a complete moisture profile of the materials.

<http://www.azic.com/blog/?p=184>
?MAG=Lab+Manager&TYPE=January+Print+Ad

Arizona Instrument LLC
3375 N. Delaware St. | Chandler, AZ 85225
800-528-7411 | (f) 602-281-1745
sales@azic.com | www.azic.com





Louis Scampavia, PhD

ASK THE EXPERT

EFFICIENCIES OF LAB AUTOMATION

by Tanuja Koppal, PhD

Louis Scampavia, PhD, associate professor in the Department of Molecular Therapeutics at the Scripps Research Institute in Florida, talks to contributing editor Tanuja Koppal, PhD, about how automation has been a critical part of their high-throughput screening activities. He goes into the details of what can and should be automated and the due diligence that needs to be performed before these decisions are made—decisions that have a long-standing impact on the workings of a lab.

Q: What types of high-throughput screens do you run?

A: We are primarily focused on high-throughput screening (HTS) and ultrahigh-throughput screening (uHTS), and we use either 384- or 1536-well microtiter plate format for those screens. A little more than half of them are cell-based, and the remaining are traditional, biochemical interaction screens. These screens go across a number of different assay types, from enzymatic to reporter genes, secondary messengers, protein-protein interaction screens, and more. We have the ability to screen up to a million compounds in a 24-hour period, although we rarely do that.

Q: What aspects of the screening are automated?

A: We are only a dozen people in our facility, so everything that we can automate, we have. That includes compound management, where we use robotics for formatting and reformatting plates. We have robots for cherry picking

and freezer storage to carefully bring out vials with 2-D barcodes so we can reformulate them into our compound collection. For screening, the plates are all loaded by robots, and robots are also used for compound dosing. The robots deliver the plates to the plate reader for obtaining the readouts. Most important, we have as much integration of informatics with the robotics so that information is obtained in real time. There is some manual intervention involved in preparing the chemicals and transporting plates from the compound management room to the screening facility, but we have tried to make things as automated as possible.

Q: Are biochemical and cell-based assays both equally amenable to automation?

A: Historically biochemical assays have been more amenable to automation, but today both types of assays can be automated. There are certain limitations with cell-based screens that have to do with the cell line and the type of assay being performed. For instance, some cells have to be kept in certain environmental conditions that cannot be maintained during automated dispensing and incubation, or some types of cells can get washed away during the readout. But with the use of proper cell lines, both biochemical and cell-based screens can be done well and efficiently when automated. Anyway, we never take anything to HTS until things have been well developed with pilot screens, on a smaller scale, done off-line. That's when the issues with automation are worked out and the go/no-go decisions are made.

Q: When automating, should everything be automated from the get-go, or should things be brought in and integrated in stages?

A: The first generation of HTS was a piecemeal integration of instruments. It demonstrated a proof of principle but was not very reliable. We are fortunate to be working with what is the second generation in lab automation, where things are designed from the ground up and everything is reliable and robust. Today if I were to give advice, I would ask people to worry about integrating the informatics. Automation is one facet, but having proper integration of information along the screening pipeline, for quality control (QC) prior to use and instrument auditing, can help prevent the propagation of errors. Whenever informatics can be integrated to provide real-time information to the operator, then the data obtained is more reliable.

Q: What questions need to be asked before investing in lab automation?

A: What people should look for are reliability and robustness, and those factors should drive your decisions. A lot of times, robotics is sold on the concept of versatility, but reliability then becomes the Achilles' heel. Then you run into cost overruns, having to repeat experiments and analyses. Another way to minimize cost overruns is to minimize human or manual interactions that can lead to errors that are propagated down the pipeline. So in your design, you must have instruments and protocols undergo QC so as to not amplify mistakes during HTS. Automation can fail at times. For instance, you can have dispensing failures, and having the compound

“QUICK, FETCH MY ADAM BALANCE!”



Adam Equipment lab balances deliver the precision and dependability you need, yet don't cost a king's ransom. If you aren't searching for an Adam balance, you might be barking up the wrong tree.

Keep your pack happy with lab balances by Adam Equipment. You'll be king of the lab.



PGW Precision Balance

Tel: 203-790-4774
Fax: 203-792-3406
Email: orders@adamequipment.com
www.adamequipment.com

PITTCON 2014
CONFERENCE & EXPO

**Booth
1707**

Dr. Louis Scampavia is an associate professor in the Department of Molecular Therapeutics at the Scripps Research Institute in Jupiter, Florida. He received his PhD from the University of Washington in the Department of Chemistry. Having been at the Scripps Molecular Screening Center since its very inception, he continues to leverage over 34 years of research experience that include 24 years in the biomedical /biotechnology field and 10 years in the chemical industry working with collaborators in both academia and industry. The Scripps Research Institute Molecular Screening Center (SRIMSC) is recognized as a leader in implementing assay development, executing HTS campaigns, and delivering high-quality results. As one of the NIH-sponsored Molecular Libraries Probe Production Centers Network (MLPCN), the SRIMSC facility has produced over 1,457 PubChem reports, 141 publications, and 46,437,620 tested substances and has discovered 405,031 active substances and 72 probes, including novel therapeutics in Phase II/III clinical trials.

plates audited, either visually or using an imaging software such as the Plate Auditor, can help pick out those mistakes prior to screening. During the screen you need proper controls and control plates in place, and all the information should be available in real time in order to catch mistakes early and control costs.

Q: Did you have to make changes to your lab design or to the workflows to accommodate the lab automation?

A: We had to make changes to both. We have a modular lab design, where even our lab benches are on wheels to accommodate new automation. Our facility is never stagnant, and we are constantly upgrading our capabilities. One recent upgrade is an imaging reader for

performing high-content screening (HCS) that can be integrated with our robotics platform. We have to have modularity to upgrade our instrument hardware as the technology improves. We also spend a good deal of time improving our flow

people at other facilities to find out what they have found in terms of reliability and use. Belonging to professional societies is another unbiased way to find out what and where instruments have worked and where they have failed.

“We have the ability to screen up to a million compounds in a 24-hour period.”

of informatics. We recently upgraded our software so the LC/MS QC now automatically updates into the database to provide seamless integration with the results. Now we not only know what efficacy a compound has, but we also can understand the relationship to its purity or any other property identified. Versatility is critical for constant upgrades, and this starts from the time you are designing your facility, knowing how things can change over time.

Q: How should you go about evaluating the right vendors?

A: You should never be too quick to decide on anything. You should develop a relationship with the vendor and see what its instrument can offer and whether it can meet your needs. However, a big part of the cost depends on how well the instrument integrates into the rest of your infrastructure and informatics for automation to go seamlessly. Also it is important to know how well the instrument will be supported in the future, even after it goes obsolete. It's also important to network with

Q: What can people expect to see in next-generation lab automation?

A: There is a third generation of lab automation already out there that is focused on versatility and looking at extended capabilities. It's not necessarily better in performance, but it offers a better range and use. The previous years had focused on a steady increase in screening capacity, library size, and miniaturization, but going forward the focus will be more on content and quality. There is now a downsizing in terms of the size of libraries being screened, and people are more interested in library diversity and its pharmacological potency, incorporating natural product such as compounds. On the automation side, that calls for instruments that can provide greater physiological relevance, such as kinetic assays. There will be more integration of HCS using image analysis and not simply reporters. There may be a greater integration of fragment-based screening with HTS. As *in silico* screening comes into play, it's going to force HTS to look at more complicated problems based on physiological relevance.

Questron Technologies' Innovative Products for Sample Preparation

www.qtechcorp.com

- **Vulcan** Automated Hot Block Digestion Workstations
- **QPrep** Automated Workstation for Dilution
- **QBlock** Wireless, Quad-channel and Single-channel Hot Block Controllers
- **QLab Pro** Microwave Digestion Systems
- **QAsh 1800** Microwave Ashing System

Contact us for all your environmental lab equipment requirements



Questron Technologies Corp.
905.363.1223 – info@qtechcorp.com
www.qtechcorp.com

AirClean® Systems

The Fume Control Experts.



Manufacturing Green Products Since 1992

- Ductless Fume Hoods
- Total Exhaust Hoods
 - PCR Workstations
 - Balance Enclosures
- Laminar Flow Clean Benches
 - Microscope Enclosures
 - Ductless Safety Enclosures

www.aircleansystems.com



MICROSCOPES

CONFLUENCE OF ELECTRONICS, SENSING, AND OPTICS

by Angelo DePalma, PhD

Microscopy means many things to many different laboratories. One constant remains beyond the dizzying array of choices: constant technologic improvement based on the confluence of diverse technologies.

Camera sensor technology employed in microscopy is changing rapidly, says Paul Jantzen, marketing manager for core microscopy at Olympus America (Center Valley, PA). Fifteen years ago, customers used still or video cameras to capture images; CCD sensor-based cameras emerged ten years ago and dominated until very recently. “Now, scientific-grade CMOS cameras are taking over that market. CMOS-based cameras are faster and less expensive, and for high-end research require special computer configurations to capture all the data.”

Disclaimer of sorts: Olympus, which manufactures consumer cameras, does not produce CMOS cameras for scientific markets. It relies on third-party companies with interest in security, microscopy, defense, and machine vision imaging markets.

“But CMOS happens to be great for scientific imaging as well,” Jantzen says.

The higher speed of CMOS enables microscopies to monitor biological events that occur very quickly, such as structural or chemical dynamics within cells, movement of ions or vesicles, and protein trafficking. “Rapid biological events demand rapid imaging, and CMOS fits the bill,” Jantzen notes. “This has significantly reduced the cost of entry into high-end imaging for many laboratories.”

Formerly, scientific-grade CMOS cameras cost upward of \$80,000. Thanks to the same

technical breakthroughs that have revolutionized consumer imaging products, today’s top-end CMOS cameras have come down dramatically in cost, to the \$10,000–\$15,000 range. “This technologic shift has been driven by companies that specialize in camera sensors,” Jantzen says.

Because the sensors are large and capture data extremely rapidly, sophisticated software and hardware are required to acquire data and store it quickly for later evaluation.

Combinatorial methods

Microscopy itself often combines two or more technologies, and the same applies for applications as more labs employ “combinatorial microscopy,” which combines two or more advanced microscopy techniques in one experiment. “Newly introduced instruments allow scientists to merge these modalities easily,” says Lynne Chang, PhD, senior applications scientist at Nikon (Melville, NY).

One example merges super-resolution microscopy with confocal imaging. The latter provides standard resolution limited by diffraction limits, which gives a detailed overview of the sample through such techniques as optical sectioning or stitching. “You get a nice 3D image of the entire tissue,” Chang tells *Lab Manager*. Then, operators zoom in with super-resolution imaging for a very high-resolution image. A type of light microscopy, super-resolution imaging acquires images beyond



the diffraction limit. “The combinatorial technique puts super-resolution information within the context of the larger tissue,” Chang adds.

Another potential combination uses a device to illuminate one region of a cell to activate a signaling pathway, followed by monitoring of the effects through super-resolution imaging. Still another idea merges light microscopy with electron microscopy (EM) for what Dr. Chang terms “correlative imaging,” which bridges the resolution capabilities of two or more techniques.

All experts interviewed for this article agreed that, at the high end at least, microscopes are becoming feature-rich but simultaneously too rich for individual research groups. “It’s hard to find funds for sophisticated imaging systems for each lab that uses them,” says Lynne Chang. More universities are writing instrument grants for locating high-end microscopes into core facilities. “Many of these installations will be multi-modality systems.”

Lights, camera, automation!

Dennis Doherty, national sales manager at Prior Scientific (Rockland, MA), agrees that the trend in microscope sales is toward fewer instruments with greater capability. “Sales volume is down, but sophistication is up,” he says. “Today, groups pool funds, and instead of purchasing two or three microscopes that do different things, they purchase something that can do everything they need plus more.”

As much as any instrument, microscopes have evolved with the disciplines they serve. “At one time 10- or 20-micron resolution was fine,” Doherty observes. “Then it was 5 microns, then 1, and now we’re looking at nanometer resolution.” In the past, cameras were limiting factors. Today, laser and LED light sources switch in microseconds; motion control and speed issues are improving, both for data/image acquisition and for mechanically moving from one position within the field to another.

Conversion to solid-state lighting from mercury lamps has been advantageous on several levels. Mercury is toxic, and lamps employing that element are energy hogs. Because mercury lamps take time to warm up to operating status, they typically remain on all day. Solid-state lamps are on

only when needed. “They last for tens of thousands of hours and are exponentially more efficient,” Doherty says.

Automation has positively affected microscopy, particularly as investigators move to microplate-based, multi-channel experiments. As with HPLC and spectroscopy, vendors have introduced plate handlers specifically for microscopes, as well as automation for more traditional slides. “As your acquisition speed increases, you don’t want someone sitting in front of a microscope plunking a slide down every five minutes,” Doherty notes.

Pushing the limits

Phil Bryson, VP for nanotechnology systems at Hitachi High Technologies America (Gaithersburg, MD), says that extending scanning electron microscopy (SEM) resolution from a long-standing limit of 4 angstroms to 1 angstrom (download the Hitachi paper at <http://bit.ly/1hZFdHs>) enables significantly improved throughput for semiconductor manufacturers.

“The instrumentation allows a chip company to do a hundred samples per day, compared with ten or twelve using lower-resolution technology,” Bryson says.

Compared with nominally higher resolution transmission electron microscopy (TEM), SEM involves little or no sample preparation: Scanning typically occurs on bulk samples. With TEM, technicians must cut a sample to the proper thickness—30 to 40 nm—to allow electrons to pass through. The process is costly and time-consuming.

“TEM instrumentation alone is ten times more expensive than SEM, but to prepare samples you also need a focused ion beam, which costs about \$1 million.”

Until recently, labs that required resolution better than 4 angstroms were limited to TEM. By extending the capabilities of less expensive SEM, analysts have gained resolution and throughput, at lower cost.

“This represents a significant extension of SEM imaging, which has been very well received,” Bryson says.

Angelo DePalma is a freelance writer living in Newton, NJ. You can reach him at angelo@adepalma.com.

FOR ADDITIONAL RESOURCES ON MICROSCOPES, INCLUDING USEFUL ARTICLES AND A LIST OF MANUFACTURERS, VISIT WWW.LABMANAGER.COM/MICROSCOPY

GLOVE BOXES

REDUCING CLASSIFIED SPACE WITH NOVEL SCIENCE

by Angelo DePalma, PhD

Glove boxes are containment systems for protecting samples, processes, and products from operators and the environment—or the other way around. As common as they are in industries ranging from biology to pharmaceuticals to semiconductors, glove boxes are unique among lab equipment in that they have not been “dumbed down.”

That, says Bob Applequist, product manager at Labconco (Kansas City, MO), is because of the nature of processes that go on inside, and the skills required to keep product and operator safe. “Glove boxes are hands-on devices. There’s no such thing as a glove box with push-button operation.” Users must be proficient not only in glove box operation and cleaning, but in the processes happening within the unit.

One application, in pharmaceuticals, is illustrative. “Nobody knows the toxicity or hazard for many potent, investigational drugs,” Applequist says. Yet lab workers are faced with the task of manipulating these materials through weighing, diluting, dispensing, mixing, etc. Here, glove boxes combine function (work space) with a high level of safety. For this application, the enclosures would incorporate HEPA (high-efficiency particulate arresting) or ULPA (ultra-low penetration air) filters and negative pressure.

Not routine science

Operating and cleaning glove boxes requires that customers know the physics and chemistry of their sample. “That is why glove box processes tend to be novel as opposed to rote science,” Applequist adds. Operators tend to be skilled not only in operating the glove box, but in what’s happening inside. “You can’t go to a cookbook and find a method for what you need to do. You or your lab manager are the ones who must develop the methodology.”

This makes purchase decisions somewhat more difficult than for other safety equipment. Managers must take a deep, hard look at their process: How much oxygen will it tolerate? Positive or negative pressure? How closely to document conditions?

“It’s the things you don’t know that will get you,” says Applequist. “There’s often no literature to guide you, so you must often sit down as a group to decide how much you know about your application.”

Sterility assurance

The 2012 meningitis outbreak traced to contaminated injectible drugs produced at a Massachusetts compounding lab has spurred regulators and state pharmacy boards to re-examine U.S. Pharmacopeia (USP) guidelines for microbial contamination at these facilities.

The operative guidelines, USP <797>, call for strict measures to prevent contamination of liquid, injectible drugs during manipulation. Central to adherence are glove boxes. “As regulators were investigating this tragedy, we saw an uptick in sales,” says Mike Buckwalter, publications director at Terra Universal (Fullerton, CA). Other areas of growth, according to Buckwalter, are anaerobic (zero-oxygen) and hypoxic (low-oxygen) environment glove boxes.

Complying with USP guidelines for sterile preparation leads to one of two possible paths. One employs installing a biosafety cabinet or a filtered laminar flow bench inside a two-zone clean room. The problem is clean rooms are expensive to purchase and run, and gowning requirements open up too many avenues for lax technique.

“Glove boxes are a more popular, practical solution,” Buckwalter says. “They’re more restrictive in terms of work area, but they can duplicate clean room functionality and are much less expensive.” For example, a glove box can contain an antechamber that serves similarly to a gowning or entry chamber for a clean room. “Think of it as a mini clean room.”

Angelo DePalma is a freelance writer living in Newton, N.J. You can reach him at angelo@adepalma.com.

FOR ADDITIONAL RESOURCES ON GLOVE BOXES, INCLUDING USEFUL ARTICLES AND A LIST OF MANUFACTURERS, VISIT WWW.LABMANAGER.COM/GLOVE-BOXES

LAB PROCESSES AND ANALYTICAL STANDARDS

by Mike May, PhD

Almost every piece of equipment—from a computer to an oscilloscope and beyond—uses a power supply. Scientists expect power supplies to keep going and going. Luckily, most of them do. Those power plants inside devices, though, come in a wide assortment.

Although the primary job of power supplies is making power, scientists want them using less of it. “There’s a dramatic shift in interest, from a cost perspective, toward power reduction and understanding the power requirements,” says Mark Swift, marketing manager at Universal Electric Corporation (Canonsburg, PA). “There’s lots of power-monitoring equipment being installed.”

In many cases, improving power efficiency spurs more funding. As Swift explains, “Lots of funding is tied to reductions in power usage, so there’s a need to see where you’re starting from before you can put together a plan to reduce it.” That plan often includes selecting new power supplies that are more efficient.

Beyond efficiency, Swift encourages customers to buy flexible power systems. “A myriad of power requirements for supplies exist in almost every lab,” he says. “Plus you need to be able to repurpose a lab for different kinds of work.”

Specific specs

In a lab, scientists often build one-off devices. Maybe it’s an experimental device or a prototype for a production concept. Either way, such devices almost always need power. EMCO High Voltage Corporation (Sutter Creek, CA) makes power supplies for those applications—putting a supply in other instruments. Those might go to companies making thousands of one type of device or to a bench scientist working on one experimental instrument. “A lot of our customers are the instrument manufacturers themselves,” says Joel Huang, applications engineer at EMCO High Voltage Corporation.

As described by Huang, “Our power supplies provide a high voltage from a low voltage,” which is frequently needed. For example, Huang says, “High voltage is required in equipment for sorting cells or separating compounds or DNA.” Many chemical applications also need high voltage.

Huang says, “Our products produce fairly low power, but they come in a wide range of input and output voltages.” The EMCO power supplies use 5–24 volts as inputs and produce 100–33,000 volts as output. Huang says, “We have about 5,000 models, because for a given series there’s a model that takes in 12 volts and gives 300, then one that takes 5 volts and gives 800, and so on.” He

adds, “The power levels vary from 0.5 to 15 watts. The smaller supplies can be treated as [printed circuit board] components.”

Keep putting out the power

Overall, power supplies don’t need much attention. “Once a power supply is in the system, unless you overstress it significantly, you don’t need to take care of it in any way,” Huang says. “It just works.”

Bruce Land, senior lecturer at Cornell University’s school of computer and electrical engineering (Ithaca, NY) says, “For teaching student labs, good voltage regulation and easy controls are useful, but bulletproof current limiting is very important.” He adds, “Students do the weirdest things, like short the 5-volt supply to the 12-volt supply.” As an example, he says, “One power supply we used years ago failed in this mode by melting the solder holding the 12-volt regulator on the board!” So, super-robust power supplies make the best choices.

Mike May is a freelance writer and editor living in Ohio. You may reach him at mike@techttyper.com.

FOR ADDITIONAL RESOURCES ON POWER SUPPLIES, INCLUDING USEFUL ARTICLES AND A LIST OF MANUFACTURERS, VISIT WWW.LABMANAGER.COM/POWER

SHAKERS

PRECISION MOVEMENTS AND REPEATABILITY MATTER THE MOST

by Mike May, PhD

Lab shakers make up such a ubiquitous piece of scientific equipment that Amazon.com sells them. In fact, a recent look at that site's "lab shakers & accessories" section revealed 2,076 items. So, as Jerry Lee Lewis told us in 1957, there's a "whole lotta shakin' goin' on."

The breadth of this field reflects the wide range of applications. Shakers mix solutions for chemists, molecular biologists, physical scientists, and others. Many users, though, seek a particular style of shaking. "End users are reaching out for a very specific motion that they require for their applications," says Nicole Kvasnicka, product marketing manager at Heidolph, headquartered in Schwabach, Germany. "They need to be very specific to not damage their samples."

users even want a shaker that goes from stop to stop in a specific amount of time.

Finding the right tree in the forest

The shaker market resembles a rainforest, with each tree depicting a product. It's very dense out there. "Every lab company offers a shaker," says Kvasnicka. "So compare features of load capacity and speed." She adds, "You need something that provides longevity, because you need to know that the shaker is still working even if you leave it on a thirty-hour run."

Beyond the specifications, a shaker must treat samples the same way time after time. As Daniela Dockweiler, head of application support at IKA, headquartered in Staufen, Germany, says, "Reproducible analysis has become

computer-controlled shaking can benefit many applications, and that's a feature worth considering. As Dockweiler says, "These technologies make it possible for robots to fill and extract samples."

In addition to getting the right shaker, users need the right accessories. Most manufacturers offer a wide range of add-ons for shakers, including platform attachments for different glassware.

Michael Evans, freshman chemistry laboratory coordinator at Georgia Tech in Atlanta, has used a shaker for hydrogenations, and he says, "Ease of operation in general is pretty important. For example, fittings should be straightforward to use, versatile, and robust."

Shaking for separation

Beyond mixing, shakers can perform other tasks. For instance, sieve shakers can separate particles of a wide variety of sizes, depending on the particular shaker. These shakers get used in many applications, including work with anything from coffee and construction materials to sand and soils.

In this shaker market, customers seek different requirements. As Kyle James, president at Verder Scientific, which is the new corporate name for Retsch and Carbolite in the United States, located in Newtown, PA, explains, "There has been more demand for calibrated sieve shakers and [installation qualification/operational qualification]

"End users are reaching out for a very specific motion that they require for their applications."

A range of specifications describes what a particular shaker does. Typically, a user looks for a shaker that provides a specific speed, often described in revolutions per minute (rpm), and one that carries a certain load, such as a number of flasks. For a shaker that moves items back and forth, the user might care about the stroke length—how far the carrying tray moves from left to right. Some

indispensable." To help with that, says Dockweiler, "Almost all IKA shakers feature an integrated timer that allows for unattended operations." For even further options for walk-away shaking, she says, "The control models feature an automatic end-positioning that allows IKA's shakers to be used in automated applications. In addition, the control models can be operated through the RS 232 port." Such

documentation for these sieve shakers.” Consequently, James’ company developed a line of sieve shakers that provide this documentation.

In terms of the sieve shakers themselves, James doesn’t see much change going on inside. He says, “The technology in sieve shakers has not changed over the years.” He adds, “Many clients now have facilities in many countries around the world and are always concerned about reproducibility of the sieve analysis when compared across facilities.” To deal with that issue, says James, his company offers shakers that “use a ‘sieve acceleration’ mode that allows the sieve shaker to operate independently of the main’s frequency—50Hz versus 60Hz—in various countries, which influences the sieving operation.”

Beyond being able to move a device around the world, users want simplicity in the day-to-day use of a sieve shaker. When discussing ease of use, James says, “This often affects which clamping system is combined with the unit to allow the customer to easily install and remove the sieve stack and sample.”

At the very beginning of shopping for a sieve shaker, though, keep in mind the fundamentals. As James explains, “Some customers just want a very basic sieving operation, while others need a high level of calibration and accuracy. This determines the appropriate model that should be purchased.” He adds, “We see customers make ordering mistakes by just purchasing a basic sieve shaker, and then coming back to us and asking why it does not have additional features or settings.”



Ongoing agitation

To keep your shaker shaking, there’s not much to do, if you bought a good one. As Kvasnicka says, “Shakers are pretty much workhorses. You set the timer, turn it on, and it shakes.”

To keep shaker maintenance to a minimum, look for a product with a no-maintenance motor. In addition, Kvasnicka says, “We use a sealed housing that protects the shaker from liquids and vapors.”

Even with a shaker developed for continuous operation, some environmental factors must be considered. Dockweiler points out that “external conditions, such as temperature and humidity, should be monitored.”

Although shakers are lab workhorses, nothing works perfectly, especially not forever. Some companies offer a warranty on a shaker for a few years. Others offer customer service in selecting the right shaker and keeping it running properly.

Follow a few guidelines, shop carefully, and then you can join Jerry Lee—“shake baby shake.”

Mike May is a freelance writer and editor living in Ohio. You may reach him at mike@techtyper.com.

FOR ADDITIONAL RESOURCES ON SHAKERS, INCLUDING USEFUL ARTICLES AND A LIST OF MANUFACTURERS, VISIT WWW.LABMANAGER.COM/SHAKERS

STAYIN' ALIVE

STRONG, BASIC CELL CULTURE TECHNIQUES KEEP THIS LAB'S CELL LINES SAFE AND HEALTHY
BY SARA GOUDARZI

▲ Placement of essential equipment to accommodate the workflows of multiple groups within Chromocell's discovery process.

Unexpected cell loss is the fear and challenge of those who work in cell culture labs. Cells are living organisms that can't be left on a shelf and forgotten about until needed. Instead, they require constant care and contingency plans at all times. Laboratory staff need to ensure that cells are maintained under precise and optimized conditions to get the most reliable and reproducible results possible. This makes the jobs of those who manage cell culture laboratories especially challenging.

"You can purchase more materials and hire more team members, but you can never buy back lost time," says Jennifer Miller, the Cell Culture Core (C3) laboratory manager at Chromocell Corporation, located in North Brunswick, New Jersey.

Researchers at Chromocell are engaged in discovering and developing flavor compounds for consumers and therapeutic

compounds for patients through science and technology. With an emphasis on biological research, the corporation has invested heavily in large-scale cell culture. To fulfill these requirements, Chromocell formed the C3 lab.

"The C3 lab is responsible for providing consistent, affordable cells as needed to all cell-based projects," Miller says.

The cells are identified using Chromocell's proprietary Chromovert® technology, which allows researchers to make rare cells that transcribe multiple RNAs of interest.

"We develop methods and/or conditions for optimal cellular growth [and] produce high-quality cells in support of projects and all discovery," Miller says. "Our work includes maintaining established cell lines as well as creating and optimizing cell culture conditions for new cell lines and ensuring a long-term, consistent cell supply."



▲ Jennifer Miller, manager of Chromocell's Cell Culture Core laboratory.

The result is healthy, robust cells—the foundational material for assays and screening. According to Miller, healthy cells will produce excellent predictive data.

For that reason, it becomes especially important to ensure that cells, which the staff works tirelessly to maintain



▲ One of Chromocell's part-time team members contributes toward program goals.

and culture, are available when needed. This task is possible only through a combination of effective management, teamwork, communication, appropriate instrumentation, and proper scheduling.

Lab structure

The Cell Culture Core lab is one of seven labs within the business. Miller manages the approximately 1,900-square-foot C3 laboratory and its team. Her team consists of four full-time lab staff and 20 part-time interns.

The C3 team, whose members possess strong biology backgrounds with concentrations in biotechnology, biomedical engineering, and animal

sciences, among others, provides cells to other labs within the corporation—such as the assay development lab for compound discovery—and to core technology, the lab group responsible for employing Chromocell's Chromovert technology to isolate cells of interest.

Together, Miller's rather small team processes an impressive number of cells.

"We typically process dozens of cell samples daily in a variety of formats and scales for their intended purposes," Miller says. "For maintenance only, this translates to roughly 25,000 cell preps per year. In addition, we prepare 156,000 screening plates per year, or approximately 6 million different cell wells."

Multiple groups within Chromocell use not only the services of the C3 lab but also the lab itself.

"In total, we have dozens of full- and part-time team members circulating through the cell culture lab every day in shifts that keep the lab functioning 24/7," Miller says. "This includes the robotics, nighttime crew, flow cytometry, core technology, and assay development teams."

Instrumentation

Due to the nature of a cell culture lab, the equipment is organized and arranged to optimize workflow while minding potential physical bottlenecks. The cell culture lab contains 14 incubators, six

HETTICH CENTRIFUGES & INCUBATORS

German engineered and manufactured. Since 1904.



→ Find out more by visiting: www.hettweb.com/laboratory



Pipet-Aid® XL

Advanced Ergonomics for Working Under a Hood

Reduce Strain

Longer lightweight handle enables lower, more comfortable arm position

Extend Uninterrupted Operation Periods

Quiet more efficient pump can be charged while in use to eliminate downtime

Excellent Control

Three speed settings enable precise volume control for both aspiration and dispensing operations

The Pipet-Aid® XL is designed specifically to reduce the strain involved when pipetting under a hood.

For a copy of our new 2013 catalog or more information on the Pipet-Aid XL visit drummondsci.com.

From the Developers of the Original Pipet-Aid®

MADE  IN USA



DRUMMOND
SCIENTIFIC COMPANY

500 Parkway, Box 700
Broomall, PA 19008

two-person biosafety cabinets, three microscopes, two cell counters, two centrifuges, four water baths, two label printers, one automation platform, four refrigerators, five freezers, two cryostorage units, and numerous pipettors and pipette aids.

“We use microscopes and cell counters most frequently, as they are involved in processing each cell sample,” says Miller of the instrumentation.

Most of C3’s instrumentation does not use the newest technology, and Miller and her team don’t often trade in their lab devices for newer models. Instead, the group focuses on using strong, basic cell culture techniques.



▲ *Cell plate organization is essential to allow the 24/7 staff to operate seamlessly.*

“We have not had a need to upgrade to new instruments for some time,” Miller says. “We continue to improve our workflows and make the best use of what we have, bringing on additional equipment as needed to increase capacity or throughput.”

As for incorporating robotics, Miller says that the initial need for robotics in the cell culture lab grew so quickly it spurred the development of an entire automation group dedicated to using robots in both cellular and compound applications.

Maintenance and inventory

Equipment maintenance is especially imperative in a cell culture lab because a failure could mean cell damage or even loss. For this reason, the bulk of the C3 equipment is on a routine maintenance

www.labmanager.com

regime. Service technicians perform preventive maintenance once to twice yearly on equipment such as the centrifuges and cell counters.

“Due to the nature of cell culture, we keep on top of decontamination cycles to ensure that our cultures stay contamination-free,” Miller says. “For example, we decontaminate water baths and cell counters weekly, biosafety cabinets monthly, and incubators quarterly. In the event there is contamination, we take extra steps to decontaminate equipment.”

A laboratory operations manager, a recently revived role at Chromocell, coordinates the maintenance of equipment, such as freezers, incubators, and centrifuges, shared between different labs.

“The cell culture-specific items are handled within the cell culture group, with one of us taking the lead to ensure concise communication between the team and vendor,” Miller explains. “Due to our round-the-clock operations, communication of performance issues or breakdowns is crucial. Emails are shared within the entire team. The responsible party is identified early on in order to keep the process on track. We implement equipment ID tags across all labs to facilitate the reporting and documentation of issues.”

The lab also has in-house quality control checks, such as equipment temperature and performance monitoring.

Similar to equipment maintenance, keeping inventory of consumables is another important aspect of ensuring that procedures are not interrupted.

“Select team members serve as point people for different facets of inventory,” Miller explains. “For example, there is one person on my team who inventories all consumables within the cell culture lab itself. Another team member takes inventory of our common area and orders shared consumables as well as materials that are strictly for cell culture.”

The right team

As team lead, Miller is responsible for ensuring that there is a properly sized, fully trained staff to handle the workload for her lab.

“For lab skills, we have training refreshers every six months to confirm proper technique and accurate job knowledge,” Miller explains. “Formal

Pipet-Aid® XP2

Advanced Ergonomics for Working on a Bench

Comfort

The most comfortable pipettor you ever laid a hand on

Convenience

Uninterrupted extended operation

Control

Quiet precision pump responds instantly to the touch of the button

Drummond Pipet-Aids have set the standard for making pipetting in the laboratory safer, easier, and more convenient. The Pipet-Aid® XP2 delivers more. More comfort...more convenience...better control.



For a copy of our new 2013 catalog or more information on the Pipet-Aid XP2 visit drummondsci.com.

From the Developers of
the Original Pipet-Aid®



DRUMMOND
SCIENTIFIC COMPANY

MADE  IN USA

500 Parkway, Box 700
Broomall, PA 19008



▲ *Chromovort-enabled stable cell lines are immediately available for rapid screening and consistent results.*

reviews are conducted company-wide every six months, reviewing past performance and setting goals for the next six months.”

The majority of teams within Chromocell have a substantial number of part-time members. Within each team, there’s an established hierarchy based on performance and leadership.

“Our lab assistants are entry-level team members who, based on performance and ability, are available for promotion to senior lab assistant,” Miller says. “Our senior lab assistants are responsible for providing leadership to junior team members on a daily basis—this includes training on technical skills and workflow as well as providing mentorship.”

The full-time team interacts closely with part-time team members to ensure that company projects and individual careers move forward in a positive direction.

“Each person is treated as a team member and not an employee,” Miller says. “Individuals are not replaceable parts but rather highly valued team members whose input is taken seriously.”

“At the end of the day, while my team provides work for the company, I work for my team to make sure they have all the tools necessary to succeed.”

To further ensure this success, Miller and other managers work hard to keep up the spirit of their teams by providing incentives beyond just performance-based pay raises. Free lunches, tuition support, parties, school

credit, and a fun yet challenging environment are encouragements that Chromocell provides its teams. However, quality time spent with each employee is perhaps the most impactful incentive in terms of team morale and progress.

“The most valuable time is spent in one-on-one meetings where team members are encouraged to speak freely about their experiences,” Miller says. “These discussions enable me to identify positive trends as well as problem areas. It also serves to foster positive relationships and provide clarity for team members.”

With such importance placed on each team member, hiring the right team member is also of great importance. At Chromocell, team leads such as Miller also take on the role of hiring managers with responsibility for interviewing and training.

“Due to the fact we work with interns, we typically need to replace a portion of our part-time team each year as they graduate,” Miller says. “We hire our interns proactively, taking into consideration the fact that it typically takes around nine months to become technically proficient in all required areas.”

When a position opens up for a full-time employee, Miller doesn’t have to look far.

“All the C3 full-time hires within the past two years have been made directly from the C3 part-time team after graduation,” she says. “They are exceptional team members who have made and continue to make significant contributions to department and project goals.”

▼ *Electronic touchscreen enables easy visualization and real-time management.*





Fewer technical replicates. Verifiable results.

Having issues with reproducibility due to routine pipetting tasks and other inconsistencies? Advance your science and increase the pace of your experiment - qPCR/PCR, ELISA, Cell based assays, NGS library prep and more! Prepare every assay with proven consistency and the highest precision using PIPETMAX.



PIPETMAN® inside.

Trust your pipetting to be reliable and consistent!

Meet MAX at www.pipetmax.com

 **GILSON®**

TOP FIVE INSTRUMENTS UTILIZED

Zeiss Axiovert 200 microscope

Beckman Coulter Vi-CELL cell counter

Thermo Scientific Heracell 240 incubator

CBS 3000 cryostorage

NuAire biosafety cabinet

Day-to-day routine

In the cell culture lab, there is a significant amount of coordination every day. Each morning, the team collectively reviews the work list for the day and assigns tasks to team members based on schedule and technical ability.

"As the cell culture assignments and routine maintenance are completed over the course of the day, we keep a weather

eye on the lab to ensure that everything goes smoothly," Miller says. "When we encounter an issue, whether it arises from cell line development or from an error, we troubleshoot it in a collaborative effort to gain different perspectives and provide team members with experience."

Between team and project meetings, Miller and other lab managers plan out the work for the following days. This requires coordination with project leads and other departments to ensure the successful completion of HTS campaigns, DRC runs, assay development, and other goals.

"In addition, we perform basic analysis of cell data frequently to verify cell health and performance," she adds. "While working toward our performance goals, we also monitor the efficiency of our cell usage both from an environmental and a monetary standpoint, adjusting plans as needed to get the most out of lab work."

But that's not all: When working with new cell lines, there is another layer of complexity due to the quarantine procedure and additional optimization steps required. Once optimized, all teams—C3, robotics, nighttime crew—are trained as needed to handle the new cells.

"We also train on a continual basis to advance team members and to make sure techniques do not deviate over time," Miller says. Managers are always working toward team development.

Despite the tremendous amount of work involved for managers such as Miller, the predominant aspiration of Miller's work makes it a worthwhile and rewarding effort.

"My motivation to come to work stems from the potential to help others, on both an individual basis and a global scale," Miller says. "We work with the common goal of increasing the quality of life and health for the general population. For instance, we have an anti-pain compound that is rapidly moving to an investigational new drug (IND)."

In addition, the company's interns are college students, for many of whom this is a first job in the industry.

"We need to teach them all the best practices to work in the lab and on a team from the get-go to set them up for long-term success," Miller says.

On all fronts, Miller says, "It is a privilege to help move those projects forward."

Sara Goudarzi is a freelance writer based in New York City. Her website is www.saragoudarzi.com.

Better Detectors produce Better Results.

PHOTONIS is the #1 detector supplier to most analytical instrument manufacturers.

Our high-quality detectors provide longer sustained output and greater longevity, for more durable and reliable results.

Switch to PHOTONIS for a wide range of high-quality custom and standard detectors:

Microchannel Plates
Superior Gain and Resolution with Low Noise

Time-of-Flight Detectors
Reduced Time Jitter to Improve Mass Resolution

Advanced Performance Detectors
Complete Assemblies with Quality MCPs

Resistive Glass Ion Transport Tubes
Up to 1000X Increase in Ion Throughput

Channeltron® Electron Multipliers
Extended Dynamic Range at High Pressure

Ask about our complete line of replacement detectors.

PHOTONIS

For more information, visit www.photonis.com or email sales@usa.photonis.com.



Efficiency

Automating and simplifying testing and quality control in **food, beverage and water** laboratories, Gallery and Gallery Plus analyzers deliver significant time and cost savings and easiness of use. Hosting various powerful features, like simultaneous analysis of several parameters from one sample, real-time reagent monitoring and automated dilutions, the Gallery systems eliminate various manual steps. Optimized Thermo Scientific system reagents cover a wide range of applications and provide high quality and excellent analytical performance for colorimetric and enzymatic measurements.

excellent performance

• [see more at thermoscientific.com/gallery](http://see.more.at/thermoscientific.com/gallery)



Gallery, automated discrete photometric analyzer
throughput up to 200 tests/hour



Gallery Plus, automated discrete photometric analyzer
throughput up to 350 tests/hour



Ready-to-use Thermo Scientific system reagents
Over 40 system applications for food, beverage, water and soil applications



Types of HPLC systems used by survey respondents

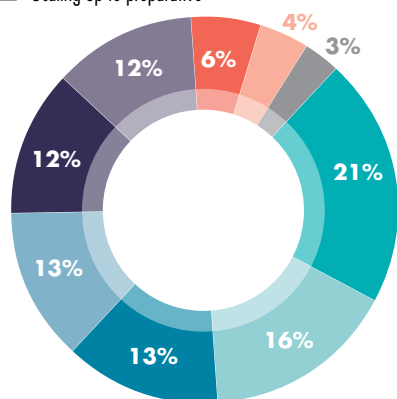
| | |
|-------------------|-----|
| Analytical HPLC | 53% |
| Preparative HPLC | 11% |
| Ion Chromatograph | 13% |
| FPLC/Bio | 4% |
| UHPLC | 14% |
| GPC | 4% |
| Other | 1% |

HPLC separation modes used by survey respondents.

| | |
|---------------------------------|-----|
| Reverse Phase | 26% |
| Normal Phase | 14% |
| Ion exchange | 13% |
| Ion chromatography | 8% |
| Size Exclusion (SEC) | 8% |
| Hydrophilic Interaction (HILIC) | 6% |
| Ultra-high performance (UHPLC) | 6% |
| Affinity | 5% |
| Gel permeation (GPC) | 4% |
| Gel filtration (GFC) | 4% |
| Chiral | 3% |
| Ion exclusion | 3% |

Nearly 28% of respondents plan on purchasing an HPLC system in the next year. The reasons for these purchases are as follows

- Addition to existing systems, increase capacity
- Upgrading existing HPLC system
- Setting up a new lab
- Require shorter run times / increased lab throughput
- Require more sensitivity
- Require higher quality data
- Trying to reduce operating costs
- Other
- Scaling up to preparative



ARE YOU IN THE MARKET FOR AN... HPLC SYSTEM?

High-performance liquid chromatography (HPLC) is, for many scientists, an essential chromatographic technique. HPLC systems used for the separation, identification, purification and quantification of various chemical and biochemical solutions are composed of a pump, a sample injector, a separation column, a detection unit, and a data-processor.

TOP 6 QUESTIONS

You Should Ask When Buying an HPLC System

1. How flexible is the system? Can the system be optimized to meet your laboratory requirements?
2. What tubes, vessels, and vials can it accommodate? Can components (such as additional detectors, valves, etc.) be upgraded in the future?
3. Is the software easy to use and operate? Can a demo version be put in place to get a feel for how the software functions for your laboratory's workflow?
4. How is the system (not just components) qualified during installation to meet manufacturer performance expectations?
5. Who provides the support and service for the product? Is it the manufacturer or a third party service group? If it is a third party service group, are they factory-trained?
6. Finally, ask about the total cost of the purchase — not just the price of the product being installed — but the total cost of ownership, which includes price, service expectations, warranty, etc.

TOP 10 FEATURES/FACTORS

respondents look for when purchasing an HPLC system

| | |
|--|------|
| ACCURACY | 100% |
| EASE-OF-USE | 100% |
| MAINTENANCE | 100% |
| QUALITY OF DATA | 100% |
| PRECISE AND ACCURATE FLOW RATES | 99% |
| PRICE | 98% |
| SENSITIVITY | 98% |
| SERVICE AND SUPPORT | 98% |
| RESOLUTION | 97% |
| AVAILABILITY OF SUPPLIES AND ACCESSORIES | 96% |

Completed Surveys: 236



For more information on HPLC systems, including useful articles and a list of manufacturers, visit www.labmanager.com/HPLC-systems



**ALL SOLVENTS
UNDER CONTROL!**



Safety, comfort and better HPLC conditions
with one single system. Suitable for all
types of HPLC instruments!



www.scatt-europe.com



Types of microplate readers used by survey respondents

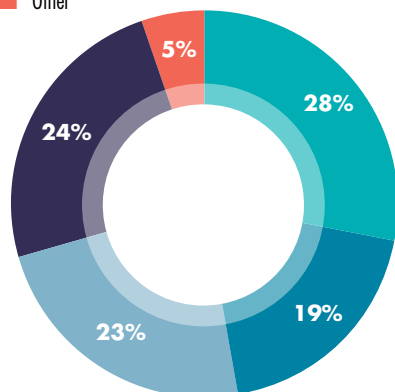
| | |
|--|-----|
| Absorbance | 29% |
| AlphaScreen | 2% |
| Fluorescence polarization | 9% |
| Time-resolved fluorescence (TRF) | 5% |
| Time-resolved fluorescence energy transfer (TR-FRET) | 5% |
| Luminescence reader | 15% |
| Multi-mode reader | 14% |
| Microplate spectrophotometer | 21% |

Microplate reader-related components used by survey respondents.

| | |
|------------------------------|-----|
| Microplate washers | 26% |
| Centrifugation | 20% |
| Microplate sealers | 10% |
| Microplate handlers | 8% |
| Barcode scanner | 7% |
| Bulk dispensing | 6% |
| Labeling and sealing | 6% |
| Microplate robotics | 6% |
| Microplate stackers | 4% |
| High-speed robot | 3% |
| Additional stacker cassettes | 3% |
| Other | 2% |

Nearly 25% of respondents plan on purchasing a microplate reader in the next year. The reasons for these purchases are as follows

- Addition to existing systems; increase capacity
- Setting up a new lab
- Replacement of an aging microplate reader
- New application requires a different type of microplate reader
- Other



Completed Surveys: 220

ARE YOU IN THE MARKET FOR A... MICROPLATE READER?

Microplate readers are widely used in research, drug discovery, bioassay validation, QC, and manufacturing processes for the detection of biological, chemical, or physical processes in samples contained in microtiter plates

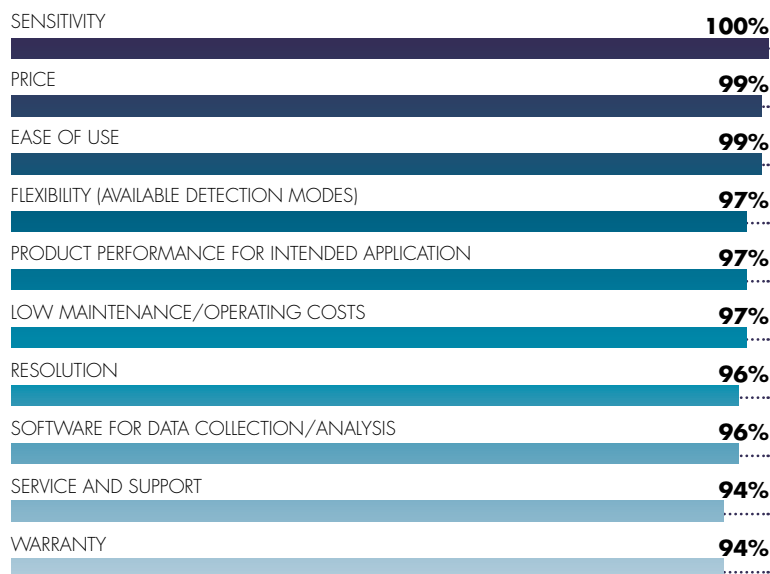
TOP 6 QUESTIONS

You Should Ask When Buying a Microplate Reader

1. How many read modes are offered? Multiple read modes offer greater flexibility and value than single read modes.
2. What kind of detection technology is used? Monochromator-based detection offers flexibility, convenience and spectral scanning; while filter-based detection is characterized by precise sensitivity and may often switch rapidly between distinct wavelengths for kinetic assays. Hybrid detection systems combine both technologies for the utmost in flexibility and sensitivity.
3. Is it upgradeable? If so, can the upgrade be installed on-site? On-site installations reduce overall downtime, and often the technician is available to answer questions or conduct training.
4. Is the reader automatable? Automating the process with a compatible microplate stacker increases throughput with walk-away operation.
5. Ask about the software—is it integrated and user-friendly? Does it allow for pre-programmed and custom protocols? What kind of analysis is offered? How is data exported?
6. Is on-site training available? Is there a fee? On-site training provides an opportunity for all staff to learn about the reader, reducing the number of subsequent trainings needed.
7. What options are available? Options such as gas control, barcode scanning, shaking, and injecting increase assay flexibility for those that need these features.
8. What assay validation data is available for the reader? Assay validation data specific for the reader provides proof that the reader performs as indicated.

TOP 10 FEATURES/FACTORS

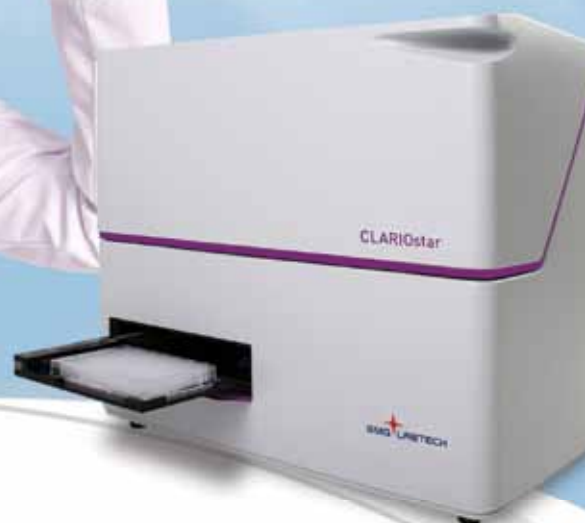
respondents look for when purchasing a microplate reader



➔ For more information on microplate readers, including useful articles and a list of manufacturers, visit www.labmanager.com/microplate-tech

Any Wavelength.
Any Bandwidth.
Any Assay.

Anything Is Possible.



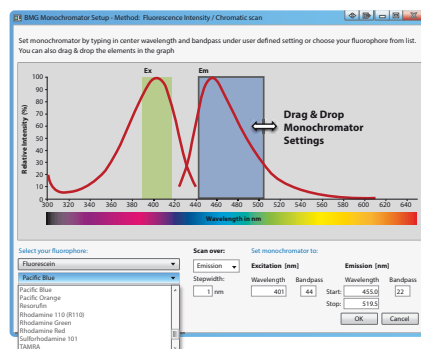
CLARIOstar® - High Performance Microplate Reader with Advanced LVF Monochromators™, Spectrometer, and Filters

Advanced Detection for Fluorescence and Luminescence Assays:

- Continuously adjustable wavelengths (320 - 850 nm) and bandwidths (8 - 100 nm) for excitation and emission
- Increased sensitivity over conventional monochromators
- Integrated fluorophore library for easy wavelength selection
- Use monochromators, filters, or a combination of both
- Fluorescence and Luminescence spectral scanning

CLARIOstar Additional Features:

- Full spectral absorbance with ultra-fast UV/Vis spectrometer
- Laser-based Alpha Technology
- Fluorescence Intensity, FRET, Fluorescence Polarization, TRF/TR-FRET, Luminescence, and BRET
- Reagent injectors for kinetic or cell-based assays
- Low volume DNA measurements



The CLARIOstar's monochromator has continuously adjustable wavelengths and bandwidths for excitation and emission, giving it filter-like performance

www.bmglabtech.com


BMG LABTECH
The Microplate Reader Company

Australia · France · Germany · Japan · United Kingdom · United States

Alpha Technology is a registered trademark of PerkinElmer, Inc. HTRF is a registered trademark of Cisbio Bioassays.



Types of titrators used by survey respondents

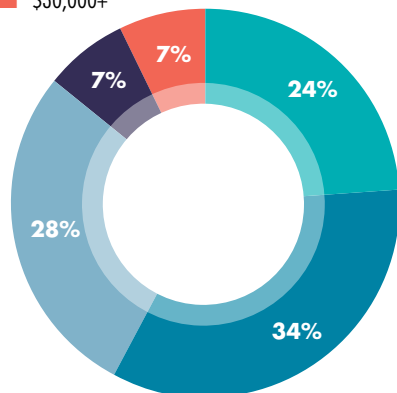
| | |
|--------------------------|-----|
| Potentiometric | 43% |
| Karl Fischer Coulometric | 23% |
| Karl Fischer Volumetric | 28% |
| Other | 5% |

Titrator components used by survey respondents.

| | |
|-------------------|-----|
| Evaporator | 10% |
| Karl Fischer oven | 23% |
| Autosampler | 44% |
| Homogenizer | 15% |
| Other | 8% |

Nearly 34% of respondents plan on purchasing a titrator in the next year. The budget ranges for these purchases are as follows

- Less than \$1,000
- \$1,000 - \$5,000
- \$5,000 - \$15,000
- \$15,000 - \$30,000
- \$30,000+



ARE YOU IN THE MARKET FOR A... TITRATOR?

While titration is a basic analytical method, titrators are specialized instruments that perform titrations with minimal operator intervention. They can thus minimize errors, improve throughput, and facilitate documentation. There are two major titrator types: potentiometric acid-based designs and Karl Fischer titrators.

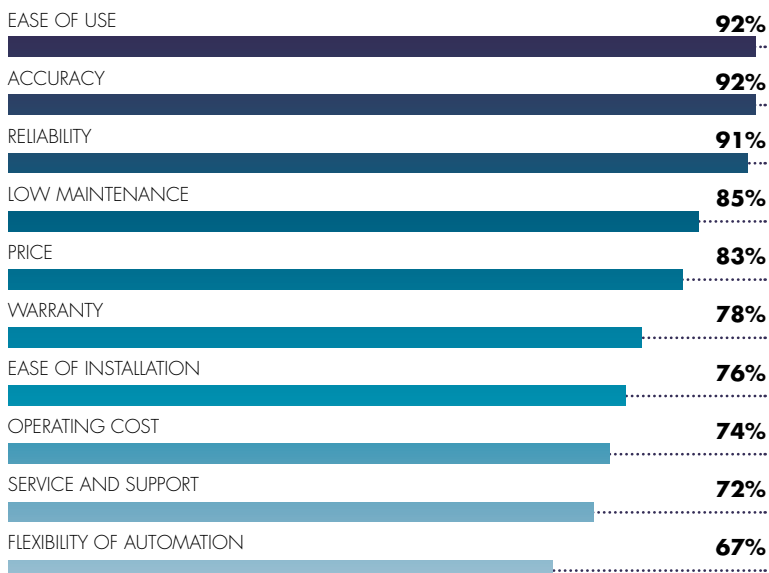
TOP 6 QUESTIONS

You Should Ask When Buying a Titrator.

1. How precise is the titrant delivery system? Is the titrant delivery system certified for accuracy?
2. Can additional titrants be used without having to purge burettes?
3. What information is included in the titrator's display and reports?
4. Is the titrator limited to proprietary electrodes? What is the replacement cost for electrodes?
5. Is the software field upgradeable?
6. What is the service and repair policy?
 - Is on-site support offered?
 - If something goes wrong with the meter, can it be fixed locally?
 - What is the general turnaround time for repair?

TOP 10 FEATURES/FACTORS

respondents look for when purchasing a titrator



Completed Surveys: 174



For more information on titrators, including useful articles and a list of manufacturers, visit www.labmanager.com/titrators

We Believe You Are Important.



Did You Know We Can Do More for You?

- Thomas has access to nearly 1 million products that include Equipment, Instruments, Supplies, Chemicals, Safety Equipment and Apparel, from the top brands you know and trust
- Easy online ordering - find what you need, fast and accurately



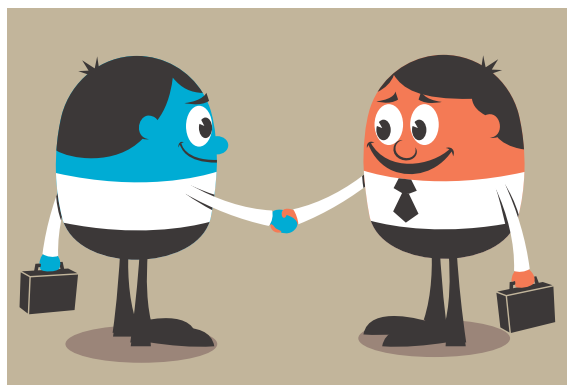
Let's Get Connected Today!

Do you like to
do things yourself?



Register on ThomasSci.com

Do you like company
and need some help?



Get a Rep at: Value@ThomasSci.com

Do you feel chatty, and
need human contact?



Call: 800-345-2100

Get everything you need from your favorite suppliers, all in one place. Save time and money with Thomas!



Distributor
GE Healthcare



Thomas Scientific • 800.345.2100 • Value@ThomasSci.com • ThomasSci.com

TECHNOLOGY NEWS

THE EQUIPMENT, INSTRUMENTS AND SYSTEMS INTRODUCED TO THE LABORATORY MARKET AT **PITTCON 2014**

ANALYTICAL

Gas Chromatography Columns

AbelBonded®

BOOTH 4141

- Abel offers complete stationary selections and consistent high performance AbelBonded (AB) GC columns
- HPLC columns, SPE, Solvent Evaporators, Syringe Filters, Vials, Septa, Caps, etc. also available



Abel

www.abel-industries.com

Nano-LC Ion Source

Chip-Mate™

BOOTH 1542

- Designed for applications requiring small micron ID HPLC columns and nanoelectrospray ionization (nano-ESI)
- Focuses on stable and reliable nano-ESI through its ability to sense poor spray performance and engage the next nozzle
- Provides ease of use and robustness
- ESI chip with 25 emitter nozzles and an integrated memory card is also available for use with the Chip-Mate



Advion

www.advion.com

Resource Guide

The Chromatographer's Guide to Gas and Gas Delivery Systems

BOOTH 2013

- Provides detailed information on the requirements needed to design and construct the gas delivery systems used in gas chromatography (GC) and other high purity analytical applications
- Gives users in-depth expertise in selecting the correct gas purity, understanding how purity is determined, and how purity affects applications
- Explains the importance of component selection
- Details laboratory gas safety codes needed for compliance, and much more

Airgas

www.airgasSGcatalog.com

Mercury Vapor Analyzer

Jerome® J505

BOOTH 3827

- High quality, robust atomic fluorescence spectrophotometer determines mercury in ambient air and water
- Hand-held instrument offers a sample button on the handle as well as a touch pad interface and an easy-to-use menu structure, allowing users to input unique testing locations and sampling cycles
- Jerome® line also includes instruments that can accurately detect H2S as low as 3ppb and Hg vapor as low as 0.5µg/m3



Arizona Instrument

www.azic.com

Handheld Raman Spectrometer

TactiD®

BOOTH 4214

- Suited to rapid identification of unknown chemicals, explosives and narcotics directly in the field or in the lab
- Allows users to get real-time actionable identification of potential threats while reducing operational uncertainty and response time without compromising the integrity of the sample, or the chain of evidence
- Designed to provide robust identification and investigation algorithms while maintaining ease of use



B&W Tek

www.bwtek.com

qTOF System

compact

BOOTH 4135

- Includes excellent MS and MS/MS sensitivity and high resolution with excellent robustness and reliability—all in a benchtop system
- Features 3-4x higher dynamic range with cutting-edge 10 bit ADC technology
- Provides 50 GBit/sec sampling speeds while maintaining high resolution
- Boasts superior mass accuracies and increased dynamic range for more application flexibility



Bruker

www.bruker.com

UHR-QqTOF Mass Spectrometer

Impact HD™

BOOTH 4135

- Provides >40,000 Full-Sensitivity Resolution (FSR)
- Opens up enhanced analytical performance levels for all applications where trace analysis from complex, high-background matrices is a challenge
- Achieves five orders of magnitude dynamic range at UHPLC speeds from 50 GBit/sec sampling technology—definitive trace analysis from complex, high-background matrices
- Includes intelligent self-optimizing MSMS routines for expert-caliber results



Bruker

www.bruker.com

QqTOF System

maXis HD

BOOTH 4135

- Novel HDC collision cell enables record-breaking Full Sensitivity Resolution (FSR) of > 75,000
- High Definition 5 orders of magnitude dynamic range achieved at UHPLC speeds from 50 GBit/sec sampling technology—definitive trace analysis from complex, high-background matrices
- One shot plug & play acquisition with triple-quad standard sensitivity ensures qualitative and quantitative results in one LC run with fastest time-to-success



Bruker

www.bruker.com

HPTLC Instrumentation

BOOTH 1624

- Features the automatic TLC sampler for sample application, the Automatic Developing Chamber for plate development, and the Visualizer for documentation/camera system
- Also includes the TLC scanning densitometer for versatile densitometer evaluation, including variable spectra recording and multiwavelength scanning
- Direct elution instruments also available, including the fully-automated DBS (Dried Blood Spots) extraction device and TLC-MS Interface



CAMAG Scientific

www.camag.com/usa

Analyzers for Low-level Impurity Detection

BOOTH 3705

- Users can measure ammonia (NH₃), arsine (AsH₃), chlorine (Cl₂), hydrogen chloride (HCl), hydrogen cyanide (HCN), hydrogen fluoride (HF), hydrogen sulfide (H₂S), nitrogen Dioxide (NO₂), phosphine (PH₃), sulfur dioxide (SO₂), total sulfur, total nitrogen, total arsenic, and total chlorides with C.I.'s analyzers
- Offer some of the lowest detection limits in the world
- Provide real-time analysis, data collection, and control functions



C.I. Analytics

www.cianalytics.com

Portable Raman Spectrometer

RapID

BOOTH 622

- Extends spectroscopic identification capability from clear containers to non-transparent and colored containers, layered paper and plastic sacks
- Allows users to verify the contents of each unopened container in seconds, at the loading dock, allowing it to be released immediately into production
- This saving on handling and lab testing reduces the overhead from hours to minutes



Cobalt Light Systems

www.cobaltlight.com

Rapid Analysis System

TRS100

BOOTH 622

- Speeds up content uniformity (CU) testing by 10x and offers significant cost-savings for routine quality control of solid dosage formulations
- Uses transmission Raman spectroscopy (TRS) to rapidly determine the API concentration of tablets and capsules
- Samples require no preparation, wet chemistry, consumables or solvents and loading samples is straightforward—chemistry skills are not needed
- cGMP-ready alternative to HPLC



Cobalt Light Systems

www.cobaltlight.com

Gas Chromatograph

FROG-4000™

BOOTH 2518

- For VOC analysis
- Weighs less than 5 pounds
- Allows user to obtain results for BTEX, TCE, PCE and other volatile organic compounds from air, water or soil samples in about 6 minutes
- Provides "Screening with Meaning" in the field, in a mobile lab, or in a fixed lab, and is easy to maintain



Defiant Technologies

www.defiant-tech.com

6870D Freezer/Mill® THE ULTIMATE CRYOGENIC GRINDER

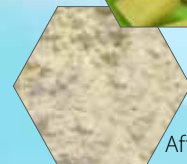


The 6870D Freezer/Mill® is a programmable cryogenic grinder with a self-contained liquid nitrogen tub. Its dual Grinding and Cooling chambers allow users to pre-cool samples while another set is being ground.

- Grinds tough plant & animal tissue, plastic, pharmaceuticals & bone to a fine powder in minutes.
- Grinding and Cooling chambers hold up to 200 grams (100 grams per vial).
- Grinding vials are immersed in liquid nitrogen for faster more effective sample grinding.
- Touch screen control panel contains up to 10 grinding protocols.

POTATOES GROUND
FOR ONE MINUTE

Before



After

© SPEX SamplePrep 2014

PITTCON 2014
CONFERENCE & EXPO
March 2-6, 2014 • Chicago, IL

VISIT BOOTHS 2753 & 2854 TO
SEE THIS PRODUCT AND MORE.

SPEX® SamplePrep®

www.spexsampleprep.com | sampleprep@spex.com | 1-855-GET-SPEX

Gas Chromatograph

Master

BOOTH 3802 & 2557

- Decreases sample run times in a wide range of GC applications
- Modular design allows easy change or upgrade to any GC configuration
- Up to three injection units and three detectors can be mounted simultaneously, and an intuitive touch screen interface controls both GC and AS
- Paired with one of a choice of two headspace samplers, offers accuracy, sensitivity, flexibility and ease of use



GenTech

www.gentechscientific.com

UV-NIR Spectrometer

FREEDOM

BOOTH 1551

- Provides high efficiency across the complete 190 – 1100 nm range
- Features ultra-compact size of 50 x 50 x 15 mm, robust and athermal performance, and flexibility in detector and electronics choice
- Unique grating provides nearly constant diffraction efficiency over the 190 – 1100 nm range for all polarizations
- Comes in two standard variants



Ibsen Photonics

www.ibsenphotonics.com

Gas Analyzer

Micro GC Fusion

BOOTH 1436

- Offers fast temperature ramping using capillary columns
- Expands the horizons of fast and transportable gas chromatograph (GC) applications with innovations needed for accurate onsite analysis
- Now covers up to C12 gas phase analysis with excellent sensitivity and repeatability
- Equipped with a Micro-electromechanical System (MEMS) Thermal Conductivity Detector (TCD) that offers 1 ppm detection limit



INFICON

www.inficon.com

HPLC Columns for Vitamin Analysis

Shiseido CAPCELL CORE

BOOTH 2802

- Allow chromatographers to see increased resolution similar to sub 2 μ m porous particles but with considerably lower back pressure
- Provide the best way to achieve the highest column resolutions with short analysis times when using conventional HPLC
- Provide improved analysis of vitamins such as K₃, K₂, D₂, D₃, E, K₁ – saving up to 60% of analysis time for higher efficiency



JM Science

www.jmscience.com

HPLC Columns for Protein Separation

Shiseido HPLC CAPCELL PAK

BOOTH 2802

- Feature the developed Proteonavi to separate proteins and peptides in reversed phase mode
- Proteonavi utilizes high-purity silica with few metal impurities, and shows minimal irreversible adsorption for proteins and peptides
- Pore size is as wide as 30 nm, so that large proteins are able to have enough interactions with the stationary phase



JM Science

www.jmscience.com

Benchtop NMR Spectrometers

Spinsolve

BOOTH 1043

- Cryogen-free benchtop NMR system, has been designed to provide an upgradable platform for versatile NMR spectroscopy applications
- Latest upgrade enables users to perform both fluorine and proton measurements on the same sample without the need for complicated retuning of the probe
- Single measurements can be made in as short a time as 10 seconds



Magritek

www.magritek.com

Nanoparticle Tracking Analysis Systems

NanoSight

BOOTH 1648

- Will be shown alongside the Zetasizer Nano and the new Viscotek SEC-MALS 20 GPC/SEC detector
- Mastersizer 3000 laser diffraction particle size analyzer featuring new software will also be at Pittcon
- The Mastersizer can now mimic the performance of other laser diffraction systems so that upgrading from one instrument to another is made easier



Malvern

www.malvern.com

COD Analyzer

PeCOD®

BOOTH 3514

- Delivers accurate COD results in 10 minutes, stopping high load effluent from being discharged, thereby protecting the environment and the public
- Keeps the analyst and the environment safe by eliminating harmful chemicals from the process
- More cost effective than the traditional COD method



ManSci

www.mansci.com

Surface Characterization Analyzer

3Flex

BOOTH 2213

- Fully automated, three-station instrument is capable of high-performance physisorption, mesopore, micropore, and chemisorption analyses with excellent accuracy, resolution, and data reduction
- Each analysis station is upgradeable from mesopore to micropore with the option of designating one station for chemisorption analyses
- Minimal footprint and three configurable analysis stations eliminate costly investment in multiple instruments and additional bench space



Micromeritics

www.micromeritics.com

Surface Area and Porosimetry Analyzer

ASAP® 2460

BOOTH 2213

- Incorporates a unique expandable system designed for upgradeable high-performance and high sample throughput
- Can be configured as a two-, four-, or six-station benchtop system depending on the user's throughput needs
- Base two-port master control unit can be expanded to either a four-port or six-port analyzer
- Includes enhanced software capabilities, data reduction features, and instrument monitoring



Micromeritics

www.micromeritics.com

Nano Particle Size & Zeta Potential Analyzer

NanoPlus

BOOTH 2213

- Utilizes photon correlation spectroscopy and electrophoretic light scattering techniques to determine particle size and zeta potential
- Can measure the particle size of samples suspended in liquids in the range of 0.1 nm to 12.3 μm with sample suspension concentrations from 0.00001% to 40%, and a sensitivity for molecular weight to as low as 250 Da



Micromeritics

www.micromeritics.com

Surface Area and Porosity System

TriStar® II Plus

BOOTH 2213

- Suited for use in both quality control and research environments and can collect up to 1000 data points
- Allows fine details of the isotherm to be observed and recorded, providing high resolution and revealing pore structure details
- The system's three analysis ports operate simultaneously and independently of one another



Micromeritics

www.micromeritics.com

Microspectrometer

STS-UV

BOOTH 2618

- Designed for integration into spectroscopy instrumentation, medical devices, process monitoring and other applications where a small footprint is desired
- Measures just 40 mm x 42 mm and 24 mm high
- Optimized for applications in the ultraviolet (190-650 nm) including absorbance measurements, point of care diagnostics, emission spectroscopy and laser characterization



Ocean Optics

www.oceanoptics.com

Hydrogen Purity Analyzers

HEMS™ series

BOOTH 4251

- These full spectrum instruments feature limits of detection per impurity of < 1 ppt
- Self-calibrating analyzer's short analytical cycle time means it can be used as an on-line impurity monitor
- Use P+E's patented palladium diffusion technology combined with advanced quadrupole mass spectrometry to achieve parts-per-trillion resolution
- Available in two models, the HEMS-M and the HEMS-T



Power & Energy

www.PowerandEnergy.com

PDA UV-Vis Spectrophotometer

Mega Array

BOOTH 3204

- Suited to product assurance testing and quick measurement
- Delivers confidence and reliability by implementing the same field-proven PDA technology
- Driven by Scinco LabPro® Plus software and provides low cost of ownership and simplicity
- Rugged design and small footprint enables users to bring the spectrophotometer where you need from the laboratory to the factory site



Scinco

www.scinco.com

FTIR Spectrophotometer

IRTracer-100

BOOTH 1942

- Combines high speed, sensitivity and resolution with enhanced expandability and easy-to-use software
- Enables up to 20 spectra/second acquisitions, offers 60,000:1 S/N ratio, and features resolution of 0.25 cm^{-1} , which provides for highly accurate quantitation and identification
- Features a stable, airtight interferometer that incorporates a built-in automatic dehumidifier, while its Advanced Dynamic Alignment provides enhanced stability and shorter warm-up times



Shimadzu

www.ssi.shimadzu.com

FTIR Spectrophotometer

BOOTH 1015

- World's first single-chip FT-IR spectrometer drastically reduces the size of standard FT-IR spectrometers and enables portable and handheld spectroscopy
- Features a single chip Michelson interferometer based on Micro-Electro Mechanical Systems (MEMS) technology, innovative dedicated circuitry, and versatile software
- Can be integrated into a wide variety of systems for applications that require qualitative and/or quantitative material analysis



Si-Ware Systems

www.si-ware.com

Benchtop NMR Spectrometer

picoSpin 80
BOOTH 2441

- Allows academic and industrial laboratories to easily collect routine high-resolution nuclear magnetic resonance (NMR) data on molecules in solution
- Features a temperature-controlled magnet that does not require liquid cryogenics
- Lightweight, portable design makes it easy to share the instrument across multiple laboratories
- Easy-to-operate fluid capillary system does not require NMR tubes or other consumables



Thermo Fisher Scientific

www.thermofisher.com

Size Exclusion HPLC Columns

TSKgel® SuperSW mAb HTP
BOOTH 2608

- Offers high throughput separation of the dimer and monomer of a monoclonal antibody (mAb) in a dramatically reduced analysis time
- Pore-controlled technology results in high resolution separations
- Specialized for fast and efficient run times
- Features a smaller ID and shorter length of 4.6 mm ID × 15 cm
- Compatible on both traditional HPLC and UHPLC systems



Tosoh Bioscience

www.tosohbioscience.com

BASIC LAB

Vented Chemical Storage Cabinets

Safestore™
BOOTH 1136

- Minimize health and environmental risks in handling chemical vapors and residues, VOCs and general laboratory functions
- Air Science Multiplex™ filtration system protects the safety of personnel during use, maintenance and decontamination
- Advanced carbon filtration technology offers a safe, high performance alternative to ducted cabinets for a broad range of applications



Air Science

www.airscience.com

Bidirectional Flow and Pressure Controller

MCD-Series
BOOTH 1908

- Offers the versatility of bidirectional mass flow and pressure control in closed or flowing volumes, with or without vacuum, all in a single instrument
- A single MCD can control upstream and downstream flows, and more
- Allows researchers to make rapid changes to experimental setups, and accommodating demanding process control requirements in gas analysis, leak testing and environmental monitoring applications



Alicat Scientific

www.alicat.com

Pipette Tip Cleaning System

BOOTH 4563

- Allows users to remove all trace metal and other impurities before using their pipette tips
- Cleans with concentrated or dilute reagents, in warm environment
- Rinses with DI water
- Dries pipette tips whatever their volume, size and material, without external inputs
- Adaptable to different pipette tip sizes



ANALAB

www.analab.fr

Pipette Controller

BRAND macro
BOOTH 3937

- Newly redesigned with optimized technology and ergonomic design
- Provides precise, one-finger meniscus control
- Compatible with 0.1 to 200mL pipettes calibrated "to deliver" and "to contain", and can aspirate up to 50mL with just one squeeze of the bellows — for additional volume, simply squeeze again
- New, relaxed grip design, and low 4.3oz weight greatly minimize strain from prolonged pipetting



BrandTech Scientific

www.brandtech.com

Dry Chemistry Diaphragm Pump

VACUUBRAND MZ1C
BOOTH 3937

- Gives users continuous, oil-free pumping of corrosive gases and vapors
- Provides whisper-quiet operation with low vibration, long service intervals (in excess of 15,000 hours), and very long lifespan
- Top-mounted power switch ensures convenient and quick operation, while the integrated gas ballast allows for continuous condensate purge, increasing the pumping capability of condensable vapors



BrandTech Scientific

www.brandtech.com

Sequential Microwave System

Discover® SP-X

BOOTH 2031

- Can help reduce your solvent usage by up to 95% and decrease extraction times from hours to minutes
- Quickly and efficiently performs solid-liquid solvent extractions on a wide variety of matrices including polymers, foods, and textiles
- Offers full temperature and pressure control of every sample and works with all solvents including polar and non-polar



CEM

www.cem.com

Solution Preparation System

SoluPrep II™

BOOTH 526

- Speeds up routine sample preparation and increases accuracy, by eliminating volumetric measurements
- Automatically prepares samples for liquid chromatography, gas chromatography, ICP, spectroscopy, viscosity, NMR and other analyses
- Typical solution preparation time is less than 2 minutes with an accuracy of 0.02%
- Also protects laboratory integrity by storing a permanent file of each sample and its preparation



Design Scientific

www.designscientific.com

Bathless Disintegrator

sensIR 3200

BOOTH 4448

- Uses the latest in bathless heating to offer a disintegrator without the mess and drawbacks associated with conventional water bath-based instruments
- Offers two, four or six disintegration test stations in a small footprint
- With rapid media warm-up, the sensIR 3200 heats media from ambient to 37°C in less than 8 minutes
- Available Q1 – 2014



Distek

www.distekinc.com

Aluminum Nitride Heaters

BOOTH 1416

- Provide excellent thermal performance in gas chromatographs, mass spectrometers and other laboratory equipment
- Feature faster thermal response than traditional heating technologies as well as chemical compatibility and miniaturization of the thermal system
- Are capable of process temperatures up to 800°C and temperature ramp rates in excess of 200°C in less than 2 seconds



Durex Industries

www.durexindustries.com

Water Purification System

PURELAB® Chorus

BOOTH 3616

- Gives users the chance to configure a solution that best suits your needs with the added benefit of flexibility should their future needs change
- A selection of dispense, storage and installation options is available
- Offers the customer the ability to create their own solution to fit the application, budget and configuration of their laboratory



ELGA

www.elgalabwater.com

Ammonia & Cyanide Collection System

FT4

BOOTH 2435

- Allows users to perform cyanide and ammonia distillations following established US EPA and *Standard Methods* methodology
- Design replaces much of the fragile glassware used in other systems with disposable collection traps and other consumables, reducing labor associated with maintenance and clean up
- Only glassware required is the boiling tube



Environmental Express

www.envexp.com

Test Sieves

BOOTH 4459

- Extremely precise and accurate whilst offering good handling, nesting, and strength
- Wide range of sieves with different sizes, depths, choice of materials and certified degrees of inspection to meet every national and international standards, including ASTM E-11 and ISO 3310
- Every test sieve is supplied with a Certificate of Compliance



Endecotts

www.endecotts.com

Refrigerated Reagent Storage

TOGA

BOOTH 1319

- Completely closed reagent storage with built-in TOGA filter system completely removes toxic gases, VOC's, offensive smells and fumes volatilized from the reagent bottles
- Features a removal efficiency of better than 99.7%
- Also features a temperature range of 2~ 40 °C
- Includes touch pad control & management system with RFID technology to record the access of every reagent bottle, and more



GT SCIEN

www.gtscien.com

pH Meter

edge™

BOOTH 4424

- Measures just 1/2" thick, weighs less than 9 ounces
- Features a wide viewing angle, 5.5" LCD and a sensitive capacitive touch keypad
- Measures pH, conductivity and dissolved oxygen through unique digital electrodes that are auto-recognized
- Simplifies measurement, configuration, calibration, diagnostics, logging and transferring data to a computer or a USB drive



Hanna Instruments

www.hannainst.com

Chemical Resistant Fume Hood

Aire-Stream

BOOTH 1026

- Constructed entirely of chemical resistant, flame retardant, non-metallic composite resin materials
- Features an exclusive "Unitized" construction that does not require screws, bolts, rivets, or metallic hardware to assemble
- Fume chamber is molded one piece seamless with all corners covered for easy cleaning and light reflectivity
- UL 1805 certified and is offered in 48", 60", 72" and 96" widths



HEMCO

www.hemcocorp.com

VP-SEM System

Model SU3500

BOOTH 3624

- Now available with a 4-axis motorized stage, in addition to the existing 5-axis motorized stage system
- New 4-axis version is targeted for smaller sample applications (max. 200 mm in diameter and 70 mm in height)
- The new motorized stage system features the same electron optics and signal detection systems as the 5-axis system, providing excellent 3-D imaging and analytical performance



Hitachi High Technologies America www.hitachi-hita.com

Serological Pipettor

PIPETBOY acu 2

- Latest technology provides a significant increase in pipetting speed and a sizeable weight reduction, making using the instrument over extended periods of time even more comfortable
- Gives users precision, speed, ease-of-use, comfort, long operating battery life and reliability
- Designed for use with all commercially available glass and plastic serological pipettes in the volume range 1-100 ml



INTEGRA

www.integra-biosciences.com

Handheld Multichannel Pipette

VIAFLO VOYAGER

- Can be used to rapidly set up a 384-well qRT-PCR plate for analysis in a ViiA™ 7 Real-Time PCR system
- Features a motorized adjustable tip spacing; enabling significant productivity gains in applications such as qRT-PCR where loading of samples into microplates has traditionally been a time-consuming task
- Rapidly and comfortably handle large workloads between various lab ware formats



INTEGRA

www.integra-biosciences.com

Tuning Fork Balances

Vibra®

BOOTH 4516

- From analytical to rugged toploading balances, the Vibra® range meets almost all application needs, utilizing tuning fork technology
- Inherently temperature-stable, tuning fork sensor balances do not need a warm up time
- Enables users to not only calibrate the balance easily, but also to diagnose the health of the equipment
- Features GLP capabilities and more



Intelligent Weighing

www.intelligentwt.com

Field Emission Scanning Electron Microscope & Imaging System

JEOL JSM-7100F & Gatan 3View®

BOOTH 3241

- Joint initiative between JEOL and Gatan brings the power of Serial Block Face imaging to the JEOL family of scanning electron microscopes
- Researchers will now be able to image 3D structures of biological and materials samples at ultrahigh resolution using the JEOL JSM-7100F Field Emission Scanning Electron Microscope with an integrated Gatan 3View® Serial Block Face Imaging System



JEOL

www.jeolusa.com

Temperature Control System

PRESTO A40

BOOTH 3453

- Made for highly precise temperature control and rapid temperature changes
- Provide large heating and cooling capacities covering a working temperature range from -40°C to +250°C
- Highly efficient components allow extremely fast compensation of exothermic and endothermic reactions
- Features an integrated 5.7" industrial touchscreen
- Also includes permanent internal monitoring and self-lubricating pumps



JULABO

www.julabo.com

Temperature Control System

PRESTO® model series W91 and W92

BOOTH 3453

- Cover a working temperature range from -92°C to +250 C
- Provide up to 31 kW cooling capacity and up to 36 kW heating capacity
- Are robust and reliable even at high room temperatures up to +40 C
- Powerful, maintenance-free pumps deliver up to 5.5 bar / 80 l/min
- Multiple interfaces permit flexible application control



JULABO

www.julabo.com

Modular Gas Standards Generating System

FlexStream™

BOOTH 2059

- Offers total flexibility for creating precision gas mixtures
- Dilutes the emission from permeation or diffusion tubes with an inert gas (typically nitrogen or zero air) to create trace concentration—ppm, ppb, and ppt—gas mixtures
- Expands the capabilities of the microprocessor controlled, stand-alone FlexStream™ Permeation Tube Unit
- Can have one to six modular channels



KIN-TEK

www.kin-tek.com

Low and Ultralow Freezers

Kaltis

BOOTH 2207

- Designed for long term biological sample storage
- Equipped with patented Pull 'N' Push™ door handle which ensures ease of use and end user comfort, by allowing the one-handed opening / closing of the door in a single, effortless movement
- High Environment (HE) freezer and green models, which use 10% less power than conventional ULT freezers, also available



Kaltis International

www.kaltis.com

Online Vacuum Pump Selection Guide

BOOTH 2707

- User friendly tool selects the proper vacuum pump for user's requirements from KJLC's pump offering
- Gives users the opportunity to search for a pump based on criteria that are most important to their application; vacuum range, pumping speed, pump type, flange size, manufacturer, and more
- Can be accessed at www.lesker.com/PumpSelectionGuide



Kurt J. Lesker Company

www.lesker.com

2nd Annual
**CHROMATOGRAPHY
COMMUNITY MIXER**
Buddy Guy's
Legends Chicago



Join colleagues from around the world

Conversation, community, collaboration

Tuesday March 4

5:30 – 8:30 p.m., 700 South Wabash Ave.

Buffet, open bar, music and chromatographers galore.

Tickets required for entry

Register for tickets through your regional chromatography discussion group or chromatography vendor.

For further inquiry contact:

Jonathan Edelman, President
Washington DC Chromatography DG
(215) 850-8748 PittConMixer@gmail.com

► Buddy Guy's invites attendees to stay for the evening show.

► Help us revive the Chicago Chromatography Discussion Group.

PITTCON
CONFERENCE & EXPO 2014



Water Purification System

WaterPro® BT™

BOOTH 1709 and 1809

- Delivers ultrapure Type I water, up to 18.2 megohm-cm, at a typical rate of >0.5 liters per minute at inlet water temperatures of 25° C either manually, or volumetrically, directly from tap water
- Features light weight and small footprint of only 16.5" deep x 11.4" wide x 21.3" high
- Easy to install—just plug and play



Labconco

www.labconco.com

Microtube Shaking Incubator

AccuTherm

BOOTH 944

- Uses Peltier technology to rapidly heat and cool precious samples
- Intuitive control panel with large color display allows users to easily program and view temperature, time and speed settings
- Eight interchangeable aluminum blocks accommodate PCR plates and tube sizes from 0.2mL to 15mL
- Also features a temperature setting range of 0-105°C and mixing speed range of 300-1,500 rpm



Labnet International

www.labnetinternational.com

Titration

BOOTH 2248

- Suited to many industries as well as applications such as R&D, QA/QC, testing incoming raw materials, and end product
- Deliver the precise and reproducible results users need to build their quality parameters
- Allow users to take those results and easily transfer them to their NIR library, so that moving forward they can pass/fail their future samples in seconds



Metrohm USA

www.metrohmusa.com

Differential Scanning Calorimeter

DSC 214 Polyma

BOOTH 2524

- Engineered from the ground up for polymers characterization
- Diffusion-bonded sensor and special low-mass furnace permit ultra-fast heating and cooling up to 500 C/minute
- Provides a temperature range of -170 to +600C
- Can be automated for unattended analysis of up to 20 samples and operated with either a refrigerated intracooler or liquid nitrogen cooling system for low temperature experiments



NETZSCH

www.netzsch-thermal-analysis.com

Rotary Tube Furnaces

BOOTH 1150

- Rotary tube furnaces for continuous processes and/or batch operation include RSR 80-500/11 - RSR 120-1000/13 and RSR-B 80-500/11 - RSR-B 120-1000/11
- Especially suited to applications where maintaining the individual grain characteristics of the material is required, such as in drying or calcination
- Permanently rotating working tube allows for the continuous movement of the charge
- Various accessories available



Nabertherm

www.nabertherm.com

Fume Hood Bench Module Cabinet

NU-156

BOOTH 2817

- Is a single piece construction of all stress-relieved, fully seam-welded 100% white polypropylene that can be used where product and personnel protection are required
- Areas of use include chemical research, microelectronics, and high acid / trace metal analysis use, semi-conductor design / development and/or production assembly processes
- Available in four sizes: 4, 5, 6, and 8 foot widths



NuAire

www.nuaire.com

Advanced Digital Refrigerated Circulator

Model AD07R-20

BOOTH 3202

- Combines intuitive touch-pad operation with automatic or user-adjustable fluid optimization and $\pm 0.01^\circ\text{C}$ temperature stability to maintain buffer solutions at optimum temperatures even under varying electrophoresis voltages
- Features a -20° to $+200^\circ\text{C}$ working temperature range, large 3.75" LCD display, and variable speed pressure-suction pump
- Includes a 7 liter reservoir; other models, with reservoir sizes as large as 45 liters, are also available



PolyScience

www.polyscience.com

Automated Viscometer

m-VROC™

BOOTH 1650

- Powered by patented VROC® Technology
- A hybrid of Microfluidics and MEMS (micro-electro-mechanical systems)
- Features automated temperature and shear rate sweeps for comfortable viscosity measurements
- Requires as little as 50 microliters of sample volume
- Capable of measuring wide dynamic viscosity ranges of 0.2 to 100,000 mPas and shear rate ranges of 0.5 to 1,400,000 s^{-1}



RheoSense

www.rheosense.com

Test Weights

BOOTH 2107

- NIST Handbook 105-1 is currently undergoing revision to adopt international requirements, moving closer to the requirements that M1 and M2 OIML weights currently adhere to when testing weighing instruments of class III accuracy
- Rice Lake currently provides Legal for Trade, Class M1 and M2 individual weights in expanded capacities up to 500 kg and sets in stainless steel and cast iron finishes, with more M1 weight sets added to their product offering for more selection



Rice Lake

www.ricelake.com

Cryogenic Grinder

6870D Freezer/Mill®

BOOTH 2753 and 2854

- High-throughput, dual chamber, cryogenic grinder includes a self-contained liquid nitrogen tub and insulated case
- Chills samples in liquid nitrogen then pulverizes them with a magnetically driven impactor
- Dual grinding chambers hold a total of 200 grams of sample (100 grams per chamber)
- Touch screen control panel stores up to 10 grinding protocols
- Features maintenance-free design with only one moving part



SPEX SamplePrep

www.spexsampleprep.com

High Pressure Reactor

HPR-Micro™

BOOTH 2004

- Specifically designed for small batch reaction chemistry
- Comes standard with a 10 milliliter Iconel 625 stainless steel reactor vessel for operation up to 10,000 psi (689 Bar / 68.9 MPa), inlet and outlet valves and a pressure gauge
- Depending upon the temperature option selected, operation from -40°C to 150°C is possible



Supercritical Fluid Technologies www.supercriticalfluids.com

Lab Benches

Concept

BOOTH 3955

- Available in manual, hand crank, and motorized height adjustment options, to adapt to the work process and the needs of the user
- All movements of the user can be optimized, which in turn increases performance and productivity and decreases work-related stress
- Can be equipped with casters to create a mobile solution
- Tables are available in five widths and three depths



Sovella USA

www.sovella.us

SunSearch

LABORATORY RELOCATION SERVICES

At SunSearch we specialize in moving your sensitive laboratory equipment to one of over a dozen sunny locations including

Mexico
Costa Rica

Dominican Republic
Jamaica

Bermuda
St. Lucia

From centrifuges and freezers to fume hoods and incubators, we'll safely relocate your delicate equipment and up to 40 employees to one of our fully appointed beachfront laboratory villas. Enjoy all the convenience of working in your lab just steps from unspoiled beaches, lush rainforests, and vibrant coral reefs.

THE ULTIMATE WORKING VACATION!

Wouldn't you rather perform PCR in Puerto Plata or chromatography in Cozumel?

Call SunSearch Now.

Our expert agents are standing by.

1-877-SUN-SEARCH

SunSearch Laboratory Relocation Services

101 Ocean Ave. Buena Broma, Calif. 90106

Refrigerated Recirculating Bath

VersaCool

BOOTH 2441

- Global voltage input feature allows the user to select the appropriate frequency and voltage to enable operation anywhere in the world
- Bath can be paired to any Bluetooth-enabled smartphone or tablet for remote operation and monitoring
- Tool-less, drip-less rack and lid provide application flexibility, easier cleanup, and enhanced safety
- Also includes easy setup and energy savings mode



Thermo Fisher Scientific

www.thermofisher.com

Calibration Gas Generator

Model 150 Dynacalibrator®

BOOTH 3216

- Constant temperature system is designed to generate precise ppm or ppb concentrations of chemical compounds in a gas stream, using permeation devices as the trace gas source
- Used as a reference for the calibration of gas chromatography instruments and in other instruments that measure gas concentrations
- Provides a wide range of temperature settings (5°C above ambient to 110°C)



VICI Metronics

www.vicimetronics.com

XY Microscope Stage with Controller

ASR with A-MCB2

BOOTH 835

- Can be used either as replacements for the manual stage on many common microscopes, or as stand-alone XY scanning stages
- Offers 100 x 120 mm travel, 12 µm accuracy, 2 µm repeatability, and up to 85 mm/s maximum speed
- Combination of the stage and A-MCB2 two-axis stepper motor controller makes it easy to control the speed and position of the unit, and more



Zaber

www.zaber.com

CHEMICALS, KITS & REAGENTS

Certified Reference Material

Certified Spiking Solution® of Acetyl Fentanyl

BOOTH 2714

- Certified Reference Material of acetyl fentanyl is in methanol at a concentration of 1.0 mg/mL
- can be used as a Snap-N-Spike® starting material in the laboratory's matrix of choice for preparation of calibrators and controls in fentanyl testing methods and other forensic, clinical toxicology, or prescription monitoring applications by GC/MS or LC/MS

Cerilliant

www.cerilliant.com

pH Buffer in Capsule Format

Reagecon

BOOTH 2802

- Tested at 25 degrees C and are NIST traceable
- Color coded for quick identification
- Easy to use—simply empty the contents of one capsule in 100 ml of distilled water
- Dissolve quickly, are preservative free, and provide an accuracy of +/-0.02 pH units
- Feature an extended shelf life—good for 4 years



JM Science

www.jmscience.com

QuEChERS Kits

SPEXQuE™

BOOTH 2753, 2854

- Suitable for removal of polar organic acids and some low to moderate levels of sugars and lipids
- General purpose kits are made for Methods AOAC 2007.1 and EN 15662
- Also available is a comprehensive set of Internal Standards for GC, GC-MS, and LC-MS which complements these QuEChERS kits



SPEX CertiPrep

www.spexcertiprep.com

USP Reference Standards

BOOTH 3656

- USP offers more than 3,100 reference standards
- These highly characterized substances are used in tests to determine the identity and quality of drugs/biologics, dietary supplements, and food ingredients, including related impurities, residual solvents, excipients, botanicals, polymers, Near-IR and dissolution calibrators, photomicrographs, and melting point standards



U.S. Pharmacopeial Convention www.usp.org/reference-standards

ICP-MS Calibration Standards

BOOTH 3502

- Meet the requirements for United States Pharmacopeia (USP <232> Elemental Impurities – Limits and <233> Elemental Impurities – Procedures
- New USP chapters were created in response to the rising concern for the health effects of impurities currently found in pharmaceutical products
- Are of high purity, produced under ISO Guide 34 and certified under ISO/IEC 17025



VHG Labs

www.vhglabs.com

Pharmaceutical Primary Reference Standards

LGC Standards

BOOTH 3502

- Designed to be used in pharmaceutical quality control if no official pharmacopoeia standard exists
- High purity, are fully characterized and satisfy the requirements of the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use and Food and Drug Administration
- Produced under ISO Guide 34 and accompanied by a comprehensive certificate of analysis



VHG Labs

www.vhglabs.com

LAB AUTOMATION

Automated System for Total Fat Analysis

Soxtec™ 8000

BOOTH 1814

- First fully automated solution for total fat analysis with the Soxhlet method
- Consists of an extraction unit, a Hydrotec™ hydrolysis unit and a single Hydrocap filter that is common to both units
- Allows hydrolysis and Soxhlet analysis to be performed in one integrated laboratory process
- Unique filter system allows users to avoid filter to filter transfer



FOSS

www.foss.us

Automated Liquid Handling Platform

PIPETMAX®

BOOTH 3254

- Helps maximize reproducibility of your biological sample prep
- Easy-to-use system also helps mitigate the increased training requirements, preparation time, procedural errors and operational costs of manual sample prep
- Comes at a size and price that is accessible to many labs



Gilson

www.gilson.com

HPLC Autosampler

HT4000L

BOOTH 633

- Lab automation ready system is able to perform high precision injection into HPLC, UHPLC and LC/MS systems
- Also handles complex sample preparation tasks as a real sample preparation workstation
- Designed to optimize ease of use, sample capacity and application versatility
- Excellent sample capacity allows users to increase laboratory throughput
- Can be personalized to fit any user needs



HTA

www.hta-it.com

Automated Extraction and Sample Prep Platform

Cambtek RES

BOOTH 2919

- Designed for development and quality assurance laboratories, and manufacturing environments
- Allows users to readily process capsules and tablets (both normal and extended-release), gels, powders, granulations, swabs, beads, pellets, stents, patches, and other solid or semi-solid matrices in an unattended manner
- Employs turbulent fluidic solvent flows, coupled with ultrasonic energy, for rapid sample processing



Kinesis

www.kinesis-usa.com

Automated System for Xylene Solubles Testing

CRYSTEX QC®

BOOTH 1950

- Eliminates the use of external filtration or extraction devices, as well as all the associated tedious manual operations
- Does not require weighing the sample or handling solvent manually at any point of the analysis because the instrument is fully automated
- Designed to be installed in a plant laboratory environment
- Features a built-in infrared detector and integrated viscometer



Polymer Char

www.polymerchar.com

LIFE SCIENCE

Portable DNA Analyzer

Qsep1

BOOTH 4519

- This capillary gel electrophoresis based instrument is designed to replace the traditional labor intensive gel electrophoresis processes
- Portable and cost-effective
- Features dimensions of 15x15x20cm and a weight of 5 kg
- Will be introduced to the market in 2014



BiOptic

www.biopic.com.twt

All-In-One Multiple Format Mixer

Co-Mix

BOOTH 3821 & 4021

- Offers effortless changing between mixing of 96- and 384-well microplates in skirted, semi-skirted and unskirted variants plus deep-well plates and PCR tubes / strips
- Plate holding mechanism ensures smooth manipulation of microplates, eliminating sample spillage and cross-contamination problems
- Vortex module enables mixing of numerous tube formats including micro test tubes
- Comes pre-programmed with commonly used mixing profiles



Porvair Sciences

www.porvair-sciences.com

LIMS & SOFTWARE

Impurity Resolution Management Solution

IRM

BOOTH 3861

- Is an application of Unified Laboratory Intelligence to identify and characterize impurities for resolution and reporting during development and acceptance of a new drug substance
- Provides tools for cross functional teams in drug development to separate, identify, and characterize impurities quickly with confidence
- Specific dashboards for each group allow users to store and search data in chemical context quickly and easily



ACD/Labs

www.acdlabs.com/irm

Analytical Data Management Framework

Allotrope Framework

BOOTH 3762

- Includes metadata dictionaries, data standards, and class libraries
- Allotrope Foundation is creating an open "ecosystem" in collaboration and consultation with vendors and the analytical community that will allow for the seamless sharing of analytical data, methods, and hardware components within users' organization or their partners'
- Data generated within this laboratory ecosystem are stored in a standardized and defined format for easy access, analysis, and archival



Allotrope Foundation

www.allotrope.org

LIMS & Laboratory Enterprise Resource Planning Solution

TITAN®

BOOTH 4059

- Offers full laboratory automation and business management functionality and the adaptability to meet users' specific needs
- Leverages workflows to allow users to manage laboratory tasks, track samples, change sample states, trigger alerts, and query data in the system for presentation in dashboards and reports
- Provides instrument integration, business management, asset/inventory management and integrated storage/freezer management



Accelerated Technology Laboratories

www.atlab.com

LIMS

Matrix Gemini

BOOTH 3859

- 'OneTime Configuration Tools' allow Matrix Gemini to be configured to users' specific requirements without the use of custom programming or esoteric basic scripting tools
- Matrix Express LIMS is a low cost entry level LIMS that is designed to be "off the shelf," therefore easy to implement and easy to use
- Matrix Environmental LIMS and Matrix Stability now include new improvements



Autoscribe Informatics

www.autoscribeinformatics.com

Reporting System for MS Instruments

Dash Reporting

BOOTH 4135

- Brings the power and flexibility of customized reporting to all users
- New capability centers on Dash Designer, a purpose built standalone application which enables customers to position and closely format report elements, and preview reports with relevant data
- Dash Designer seamlessly integrates with Bruker's MS Workstation data system to generate reports both manually and automatically



Bruker

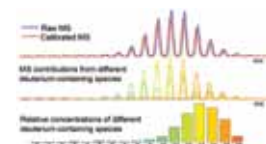
www.bruker.com

Mass Spectrometry Software

MassWorks 4.0

BOOTH 2507

- Adds DirectRead™ data support for three high resolution MS systems: Thermo Orbitrap or FT ICR MS, Agilent TOF, and Waters TOF
- Expands unit mass resolution direct support to Agilent MassHunter and Advion CMS
- Now enables elemental composition determination in the absence of an observable monoisotope peak or in the presence of larger-than-usual mass errors



Cerno Bioscience

www.cernobioscience.com

Chromatography Data System Software

Chromperfect®

BOOTH 4418

- Supports all HPLC and GC systems, with many instrument control options available with direct digital interfaces to leading chromatography instruments
- Solutions offered that will connect to all user's existing laboratory and computer equipment
- Flexible licensing system allows users to share important data throughout the laboratory and the whole organization

Chromperfect

www.chromperfect.com

Web-based LIMS

LABVANTAGE

BOOTH 3663

- Highly configurable LIMS enables companies to innovate faster in the R&D cycle, improve product quality, achieve accurate recordkeeping and comply with regulatory requirements
- Supports hundreds of concurrent users, interfaces with various instruments, and is available as a cloud-based solution
- Laboratory intelligence capabilities help users make decisions that reduce costs and increase revenues



LABVANTAGE

www.labvantage.com

LIMS Software Solutions

Laboratory Informatics

BOOTH 1418

- Provides users with completely configurable LIMS software that will grow with their organizations
- Cloud-based LIMS software allows users to customize their software to suit their needs
- Newest LIMS at LIMSABC is its mobile LIMS which offers user flexibility by enabling them to access and input data on iPads and Android tablets



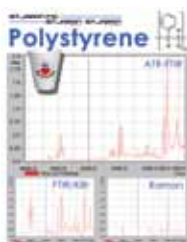
LIMSABC

www.limsabc.com

ATR-FTIR and Raman Spectra Databases

BOOTH 1139

- Consists of over 140,000 spectra, subdivided into over 100 individual application libraries
- Application libraries include FTIR Transmittance, ATR-FTIR, Raman and Near IR spectra of polymers, pharmaceuticals, forensics, explosives, minerals and many more substances
- Spectra were collected from samples of highest purity and contain extensive sample information
- Available in the common spectra formats



S.T. Japan

www.stjapan-usa.com

LIMS

SampleManager 11

BOOTH 2441

- Features advanced new tools and user-interface enhancements that improve laboratory process mapping, management, and automation
- Delivers workflow configurability, user-intuitive multiple sample login, point-and-click extensibility and enhanced data mining and tracking capabilities to benefit a wide variety of industries
- Includes the ability to track aliquots and composites, enable finer control over samples and more reliable data for decision-making and compliance



Thermo Fisher Scientific

www.thermofisher.com

MOBILE APPS

Data Collection App

Sample Master® iMobile

BOOTH 4059

- Allows data to be collected in the field and automatically uploaded to the LIMS in real time, saving companies time and money
- Also enables uploading of testing site data as it is collected, eliminating manual re-entry of data from paper forms, eliminating transcription errors and paper
- Runs on web-enabled devices such as Apple iPads and iPhones, and more



Accelerated Technology Laboratories

www.atlab.com

SERVICES & EDUCATION

Web-based Analytical Technique Training

BOOTH 4542

- Fully on-demand, self-paced learning library covers all levels of experience allowing user's laboratory, department, company or enterprise to benefit from online analytical technique training and support from world thought leaders 24 hours/day, anywhere in the world
- Offer a site license providing users or their laboratory/enterprise with unlimited access to an extensive library of HPLC and GC training content and more



Analytical Training Solutions www.analytical-training-solutions.org

X-ray Fluorescence Analysis Services

BOOTH 4564

- FLUXANA develops new test methods for X-ray fluorescence analysis (XRF)
- Test methods are used within the framework of contract analyses as well as for external X-ray fluorescence services
- Works in accordance with ISO 17025
- Offers competent analysis of samples with X-ray fluorescence analysis
- All customers receive comprehensive service
- Experts available for advice and support



FLUXANA

www.fluxana.com

Online Master's Degrees

Illinois Institute of Technology

BOOTH 1135

- Offers rigorous, relevant part-time online master's degrees in analytical chemistry and materials chemistry
- Certificate programs are in: analytical method development, analytical spectroscopy, chromatography, and synthesis and characterization of organic and inorganic materials
- Non-thesis chemistry master's degree includes courses in business, intellectual property, and leadership
- Students can also pursue a full-time MS or PhD degree in an outstanding interdisciplinary research environment



Illinois Institute of Technology

<http://iit.edu/csl/che>

Equipment Maintenance Management Program

BOOTH 1215

- Consolidates existing service contracts under one comprehensive program, eliminating the inefficiencies of multiple vendor service agreements
- Gives organizations the ability to analyze and effectively control electronic equipment assets while realizing significant savings on annual equipment maintenance budgets
- Specializes in providing quality service, technical resources, innovative management systems, and financially secure solutions
- Remi does not repair or maintain equipment, but allows clients to use their preferred service provider



Remi

www.theremigroup.com

Online System for Teaching Analytical Chemistry

Sapling Learning

BOOTH 1017

- Drives student success, saves educators time and is an advanced online system for teaching analytical chemistry
- Features over 500 feedback-rich questions, covering a wide variety of topics in analytical chemistry
- Students use the unique interface to answer questions numerically, write mathematical and chemical equations, and receive guidance when setting up the spreadsheets needed to solve more involved questions



Sapling Learning

www2.saplinglearning.com

SUPPLIES & CONSUMABLES

UHPLC Seal

Enduris™

BOOTH 3410

- Delivers consistent, long-term performance in liquid chromatography pumps at pressures of 22,000 PSI and higher
- Employs a Bal Seal Canted Coil Spring® energizer to promote more uniform wear and longer service life
- Metallic backup element features a single-sided concave design which supports the seal, and prevents extrusion along the inner and outer diameter of the groove



Bal Seal Engineering

www.balseal.com

High Flow Dry Break Quick Disconnect

QDI3L/QDE3L

BOOTH 4434

- M8 x125 connections and a compact 9/16" x 1.8" design makes this product well suited to applications requiring high flow rates and limited space
- 0.180" diameter orifice has a low flow resistance and a no spill feature that stops leakage and air inclusion during connection and disconnection
- Sleeve/ball lock design allows one handed connection and disconnection using a push-pull motion



Beswick Engineering

www.beswick.com

Array Microplates & SLE Plates

Cleanert

BOOTH 3309

- Cleanert array microplates (part number: WC00501-MW) enable sensitive, robust, and reproducible analyses and help make sample preparation easier and less laborious for lab personnel in DMPK and bioanalytical research
- Cleanert SLE plates (part number: HC4002SQ-9W) help users avoid emulsification, make sample prep simpler and faster, enable high throughput, and are compatible with automatic SPE



Bonna-Agela

www.bonnaagela.com

Pistons and Ball & Seat Valves

BOOTH 1515

- Made out of advanced ceramics and sapphire
- Piston / cylinders and other custom-made parts also offered for high-pressure pumps, pipettes, metering pumps and other precision dispensers
- Made to user's specifications, although several sizes are also available as "standard"
- HIP treatment is available on request for zirconia pistons
- Parts are made 100% in-house to guarantee the quality of materials



Ceramaret

www.ceramaret.ch

Cryogenic Hoses

BOOTH 3643

- For the transfer of any cryogenic liquid or gas
- Can be made non-insulated or vacuum jacketed for the most efficient transfer possible
- Many different sizes offered with a variety of fitting options to suit many connection types and a variety of customization options are also available to fit many applications



Cryofab

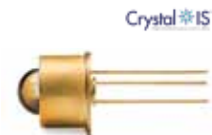
www.cryofab.com

UVC LEDs

Optan

BOOTH 1213

- Come in a TO-39 package
- Provide excellent light output and spectral quality
- Offered in peak wavelengths from 250 – 280 nm and power bins from 0.5-4 mW
- Suited for spectroscopic applications in analytical and life sciences instrumentation
- High light output increases the sensitivity of detection while the high spectral quality provides measurement linearity over a wider range



Crystal IS

www.cisuv.com

Elemental Analyzer Supplies & Consumables

Elemental Microanalysis

BOOTH 1316

- Designed for the Elementar range of elemental analyzers
- Can reduce operating costs by up to 30%, often with improved performance
- Furnace tubes, chemical fillings, absorbents, wear and tear parts are all available for: rapid N, vario EL, vario MACRO, vario MAX classic and cube versions as well as the vario MICRO, vario ISOTOPE, vario PYRO cubes, and other brands



EA Consumables

www.eaconsumables.com

Pipette Tips & Centrifuge Tubes

BOOTH 4650

- Pipette tips with low adhesion are injection molded scientifically to minimize liquid retention and ensure optimal sample yield
- Centrifuge tubes are autoclavable and ideal for sensitive clinical assays, quantitative analysis, quality control and any other applications where optimal yield and minimum sample loss is required
- Other high-quality disposable plasticware also available



ExtraGene

www.extrageneweb.com

Filtration Products

BOOTH 1021

- Available products include: disc and capsule filtration for gases and fluids, defoaming and coalescing filtration, customized specialty filters, ultrafiltration separations and high purity filtration bacterial/Viral filters, compressor filtration and membrane drying, disposable diagnostic filters, hollow fiber drying for gas analyzers or processes, and humidifying membranes
- Each product offering begins with the ASC™ "Application Specific Customization" to ensure it meets user requirements



Pentair

www.pentair.com

BDD Electrodes and Products

BOOTH 1227

- Products include BDDonSi electrodes up to 8" in diameter, BDD microelectrodes and microelectrode arrays (MEAs), optical and IR transparent electrodes (OTE & IRTE) and framed or freestanding BDD foils and windows
- BDD can be applied on a variety of substrates such as silicon, quartz, metals and diamond itself
- Polycrystalline and single crystalline diamond products also offered



Fraunhofer

www.ccl-coatings.fraunhofer.org

Plastic Containers

UltraLab

BOOTH 3924

- Meets the specific container and preservation requirements of UCMR3
- Leak-proof closure system withstands vibration and eliminates closure back-off during shipping
- Closures are molded polypropylene for excellent chemical resistance
- Constructed from top-quality laboratory-grade resins
- These translucent HDPE and polypropylene containers undergo rigorous pre-manufacturing design inspections and testing
- Available assembled and QA checked or pre-cleaned to EPA standards



QEC

www.qecusa.com

IVD Products

Minitubes

BOOTH 3819

- Company draws its own tubing and is therefore able to provide users with smooth ID, and low variations in ID and OD dimensions in almost whatever metal material they require
- Allows improved precision in sampling for seamless capillary tubing, needles and other tubing used in LC/GC and UHPLC
- Minitubes control the metallurgic and mechanical properties of the various alloys they draw



Minitubes

www.minitubes-usa.com

Cryogenic Vials, Racks and Accessories

CryoFreeze®

BOOTH 4351

- Provide users with safe and handy solutions for the cryogenic preparation, transportation and storage of biological material
- CF Vials are comprised of FDA-approved, medical grade polypropylene tubes and HDPE caps
- SSI offers internally threaded caps that maximize vial storage within racks, and externally threaded caps which are ideal for aseptic technique, as they reduce the risk of cross-contamination



SSI

www.ssibio.com

Manual-inflating Sample Bags

VeriAir Flex

BOOTH 1818

- Offer a patented design that allows a whole air sample to be collected without expensive sampling pumps or equipment
- Simple, reusable, and made of durable multi-layer foil, VeriAir Flex bags are available in 1 and 5 liter sizes
- Field tests can be performed with a VeriAir Flex sample bag and still allow sufficient sample for off-site analysis



Nextteq

www.nextteq.com

Pipette Tips

Vertex™

BOOTH 4351

- Internal studies have indicated these tips provide less fluid retention and less sample loss
- NoStick® resin makes the inner surface of the tips considerably more hydrophobic than standard industry tips, enabling viscous fluids in particular to be dispensed more completely
- Finely tapered tip construction and thinner walls eliminate the need for users to touch off their pipettor



SSI

www.ssibio.com



Experts in air filtration for the protection
of laboratory personnel since 1968

Safer labs and energy savings don't mix

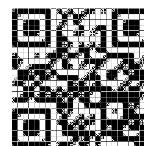


Not any more

Come discover a new revolutionary technology that will
change the air you breathe, visit booth #3735 at Pittcon

www.erlab.com/halo

Once again, Erlab challenges the status quo. Scan to see how



Keep your lab safe with total filtration of toxic gases, fumes, and odors



CaptairFlex ductless
fume hoods provide:

- ▶ Guaranteed safety
- ▶ No ductwork
- ▶ Easy installation
- ▶ Very low energy consumption
- ▶ Complete mobility
- ▶ Lifetime warranty

Complies with the AFNOR NF X 15-211
filtration safety standard



CaptairStore
Filtered storage
cabinets



CaptairFlex
Weighing stations



CaptairFlow
Laminar Flow
Hoods



Chemtrap
Filtration systems
for fireproof cabinets



Replacement filters
Genuine Erlab filters
for any hood brand

BIOLOGICAL SAFETY CABINETS & DUCTLESS FUME HOODS

CLEANING AND CHEMICALS ARE COMMON ERRORS WHEN DOING UPKEEP

by Rachel Muenz

For lab equipment as essential to protecting employees' safety as biological safety cabinets (BSCs) and ductless fume hoods, making sure you're looking after such equipment properly is crucial.

"Preventive maintenance should not be taken lightly," says John Peters, marketing director at NuAire (Plymouth, MN), about maintaining BSCs. "Standard Operating Procedures (SOPs) and training should be in place before any work begins inside the BSC."

He adds that all maintenance, including certification and repair, must be done by a qualified technician familiar with the proper maintenance procedures required for the lab's BSC. NuAire recommends that BSCs be certified at least once a year in accordance to the NSF/ANSI 49 Standard for Biosafety Cabinetry annex F.1.

For ductless fume hoods, the most important part of maintenance is the filter.

"It is important that [users] recognize the filters are not just a simple replacement part," says Erlab's North American safety specialist Barbara Borzecki. "The filter is



▲ The filter is the most important part of maintaining a ductless fume hood.

HELPFUL RESOURCES TO CONSULT:

- Onsite biosafety officer or environmental health officer
- State or national organizations such as National Institutes of Health, Centers for Disease Control, Health Canada, etc.
- Local service company
- Certifiers
- Vendor's technicians/safety specialists
- Training programs offered by the vendor or other experts

without a doubt the most crucial part of your ... ductless fume hood and the guarantor of your health and safety."

Erlab (Rowley, MA) hoods in particular, can have up to a 25-year lifespan if they are maintained correctly, she adds. Other ways to keep fume hoods in top shape include keeping track of the hood's intended use and chemicals utilized, and to notify the manufacturer of any changes in use. "Erlab's PhD chemists evaluate the chemical used, the filter's retention capacity for each one, and how long the filter will last," Borzecki says. "Replacing the filters as suggested by our lab is the key to safety."

She adds that for Erlab hoods, which are manufactured in accordance with the AFNOR NFX 15-211 filtration safety standard, there is an alarm that notifies users when 60 hours of use has passed and they should look at their chemical evaluation to learn how long their filter will last. "If you are close to the replacement date, you should test the filter for saturation," Borzecki says. "Some

Small. Mobile. Beautiful. And good with water too.



The NEW WaterPro® BT™ Water Purification System: All-in-one versatility for your bench-top.

The WaterPro BT delivers ultrapure water manually, or volumetrically, directly from tap water. This system is ideal for laboratories needing between 1 and 10L of RO and/or ultrapure (Type I) water per day.

- Small footprint so it can fit in tight spaces. Only 16.5" deep x 11.4" wide x 21.3" high.
- Lightweight. Take it from lab to lab when sharing is a must.
- Simple elegance. It's easy to install. Just plug and play.

Learn more at www.labconco.com
or call **800.821.5525**



*Protecting your
laboratory environment*

LABCONCO®

Labconco Corporation
Kansas City, MO | 800.821.5525 | www.labconco.com



SERVICE PROGRAM OPTIONS:

- Can be either direct from the manufacturer or a third-party service company
- For Erlab ductless hoods in particular, enrollment in the Erlab Safety Program, (E.S.P.) is automatic when users purchase their hood, giving them eligibility for the company's extended warranty program.
- NuAire utilizes a network of third party and onsite facilities service personnel (i.e. university, pharmaceutical, etc.)

customers test for saturation once a month, others once a year. It depends on the usage. Others just replace the filter as recommended by Erlab.”

For BSCs, many cabinets also have alarm features that will trigger in the event of high or low airflow once the high or low set point has been reached, Peters says. “When a BSC cannot reach proper airflow, it usually means the HEPA filters need replacing.”

Under normal usage and barring a puncture, a BSC's HEPA filters do not need replacement until the efflux velocity cannot be maintained or the access inflow velocity cannot be maintained at 100 LFPM (.51 m/s) (min.), Peters says.

Other signs it's time to do BSC maintenance are also fairly easy to spot, such as fluorescent lamp bulbs burning out or the blower motor failing to run.

“This [motor failure] can be recognized by viewing your airflow monitoring device and, more importantly, there will be no noise and no air being pulled into the BSC,” he says.

Users can easily replace light bulbs themselves, but Peters recommends they contact their service professional to replace the motor.

As far as common maintenance mistakes go, for BSCs, Peters says cleaning is a common one.

“Cleaning the cabinet is an important function in terms of both containment and sterility,” he says. “Disinfectants that use chlorides and halogens will cause damage to the stainless steel surface (if present) if left on for long periods of time.”



- ▲ All BSC maintenance, including certification and repair, must be done by a qualified technician who is familiar with the unit.

He recommends users set up and follow SOPs to avoid cleaning errors and that, if disinfectants use chlorides or halogens, users should “re-wipe all surfaces with 70 percent alcohol or similar non-corrosive anti-microbial agent to prevent damage to stainless steel surfaces.”

For ductless fume hoods, the most common maintenance errors are chemical-related.

“Many users assume that their filter is not saturated because they do not smell an odor,” Borzecki explains. “But many chemicals do not have an easily detectable odor.”

She adds many users don't know the full list of chemicals used in their hoods.

“It is important to know the chemicals used and have a chemical analysis completed by the manufacturer and posted on the unit,” Borzecki says. “Any chemical not on the list should not be used in the hood without prior approval by the manufacturer. The chemical analysis determines the type of filter that will be used depending on the chemicals.”

Users can leave the unit running continuously to clean the air in the lab but this will shorten the life of the filter. And, as with any ductless fume hood, storage of chemicals is not recommended in the hood for safety reasons.

NOR-LAKE[®] SCIENTIFIC

-86°C SELECT[™] ULTRA-LOW UPRIGHT FREEZERS

Designed to Meet the Demanding Requirements for Scientific and Laboratory Research.



Select[™] Control System

- Upright models available in 27.5ft , 23.3ft and 18.9ft internal storage capacity
- Operating temperature range -50°C to -86°C
- Next generation 1HP low noise high efficiency compressors
- Exclusive cascade refrigeration and cabinet design
- Programmable logic microprocessor controller with LCD digital display
- High/low audible and visual temperature alarms, remote alarm contacts
- Door ajar alarm, on board diagnostics, surge protector, password protection, real time clock and battery backup of controller display
- Available options-CO2 and LN2 Backup systems, chart recorder, inventory storage systems
- UL/CUL listed



Nor-Lake Scientific
727 Second Street
Hudson, WI 54016
800-477-5253
715-386-2323
715-386-4290 FAX

www.norlakescientific.com



Committed to our environment



Nor-Lake, Inc.
Registered to ISO 9001:2008
File No. 10001816



PURCHASING SECOND-HAND PHARMACEUTICAL AND BIOTECH EQUIPMENT

Problem: Whether due to mergers and acquisitions, lab downsizing, upgrading or outsourcing, many pharmaceutical and biotech companies—large and small—are opting to sell R&D or manufacturing equipment no longer needed in their own labs. This presents a great opportunity for other institutions to obtain late-model, quality equipment at a reduced cost, direct from the working lab. While purchasing second-hand equipment can be a cost effective and socially acceptable way to go, there are potential pitfalls buyers should look out for including: unreliable sellers, equipment contamination, hidden fees, and unverified purchasing channels.

Solution: By implementing a few best practices, interested buyers of used biopharma equipment can navigate the secondary market successfully and ensure a streamlined purchasing process.

Buying from a credible source and knowing the condition of the assets are two extremely important rules to go by. Because the equipment is typically sold ‘as is’ with no refunds, make sure what you are buying has come straight from the working lab environment of a reputable institution. If possible, you should plan to inspect the equipment in person. In some cases the seller will schedule a preview period for potential buyers to come out and look at the item(s). If an in-person preview is not offered or not possible, plan to validate the equipment based on the written description, images and video provided via the sales platform. Keep in mind: all credible secondary market sellers will provide this type of marketing collateral as well as transparency when it comes to the sales terms and conditions.

Another important thing to consider is whether the device meets the specs you require. In most cases you can still get by with an older generation model but make sure the technology of the device is in line with what you need. For example, a generation 3000 mass spectrometer can work just as well as a generation 4000 model, depending on your specific needs.

It's important to be familiar with the different types of platforms in which to purchase used equipment via the secondary market. The most common channels nowadays are competitive online auctions and private treaty sales. The type of equipment you are purchasing and the type of sales channel you are purchasing it through have a direct effect on the anticipated savings:

- If purchasing via a private treaty sale, expect a 40-60 percent savings off original acquisition value
- If purchasing via an online auction, expect a 30-80 percent saving depending on how old the item is and the original acquisition value

Finally be sure to factor in removal and shipping costs for everything you plan to purchase. A good rule of thumb: the larger the product, the more expensive it will be to transport.



▲ Expect to save 30-50 percent on general lab equipment that is less than three years old; expect up to an 80 percent savings on lab equipment that is more than five years old.

Additionally, keep in mind that sometimes rooms are built around devices so you may have to knock through an exit wall to remove the equipment (ex: a nuclear magnetic resonance (NMR) spectrometer or a big chemical dryer mixer); and don't forget the installation costs at your facility.

Between lower acquisition costs, reduced installation time, ease of purchase and the breadth of quality product, buying used equipment with its bottom line benefits has never been easier to justify and will continue to be a staple in the pharmaceutical and biotech space.

For more information, visit <http://www.liquidityservicesinc.com/>, or Liquidity Services' online marketplace www.go-dove.com/events. To learn more about how Liquidity Services can help manage your surplus assets, please contact sell@liquidityservicesinc.com.



RAMAN SPECTROSCOPY FOR ONCOLOGY RESEARCH (AND DRUG DELIVERY)

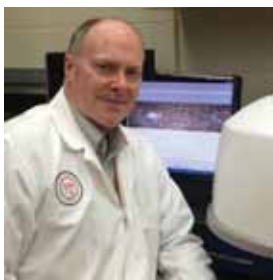
**Thursday February 27, 2014
12:00 - 1:00 PM EST**

Raman microscopy is routinely used for characterization and identification of material, but the need for this molecular imaging and analysis technique has become increasingly important in biology. Advances in imaging techniques such as StreamLine™ Plus, combined with chemometric data analysis capabilities, make it possible to gain an understanding of chemical changes within biological materials. Raman's ability to probe the chemical and molecular structure of biological materials is obtained directly without the need for dyes or markers. Renishaw's inVia can be utilized to generate chemical images for cells, tissues, and bone with high spatial resolution. It has been employed for cancer diagnosis, stem cell differentiation, protein structure analysis, diagnostics, and bacterial identification.

As an attendee you will learn about:

- A Raman technique used to identify cancer cells from healthy cells
- A Raman technique used to analyze lipid based drug discovery
- Set up of an experiment using label free detection (no fluorescent dyes, colorimetric stains or labeled antibodies needed)

PRESENTER



Frederick Coffman, PhD

Dr. Frederick Coffman is the Associate Director of the Center for Biophysical Pathology at Rutgers New Jersey Medical School. He has a longstanding interest in cancer research, particularly in defining differences between cancer cells and their normal counterparts for applications in diagnosis, prognosis and therapy. As the biophysical properties of cells are both reflective of gene expression patterns and predictive of abilities to migrate and to interact with cells and tissues, a major research focus involves measuring biophysical properties such as dynamic mass rearrangement, impedance, and laser Raman spectra of various tumor and normal cells to define tissue-specific and stage-specific signatures of highly malignant cancer cells. Dr. Coffman has also studied the chitinase family protein YKL-40 which appears to function as a survival factor in cancer cells, the regulation of DNA replication initiation in leukemia cells, and the synergistic enhancement of tumor cell killing by TNF by specific classes of DNA topoisomerase II inhibitors. He has lectured on diverse subjects from DNA structure to genetics to cancer in the graduate, medical, dental, and pre-professional schools, and is currently course director of the graduate core class in biomedical sciences.

REGISTER NOW

www.labmanager.com/Ramanspotlight

Webinar Sponsored by

RENISHAW 
apply innovation™

AN AUTOMATED SAMPLE PREP WORKSTATION

Problem: With unrelenting need for accurate sample analysis at lower and lower detection limits, there is pressure on modern laboratories for sample prep instruments that can provide automated, accurate reagent additions to previously prepared liquid samples or for preparing several aliquots of these samples with multiple dilution factors. The catch-all phrase that identifies these devices is “liquid handling systems” and they perform absolutely essential tasks that have a direct and large effect on the ultimate measurement accuracy of both inorganic and organic sample analysis.

Among the instrument types currently popular in laboratories are pipettes with or without syringe pump locomotion, and autosamplers with syringe pump attachments. Both of these, although finessed and refined over time, suffer from many key disadvantages. Pipette systems, for one, are essentially manual devices that need a human operator to accomplish the task. These are available in a variety of sophistications and can independently pick up a specified volume of the sample from a sample tube and the diluent from a separate source and deliver the two into a fresh tube as a diluted sample, albeit all with help from human hands.

Autosampler systems with accessory syringe pump attachments also have their own unique issues. The units in this category surveyed were made of painted sheet metal, which, at the ppt level detection limits sought by lab analysts, do pose ambient metal contamination. Further, while these systems are able to accurately deliver specific volumes of liquid directly into the sample tubes, they are not able to pick up measured sample aliquots from originating sample tubes and accurately dilute them before depositing into new tubes. Lastly, the software packages that drive these systems are cumbersome and rigid, being able to perform very limited and regimented operations.

Solution: The first area of improvement for a well-designed, automated, computer driven liquid handling system is its construction. It could be constructed from inert materials, at least in the environs of the work area where sample tubes are located. To further improve on the ambient conditions, the system could be placed in an enclosure with properly engineered air flow path through HEPA filters, providing clean room conditions where risk of sample contamination from surroundings is minimized.

Secondly, careful attention must be paid to the liquid locomotion mechanism that permits reagent dispensing and dilutions. It must be designed so that sample aliquots can be picked up, diluting solutions deposited, and, most importantly, the aptly diluted aliquots transferred to new sample tubes. All this must happen under the watchful ability of a well-designed and integrated software package with which the user can easily configure the system building-blocks, and subsequently run tasks using batch-oriented operation files.

Questron's QPrep Automated Workstation is one example of a versatile liquid handling system that easily conforms to reagent dispensing and dilution oriented operations. As the needs require, the entire chassis is made from plastic welded, inert material sheets that are machined to required shapes. Aside for some unavoidable metal parts, such as motors, electronics boards and wiring interconnections, the entire hardware is inert. Furthermore, great care is taken to cover all exposed metal parts with plastic cladding, and no metallic components are present in the system work area. For applications requiring ultimate clean room air conditions, the entire unit can be placed in a Questron-supplied HEPA filtered enclosure.

QPrep reagent and sample transfers are made under the precise delivery of a custom-designed syringe pump assembly, being able to obtain day-to-day working accuracy of 0.03 ml. The carefully integrated design of system software ensures easily-created batch files that can perform reagent dispensing into sample tubes or aspirating specified volume of sample aliquots, diluting them, and delivering the contents into fresh tubes. A two-stage wash station that is designed to provide fast probe cleanings is also part of the package.

Lastly, the system is designed from the ground up to work with various standard or custom sample tube racks. One can even combine multiple rack types by virtue of custom-made rack positioning plates that accommodate the exact rack requirements of the user.

For more information, please visit www.QTECHCORP.com or call 905-363-1223, x 112



▲ Questron's QPrep Automated Workstation.



Register to Win a
Bose SoundLink®
Bluetooth® Mobile
Speaker II



Together, we can make your lab more efficient.



H2PEM
Hydrogen
Generator



MX45S
Miniature
Positioner



Parker
Smart
Syringe

Partner with Parker for all of your laboratory solutions including cost saving lab gas generators for analytical laboratory instruments and miniature electronic controls, valves, linear actuators and pumps for portable instrumentation. Parker's product solutions offer the broadest range of technology, and the highest level of reliability, consistency, safety and purity.



PITTCON
CONFERENCE & EXPO 2014



Win a Bose
SoundLink® Bluetooth®
Mobile Speaker II
BOOTH #1424



ENGINEERING YOUR SUCCESS.

www.parker.com/pittcon-2014

HotBlock®— Multiple functions add versatility and improve economy.



In today's economy laboratories are asking their employees to do more with less, requiring more of both their employees and their equipment. One way analysts are stepping up is by looking for instrumentation that is adaptable for multiple purposes.

The original HotBlock is the workhorse of the Metals Lab.

Laboratories have been using the Environmental Express® HotBlock for metals digestions since 1997. The HotBlock continues to provide a better alternative to classical hot plate digestions due to its superior acid-resistant construction and even heat distribution. Over the years, the HotBlock product line has expanded to include several block sizes and a complete line of disposable consumables.

Acid-resistant construction and low-metals disposable consumables reduce the potential for sample contamination and provide consistent, reliable results.

The HotBlock is the leading block digester for metals digestions worldwide and now can be used for other functions in the laboratory as well.



The SimpleDist® Distillation System utilizes a vacuum manifold over a 50mL HotBlock.

The easy-to-use SimpleDist complies with U.S. EPA and *Standard Methods* methodology. The SimpleDist is the optimal system for performing distillations in your Wet Chemistry lab. The unique design eliminates most of the fragile glassware used in other distillation systems, improving safety and eliminating labor associated with maintenance and cleanup. The SimpleDist System utilizes disposable polystyrene collection traps and does not require the use of a chiller or water lines.

Disposable collection traps contain a hydrophobic porous frit and a built in vent tube that makes pouring the final solution easy and safe.



The Soil-Cell™ System for the Extraction of Semi-volatile compounds utilizes a 100mL HotBlock.

Environmental Express has also developed the Soil-Cell™ which is used with the 100mL HotBlock. The Soil-Cell is a stainless steel cell designed for the extraction of semi-volatile compounds from solid matrices. The Soil-Cell System allows for the extraction of up to 25 or 35 samples at once and follows the SW846 Method 3546 procedure. The sample and 30mL of solvent are placed into each individual Soil-Cell and then capped. After 30 minutes at 130°C the extraction is complete. Solvent is then decanted and concentrated for analysis.

Versatility is key.

While dedicating one workstation to each task is ideal, the option to perform multiple analyses on the same day from the same piece of equipment can be very helpful to laboratories tasked with optimizing their equipment budgets. Instrumentation duality is also essential should a dedicated system suffer downtime.

Our goal at Environmental Express is to provide versatile equipment with increased functionality in an effort to streamline analytical processes. We continue to look for unique applications for our products in multiple areas of the lab.



www.envexp.com
800.343.5319 / 843.881.6560

No Filters Needed - CLARIOstar® Microplate Reader

Easily Measures Live, Cellular Fluorescent Protein Assays

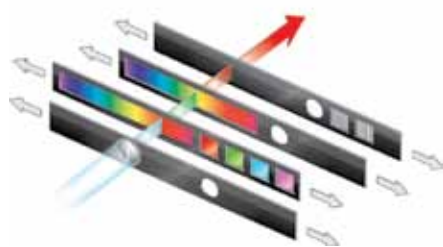
Filters vs. Monochromators –

There were always two options to filter light into monochromatic wavelengths, when using a microplate reader. Filters offered higher performance because of greater light transmission and wider bandwidths; monochromators offered greater flexibility, no new filters had to be bought for each new assay.

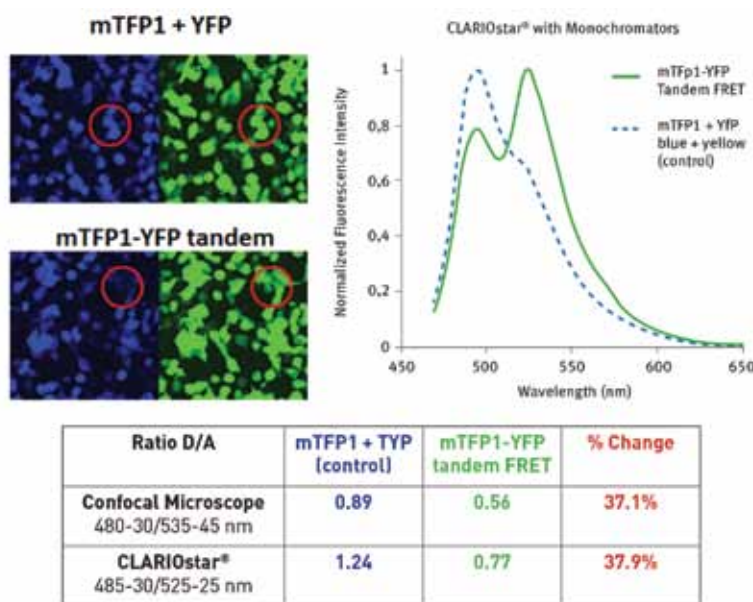
However, researchers say that monochromators cannot perform many assays (1). Fluorescent protein assays like EGFP, mTomato, or CFP-YFP, do not perform well on monochromator-based microplate readers. The same holds true for FRET and BRET assays. A main reason is that wider bandwidths are needed for these assays and current monochromators have fixed or limited bandwidths only up to 30 nm.

New LVF Monochromators™ Have Filter-like Performance

Realizing the need for a more sensitive, broader bandwidth monochromator in a microplate reader, BMG LABTECH's German engineers created the CLARIOstar® multimode microplate reader with new innovative LVF Monochromators™ (Fig 1).



▲Fig. 1: With adjustable bandwidths up to 100 nm, new LVF Monochromators found in the CLARIOstar microplate reader have filter-like performance in fluorescent protein assays.



▲Fig. 2: mTFP1-YFP tandem FRET assay in live HEK293 cells as measured on a confocal microscope (2) and on the CLARIOstar microplate reader. With the CLARIOstar's new LVF Monochromators, no new filters are needed

Consisting of linear variable filters separated by a linear variable dichroic mirror, LVF Monochromators™ filter light into definable wavelengths and bandwidths up to 100 nm wide.

Microscope to Microplate Reader – No Filters Needed

Researchers routinely try to adapt their fluorescent protein assay from a confocal microscope to a microplate format. Now with LVF Monochromators™ no filters are needed. Figure 2 shows an mTFP1-YFP fluorescent protein FRET response in HEK293 cells as measured on a confocal microscope and on the CLARIOstar®. This FRET assay requires the measurement of two emission signals with bandwidths of 30 nm and 45 nm for the microscope (2), which were the starting points for the

CLARIOstar's LVF Monochromators™. With further optimization, the same percent change is seen, making it an almost seamless transition to a higher throughput method without buying new filters.

References

- 1) Comley, J. Drug Discovery World. Fall 2007.
- 2) Padilla-Parra S, et al. Biophys J. 2009 Oct; 97(8):2368-76.

BMG LABTECH

The Microplate Reader Company

BMG LABTECH GmbH

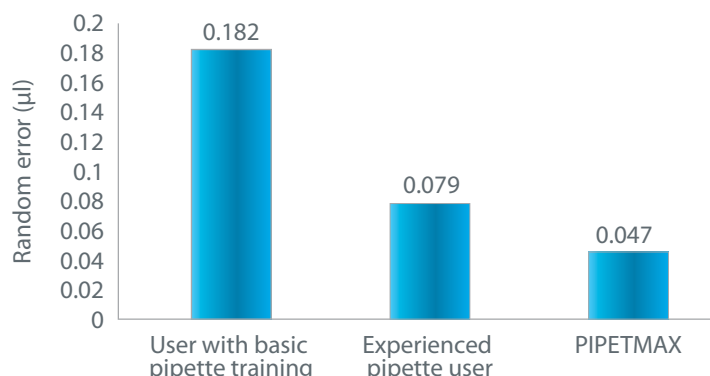
Allmendgruen 8, 77799 Ortenberg, Germany

1-877-BMG-LABS

www.bmg-labtech.com

IS PIPETTING TECHNIQUE GETTING IN THE WAY OF YOUR REPRODUCIBLE RESULTS?

Random Error for Novice vs. Experienced vs. PIPETMAX user



10 dispenses from three different technicians were measured gravimetrically.

When preparing biological samples, you need a lab assistant you can trust, one that is focused on consistency and reproducible results across 10's and 100's of samples. Advancing your science and increasing the pace of your experiments is your job! Being tied to the bench for routine pipetting tasks doesn't have to be!

Replace your lab bench time with:

- Time for scientific analysis and publications
- Improved experimental accuracy and improved consistency
- Fewer technical replicates

Numerous technical replicates are often included in the experimental design in order to compensate for user inconsistencies; however, that wastes samples, time and reagents. PIPETMAX prepares every assay with proven consistency, delivering high precision and accuracy in routine pipetting tasks.

The versatility of PIPETMAX allows you to run a multitude of different applications, providing you with applications versatility, saving you bench space and unnecessary spending. Many types of labware/devices and various samples are all supported by this lab assistant, and the hardware and software are built to suit your specific methods.

qPCR assays

- Maximize qPCR sample prep accuracy and reproducibility
- Eliminate inherent variability
- Eliminate sources of contamination.

Download Potato Virus Y gene expression study: www.gilson.com/pipetmaxqPCR

NGS library prep

Automate and standardize your NGS library prep process for:

- Easy preparation of multiple samples simultaneously
- Standardization and greater consistency of libraries
- Improved quantity and quality of libraries

Download the NGS library prep study: www.gilson.com/pipetmaxNGS

Reproducibility is key when working with biological samples. PIPETMAX – focused on consistency – can be your ultimate lab assistant so you are free to focus on what is really important to your research – scientific analysis and publications.



Gilson, Inc.
www.gilson.com/pipetmax
 3000 Parmenter Street, Middleton, WI 53562
sales@gilson.com | 800-445-7661

Make Grainger Your Lab Partner



From beakers, incubators, hot plates and petroleum testers to analytical reagents, solvents, buffers and bases, you'll find a complete inventory of products to help keep your lab running its best. Grainger is dedicated to providing you with an impressive mix of products and services for all your lab needs. Take a look:

- Over 50,000 lab-specific, brand-name products
- Fast delivery (99% of in-stock items ship the same day*)
- Convenient 24/7 ordering by phone at 1-800-GRAINGER or online at grainger.com/lab
- Coast-to-coast distribution centers
- Hundreds of branches across the United States

Need help selecting products to meet complex lab safety regulations? No problem! Rely on our technical support staff that have the hands-on field experience and training to provide you with quick answers to your tough questions. Looking for articles on compliance, safety standards or other issues you face in your lab every day? Grainger has those, too!

You'll also find resources to help you prepare for the Globally Harmonized System (GHS) HazCom rule, which is standardizing chemical labels and SDS formats. This includes interactive online training courses, DVDs, information decals and wall charts, and a free webinar to help you stay in compliance.

Not only does Grainger have the products, resources and technical support you need, we can also help you manage your lab products inventory. Grainger KeepStock® Inventory Management solutions** help take costs out of your business by providing you with the right products, in the right place, when you need them. Grainger understands that every situation is unique, so we offer a broad range of solutions that can help meet your specific requirements, including:

- Label – Simple labeling solution on Grainger.com®
- Scan – Manage your inventory using barcodes
- Mobile – Ordering solution for inventory on the go
- Track – Track inventory in and out of your stockroom
- Secure – Controlled product dispensing
- Onsite – Product scan and replenishment
- Store – Customized Grainger branch at your location

Whether you're looking for products, technical support, training or help managing your inventory, Grainger is your one-stop shop for your lab needs. Don't wait, visit grainger.com/lab and make Grainger your lab partner today!



*In-stock orders placed directly with the branch or on Grainger.com® by 5 p.m. local time Monday through Friday will ship the same day within the continental United States.

**Grainger KeepStock solutions are subject to customer eligibility and agreements.

GRAINGER
 /// FOR THE ONES WHO GET IT DONE

W.W. Grainger, Inc.
 100 Grainger Pkwy.
 Lake Forest, IL, 60045 United States
 (847) 535-1000
Grainger.com®

LABCONCO'S RAPIDVAP® VERTEX DRY EVAPORATOR USES A DRY HEAT BLOCK TO QUICKLY EVAPORATE SAMPLES UNDER NITROGEN STREAM.

Combinatorial chemistry can be traced back to the 1960's, but didn't gain popularity until 1990 when pharmaceutical companies started compounding large amounts of potential new drugs into libraries. Now, combinatorial chemistry has moved into other disciplines such as materials science, biotechnology and even semiconductors.

Because combinatorial chemistry requires multiple samples to be run in parallel, the RapidVap Vertex Evaporator, accommodating up to 50 samples, is the perfect choice for this type of research and development. During operation, each product is synthesized in separate reaction vessels. The advantage of parallel synthesis is that the composition of each compound is known, but generally, the split and mix procedure can generate many more compounds in the same amount of time. The samples are evaporated in the Vertex simultaneously which speeds throughput and keeps all samples under the same conditions. The nitrogen supply is controlled in rows of 10 so nitrogen can be conserved in smaller sample runs.

The RapidVap Vertex Evaporator uses a dry heat block to quickly evaporate samples under a gentle stream of nitrogen. Unlike water baths, a dry block does not evaporate during the run which can result in condensation from the bath—condensation which could drip into the samples causing contamination. A dry block requires less maintenance and requires no distilled water or additives.

The RapidVap Vertex accommodates tube sizes ranging from microcentrifuges up to 28mm in diameter. A convenient LCD touch screen allows

easy programming of time and temperature and up to ten different programs may be stored in its microprocessor for protocol consistency. A microprocessor-controlled heater supplies heat to the block and is programmable from 30° C to 100° C in 1 degree increments.

Nitrogen blow down reduces the partial pressure directly over the liquid to speed evaporation and help remove the solvent as it evaporates. Heat helps speed the process. The samples are angled thus increasing the surface area for faster evaporation and optimized recovery. The temperature sensor probe may be positioned on the block or in a sample to monitor temperature.

There are seven interchangeable aluminum blocks to choose from and are sold separately—five hold samples as small as two milliliters; two additional blocks hold 28 mm tubes with samples sizes of 40 and 60 milliliters.



XPert® NANO™ ENCLOSURES PROTECT USERS DURING NANOPARTICLE MANIPULATION AND DRY POWDER CHEMICAL HANDLING.

XPert Nano Enclosures provide user protection by keeping hazardous powders and particulates contained during procedures such as nanoparticle manipulation and dry powder chemical handling. The patented containment design filters the air through a 99.999% bag-in/bag-out ULPA filter before returning the clean air to the laboratory. The all stainless steel interior (sides, work surface, removable baffle and removable airfoil) is designed for easy wipe down and cleaning procedures. An optional built-in ionizer neutralizes static charge on interior surfaces by emitting ions into the airstream, which helps reduce weighing errors and attraction of particles to the enclosure surfaces. The XPert Nano is the first and only enclosure validated for nanomaterial containment. Learn more at www.labconco.com.



Jenny Sprung, Product Manager
816-822-37236, 88114 Prospect Avenue
Kansas City, MO 64132

Toll free: 800-732-0031, www.labconco.com

875 KF GAS ANALYZER: FULLY AUTOMATED WATER ANALYSIS IN PERMANENT AND LIQUEFIED GASES

With its new 875 Karl Fischer Gas Analyzer, Metrohm combines decades of experience in moisture analysis and sample handling. The KF Gas Analyzer is designed to handle nearly any gas sample – compressed, liquefied or native. It is fully equipped to measure the absolute moisture content of LPG, petrochemical intermediates, natural gas or other compressed or liquefied gases.

Metrohm's easy-to-use gas analyzer features a complete and integrated sample introduction and treatment system. The integrated sample heater guarantees uniform temperature and evaporation of a sample regardless of its original state while a precision flow control valve ensures a constant and even flow of the sample. A series of automatically controlled magnetic valves connect the sample to a rugged mass flow controller, which carefully meters the exact amount of gas specified for each analysis. The analyzer's coulometric cell is powered by one of Metrohm's lab favorites - the KF Titrand.

The system's strict separation of gas-carrying system and electronic area ensure safe operation. Gases are prevented from ever coming into contact with sparks, which eliminates the risk of gas explosion.

These key features and the KF Gas Analyzer's robust design make it an ideal candidate for routine analysis in the laboratory. The system is controlled by Metrohm's easy-to-use ti amo™ software and consists of a control unit and an analysis module.

Highlights:

- Complete system with durable components for high flexibility
- Separation of the gas handling system from the electronics and power supply for added safety
- Sample inlet filter to keep out particulate matter
- Venting bypass to release the pressure when swapping gases
- Built-in evaporator for gasses in all states – native, compressed and liquid
- Oil filter with flushing port to remove residual oil
- Precise gas measurement with a mass flow controller (MFC)
- Automated analysis sequence using magnetic valves
- Predefined analytical methods with gas feed and pre- and post-flushing phase
- All components integrated in one system

The 875 KF Gas Analyzer is supplied with predefined software methods, so measurement can begin immediately after installation.

Analysis of a wide range of liquefied or compressed gases, such as:

- propane, propene, LPG, butane, butene, butadiene
- dimethyl ether, ethylene oxide
- chlorinated hydrocarbons: methyl chloride, ethyl chloride, vinyl chloride
- refrigerants: various CFC, HFC, CFC
- New and contaminated refrigerants containing refrigeration oils
- Analysis of permanent gases, e.g. natural gas



Metrohm
USA Inc.
6555 Pelican Creek Circle
Riverview, FL 33578
866-METROHM (638-7646)
www.metrohmusa.com

8 DETECTION MODES IN 1 MICROPLATE READER



▲ SpectraMax® i3 Multi-mode Microplate Reader with MiniMax™ 300 Imaging Cytometer now with StainFree™ Cell Detection Technology



▲ SoftMax® Pro Software showing ScanLater™ Western Blot scan generated on the SpectraMax® i3 System

The SpectraMax® i3 Multi-Mode Detection Platform is a flexible, three-mode plate reader that evolves to fit your future application needs. The system is equipped with absorbance, fluorescence, and luminescence detection modes while the patented, flexible design allows field upgrades including FP, HTRF, and AlphaScreen® as well as the first-in-market SpectraMax® MiniMax 300 Imaging Cytometer and ScanLater™ Western Blot Detection options – all on a single detection platform.

- **Field-upgradeability:** Expand the standard 3-modes, (spectral absorbance, fluorescence, and luminescence detection) with additional application cartridges for FP, HTRF®, AlphaScreen® assays and more.
- **Western blot detection:** Add the ScanLater™ Western Blot System at any time to expand system functionality and support protein identification and quantitation research.

- **Cellular imaging:** Add the SpectraMax® MiniMax™ 300 Imaging Cytometer and simplify complex imaging workflows. Run cell counting and cell confluency measurements using StainFree™ technology without the need for destructive stains or use green or red fluorescent detection to visualize changes in cell morphology.
- **Increased fluorescence performance:** Spectral Fusion™ Illumination delivers a high-powered full-spectrum light source across the entire excitation range.
- **Expanded dynamic range:** Sophisticated engineering delivers optimal sensitivity and maximizes signal range.
- **Streamlined complex data analysis:** SoftMax® Pro Microplate Data Acquisition & Analysis Software includes over 140 built-in protocols, effectively eliminating the need for additional software. Additional tools for regulatory compliance are included in SoftMax Pro GxP Software.

See how the system works>>>

<http://www.moleculardevices.com/Products/Instruments/Microplate-Readers/Multi-Mode-Readers/SpectraMax-i3.html>



Molecular Devices, LLC
1311 Orleans Drive, Sunnyvale, CA 94089-1136
Phone: 1-408-548-6439 | Toll free: 1-800-635-5577
Website: www.moleculardevices.com

NOR-LAKE® SCIENTIFIC -86°C SELECT™ ULTRA-LOW UPRIGHT FREEZERS

Designed to meet the demanding requirements for scientific and laboratory research. Advanced engineered design incorporates the latest in cabinet, refrigeration, temperature control and monitoring features. Provides energy efficient, convenient, safe and reliable performance for optimal storage temperature environments necessary for a wide range of life science, pharmacy, biological, medical, clinical, and industrial applications.

CONSTRUCTION

CFC free polyurethane cabinet and door foam insulation.

High-impact, smooth scratch and corrosion resistant painted exterior and smooth white painted interior, provides attractive appearance and easy to clean surfaces.

Interior and exterior of the freezer cabinet are white painted galvanized steel.

Combination cabinet mounted multi-bulb and door perimeter gaskets provide multiple points of door sealing. Ensures reliable frost resistant performance and enhances energy efficient cold performance for long term sample security and storage.

Interior doors (5) independent hinged steel inner doors are constructed of insulating material with magnetic catch and easy pull handles. Reduces cold loss during door openings and sample retrieval.

Five internal storage compartments with four heavy duty reinforced stainless steel shelves. Shelves are adjustable in 1 inch increments. Compatible with optional stainless steel storage racks, fiberboard boxes and dividers for multiple storage needs.

Multi-feed patent pending cold wall evaporator design provides superior refrigerant flow and maximizes cooling power by ensuring that the evaporator is always 100% in contact with the freezer wall, maximizing cold transfer into the freezer and heat removal from the chamber.

SELECT™ CONTROL SYSTEM

Advanced PLC (programmable logic) microprocessor controller (door mounted eye

level display and interface) includes real time clock, event logging alarm history, advanced alarms, alarm-test, and memory functions.

Password protection (2 levels, setpoints and parameters) security for power, temperature and alarm settings.

Key pad, multifunction, menu driven, LCD display for trouble free access on monitoring of all control features.

Temperature adjustable in 0.1°C increments.

Temperature display to 0.1°C increments.

Control probe located in rear wall bottom left corner for optimal and accurate temperature measurement and control.

Evaporator design enhances refrigerant flow increasing the overall efficiency, temperature uniformity and recovery performance.

Air cooled condenser, high capacity with large surface area. Washable condenser filter maintains optimal efficiency and performance.



SELECT™ REFRIGERATION SYSTEM

Nor-Lake Scientific's Select™ Refrigeration system is powered by an advanced low noise high performance cascade refrigeration system using two next generation 1 HP hermetically-sealed compressors.

Exclusive engineered super capacity (Itri-tube) capillary tube system delivers refrigerant on demand matching with advanced heat exchanger design providing optimal heat removal and superior low temperature performance.



727 Second Street
Hudson, WI 54016
800-477-5253
www.norlakescientific.com

INNOVATIONS DESIGNED FOR YOU



NuAire has teamed up with Hitachi Koki himac to offer High-Speed, Refrigerated, General-purpose Ultra, and Micro Ultracentrifuges to provide our customers with a reliable separation solution.

The Hitachi CS150NX Tabletop Micro Ultracentrifuge, its compact size saves laboratory space. CS 150FNX Floor Standing Model provides users the optimum working height to access samples both are suitable when working with proteins, lipoproteins, cell organelle, DNA, RNA, viruses, carbon nanotubes, and nanoparticles. Enter protocol information via Touch-sensitive LCD with graphic user interface icons. CS150NX has a quiet operation of 45 dBA; takes only 90 seconds to reach 150,000rpm

and maximum RFC 1,050,000xg. The Non-Contact Imbalance Detection System monitors the vibration of the rotor and drive shaft, in the event of abnormal vibration the sensor stops the operation immediately. Install and remove rotors by placing rotor on the drive shaft, the rotor is automatically locked by centrifugal force. User Lockout System, when sharing the centrifuge under joint utilization or in RI facilities limits utilization to registered personnel only.

The CP-WX Series Ultracentrifuges are general-purpose Ultracentrifuges with outstanding performance up to 100,000 rpm in 5 minutes and 803,000 xg RCF assisting in a wide range of separation tasks used in cell biology, biochemistry and nano-material fields. Reliable and efficient the Hitachi CP-WX Series features a Rotor Life Management (RLM) system to automatically maintain rotor logging history maximizing rotor life. Real Time Control (RTC) for direct entry of start/stop times and other parameters. The operating height is 33.5" (85cm) making the large sized rotors easy to load and unload.

Hitachi's CR22N High-Speed Refrigerated Centrifuge offers reliable performance with a maximum RCF of 55,200xg and 6L capacity for bottles, tubes, or microplates. The Automatic Rotor Identification and Rotor Cover Detector make the CR22N the ideal separation tool for multiple research applications. Equipped with an inverter refrigerator system which provides highly efficient temperature control of the rotor while requiring less electricity, with all standard rotors maintained at 4°C. The CR22N has an Economy mode (automatic standby function), if the display is not touched over the set wait time, the system automatically dims the LCD and stops refrigeration reducing electricity by 83%.

Like the CS150 series, CP-WX Series and CR22N also utilize the Non-Contact Imbalance Detection System, Self-Locking Rotor System and User Lockout System.



NuAire, Inc.
2100 Fernbrook Lane, Plymouth, MN 55447 U.S.A.
t: 1-800-328-3352 | ph: 763-553-1270
e: nuaire@nuaire.com | w: www.nuair.com

For 50 years, PolyScience has been the market leader in liquid temperature control equipment. From un-stirred and circulating baths to industrial-sized chillers, PolyScience has the perfect, precise and reliable solution for your needs.



POLYSCIENCE TEMPERATURE CONTROL SOLUTIONS

In laboratory settings, there are many applications that require temperature control: from GC-MS to rotary evaporators, from plasma thawing to electrophoresis. PolyScience provides solutions for them all.

Our award-winning line of circulating baths introduces a multitude of features new to the market, including touch screen displays, the patent-pending Swivel 180™ rotating controller technology and LidDock™ lid docking system. Not only do these circulating baths enhance work flow and ease of use, they bring with them a new design aesthetic and are perfect for freezing or thawing or cooling equipment such as spectrophotometers, rotary evaporators, and Peltier devices.

90 Circulator models including:

- Refrigerated/Heated, Heated-only, and Immersion
- six controller options
- various communication protocols
- reservoir sizes from 6 to 75 liters

General purpose water baths provide heating required for thawing plasma or frozen samples or even warming culture media. With the see-through gable cover, flasks and other tall sample vessels are accommodated, while the lid tilts out of the way, allowing condensate to drain back into the bath.

PolyScience Recirculating Chillers provide circulated cooling for incubation water jackets, electron microscopes, and larger distillation systems. With different sizes and cooling capacities, the PolyScience Benchtop and 6000 Series Chillers fit your lab needs.

PolyScience also manufactures a wide range of specialty products including:

- histology products
- calibration baths
- viscosity baths
- 75 and 190 Liter Refrigerated Baths for accelerated beverage aging studies

So whether you're in a life science lab or a quality control lab, PolyScience can meet your temperature control needs.

For more information, visit: www.polyscience.com/LabManager

 **PolyScience®**
Temperature Control Solutions

www.polyscience.com

PROTON ONSITE

"More laboratories are opting to generate their own gas, on-site," said John Speranza, Vice President of Global Sales at Proton OnSite. "For Gas Chromatographers (GC) who are struggling to source inexpensive helium gas, hydrogen is the superior carrier gas alternative. But stored hydrogen is dangerous and purity is always an issue from a cylinder, so generating hydrogen on-site is the safest, most convenient and purest way to source gas, when it's needed."

Speranza noted that more Liquid Chromatography/Mass Spectrometry (LC/MS) practitioners are also deciding to generate nitrogen gas on-site as opposed to having cylinders delivered. He said: "LC/MS experts need to know that they have enough high purity nitrogen on hand, at all times. Gas-hungry LC/MS systems mean cylinders are constantly being replaced, and in a busy lab that can be a hassle and can put results at jeopardy. By having a pure and cost-effective source of nitrogen gas on hand at the flick of a switch, practitioners can stop worrying about their gas supply and instead focus on getting the best results."

Safer, purer hydrogen generated on-site

The Proton OnSite line of hydrogen generators is the simpler, more cost-effective, and safer approach to supplying hydrogen for all laboratory applications. Offering units that produce from 300 cc/min to 18.8 slpm of gas, these generators use Proton OnSite's patented Proton Exchange Membrane (PEM) electrolysis technology to produce gas at +99.9999 percent purity without the need

for liquid hydrogen tanks, or compressed gas storage. It's the safe, cost-effective hydrogen gas solution for any lab.

Proton OnSite's large PEM electrolyzers are the only generators in the laboratory market with the ability to run as a 'Lab Server'. One S-Series hydrogen generator can supply up to 200 GC units with ultra high-purity hydrogen gas that can be maintained and managed from a single source. Proton OnSite's technology can also ensure that pressure, flow and purity are constant throughout the building, and can be monitored at all times.

Ensuring safety is paramount for a facility that deals with thousands of liters of hydrogen gas each day, considering a single hydrogen cylinder storing 6,300 liters of gas has the explosive potential of 3.5 lbs of TNT. A facility with hundreds of GC systems fed by cylinders of hydrogen has a tremendous explosive potential, so a lab manager that opts for delivered cylinders has to invest in significant safety infrastructure to mitigate those risks. By replacing those cylinders with one or more Proton OnSite hydrogen gas generators, which only produces gas when necessary and have a limited capacity. This way, labs can dramatically reduce both the explosive potential and the amount of time and money spent handling heavy, dangerous cylinders.

On-site nitrogen, at the flick of a switch

Proton OnSite's line of on-site nitrogen gas generators use membrane technology and Pressure Swing Adsorption (PSA) systems to produce pure and cost-effective nitrogen gas.

Proton OnSite's membrane generators offer 34, 60 or 120 liters/minute at up to 99.9 percent purity without an internal compressor, and 34 liters/minute with a compressor. Proton OnSite also offers nitrogen generators that use its own PSA technology to create high-purity nitrogen from compressed air for both LC/MS and GC applications. These generators produce ultra high purity nitrogen at flow rates from 500cc /minute to 9 liters/minute at up to 99.999 for GC applications.

Producing nitrogen gas on-site ensures an optimum flow and supply. The typical mass spectrometer demands between 1.5L and 2.5L per minute of nebulizer gas, which adds up, especially if a laboratory is running a test for eight or even 24 hours. As well as a stable supply, MS demands a stable flow. A mass spectrometer may demand as much as 100 PSIG of feed pressure to ensure flow controllers through the system work properly without that constant pressure, it can take a lot longer to get a stable gas flow. Using cylinders that have to be regularly replaced means a flow may not be maintained and the spectrometer's detector may not pick up ions being passed through the system.

On-site generation for all lab gas needs

In every GC and LC/MS application, for practical, financial and safety reasons, on-site gas generation is a must. By operating a compact, efficient gas generator, lab manager can stop worrying about gas deliveries and gas safety concerns, while practitioners can focus on the job at hand and get better results from a purer, constant carrier gas supply.



Proton OnSite
10 Technology Drive
Wallingford, CT 06492
+01-203-949-8697
www.protononsite.com



BECAUSE KNOWLEDGE IS POWER: SmartCapture – Business Intelligence for Smarter Decisions

Knowing how instruments are utilized throughout your laboratory is important information to help you optimize operations, drive cost savings and improve productivity. However, capturing information on instrument utilization in a lab comprised of an array of different manufacturers, techniques, control software and computer platforms presents a difficult challenge. Until now.

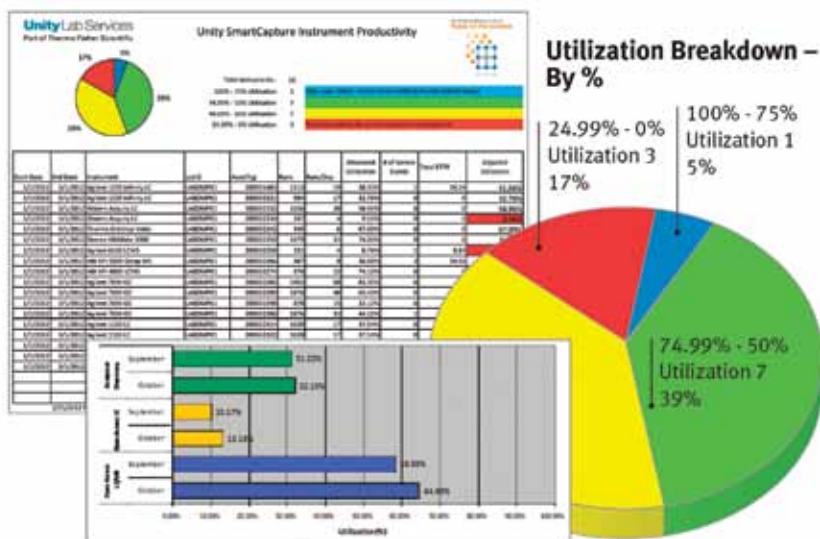
Introducing Unity™ SmartCapture Asset Utilization Monitoring

SmartCapture Asset Utilization Monitoring from Unity Lab Services combines innovative software technology with our extensive service expertise to deliver a comprehensive utilization monitoring solution for your laboratory. SmartCapture provides automated daily capture of detailed utilization information for all of your instruments, regardless of manufacturer, technique and control software. It integrates seamlessly into your existing lab computing environment to protect your current investment in instruments, software and training.

With Unity SmartCapture, you can:

- Proactively adjust delivery of planned services (e.g. PM, OQ) to match actual instrument usage to optimize service levels to reduce downtime and service costs

Data-to-Knowledge: Informed Purchase and Redeployment Decisions



- Redeploy instruments from areas of low utilization to high utilization to balance workload and reduce downtime risk
- Factor current instrument utilization into your capital purchase and disposition decisions, optimizing your return on current investments and eliminating unnecessary future capital expenditures

SmartCapture™ technology empowers you to make smart laboratory decisions based on real instrument and equipment usage information. Finally, a solution that provides data across all makes and models.

The Power to Do More

Unity Lab Services' proven expertise combined with SmartCapture automatic data collection provides knowledge to:

- Balance instrument workload
- Identify redeployment opportunities
- Optimize instrument and equipment service levels
- Enabling you to reduce downtime risk, cut capital expenditures and decrease equipment maintenance costs.

Find out how SmartCapture can drive cost savings, improve lab productivity and power smart lab decisions at

www.unitylabservices.com/smartcapture



- 1. Configure** - Our SmartStart™ Implementation Process ensures an optimized solution, customized to your unique lab requirements.
- 2. Collect** - Our proprietary SmartCapture™ Asset Utilization Software automatically collects and transmits asset utilization data.
- 3. Analyze** - SmartLogic™ Data Analysis process prepares data for smart decision making.
- 4. Review and Enhance SmartTrac™ Metrics Review including:** Regular reviews of instrument utilization information by one of our Utilization Data to Knowledge Specialists.

Unity™ Lab Services
Part of Thermo Fisher Scientific

Unity Lab Services,
Part of Thermo Fisher Scientific
Email: unity.usa@thermofisher.com
www.unitylabservices.com

Evaluate, Educate, Explore



March 2-6, 2014
Chicago, Illinois
www.pittcon.org

Pittcon is the leading conference and exposition for the latest advances in Laboratory Science.

Attending Pittcon gives you a unique opportunity to get a hands-on look at cutting-edge product innovations from leading companies. Participate in any of the more than 2,000 technical presentations to learn about recent discoveries from world-renowned members of the scientific community. Improve or develop your skills by taking a short course taught by industry experts.

For more information on technical sessions, exhibitors and short courses, visit www.pittcon.org.

Follow Us for special announcements





LAB MANAGER BOOTCAMP¹⁴ INSIGHTS INTO ETHICAL LEADERSHIP

WITH FRANK BUCARO

8:30am — 12:30pm CST | Tuesday March 4, 2014

Unity™ Lab Services
Part of Thermo Fisher Scientific

www.labmanagerbootcamp.com



PITTCON¹⁴
CONFERENCE & EXPO

MARCH 2 - 6, 2014
MCCORMICK PLACE
CHICAGO, IL USA

This presentation combines timely and useful material with humorous stories for an experience that is informative, practical in application, and entertaining in delivery.

In a business climate where corporate leadership is often under the ethics microscope, lab leaders are increasingly being challenged to find ways to deepen trust, foster collaboration, and build customer loyalty. This program will help participants gain a clearer understanding of ethics, show how ethics is a key ingredient in business and personal success, and will provide practical ideas to help with difficult decisions.

TOPICS THAT WILL BE COVERED INCLUDE:

- Two types of ethics and which will serve you and your lab best
- How to identify the "ethics gap"
- Five virtues that will enhance an ethical and productive lab environment
- Five key challenges to labs and how to overcome them
- Four points to consider in making the best decision

Frank Bucaro is an ethics expert, who, for the past two decades has been a leading crusader—researching, speaking, training and writing-- on the benefits of ethics. Frank's career in business spans two decades, with the message that not only is good ethics good business, it is also good for business. As a current doctoral candidate in Ethical Leadership and an author of numerous articles on ethics, and author of the book *Trust Me! Insights into Ethical Leadership*, Frank has developed unique and humorous insights into the challenges of being ethical. He provides practical ideas to help with difficult decisions as well as strategies for combating the sometimes blurred lines between right and wrong.

AIR IMPURITIES REMOVAL SYSTEMS, INC.

Air Impurities Removal Systems, Inc. produces innovative, high-quality air purification products. Our versatile and affordable Extract-All™ line of compact air cleaning systems is ideal for the removal harmful airborne contaminants.

Our systems offer a high level of filtration, in a mobile, ductless design. We pride ourselves in our ability to accommodate a wide range of customers. We have been providing clean air solutions for countless applications for over thirty years.



Contact:
Air Impurities Removal Systems, Inc.
(800) 236-1889
www.AirSystems-Inc.com



ARIZONA INSTRUMENT LLC

Arizona Instrument LLC, an ISO 9001:2008 company, is the manufacturer of the Computrac® Moisture, Solids, Ash and Jerome® Mercury and Hydrogen Sulfide analyzers. The Jerome® J505 Mercury Vapor Analyzer, a high quality, robust Atomic Fluorescence Spectrophotometer, is used for determining mercury in ambient air and water. This hand-held instrument offers a sample button on the handle as well as a touch pad interface and an easy to use menu structure, allowing users to input unique testing locations and sampling cycles. The Jerome® line also includes instruments using gold film sensor technology to accurately detecting H2S as low as 3ppb and Hg vapor as low as 0.5µg/m3. Test data can be downloaded using the USB port and statistically analyzed using the instrument.



Contact:
Arizona Instrument LLC
3375 N Delaware Street, Chandler, AZ 85225
(800) 528-7411
www.azic.com

SOXHLET-BASED FAT ANALYSIS REINVENTED WITH NEW TOTAL FAT SOLUTION

The Soxtec™ 8000 extraction unit and Hydrotec™ hydrolysis unit is the first fully automated solution for total fat analysis with the Soxhlet method. Consisting of an extraction unit, a hydrolysis unit and a single Hydrocap filter that is common to both units, the Soxtec™ 8000 allows hydrolysis and Soxhlet analysis to be performed in one integrated laboratory process.

FOSS will be demonstrating the Soxtec™ 8000 at Pittcon 2014.
Stop by booth #1814 to learn more!

Contact:
FOSS
www.foss.us

FOSS

BROOKFIELD ENGINEERING VISCOSITY MEASUREMENT/CONTROL

Brookfield Engineering celebrates their 80th anniversary in 2014! Brookfield has been the world leader in viscosity measurement/control of liquids and semi-solids for 80 years. We manufacture rotational viscometers/rheometers, in-line process viscometers, texture analyzers for compression/tension and a Powder Flow Tester for manufacturers/processors of powder-based materials used by Quality Control Labs, R&D Departments, Government Organizations, and academic institutions.

Contact:
Brookfield Engineering Laboratories, Inc.
11 Commerce Blvd, Middleboro, MA 02346
(508) 946-6200
www.brookfieldengineering.com



DID YOU FIND OUR "FAKE AD"?

DID YOU NOTICE AN AD IN THIS MONTH'S ISSUE THAT SEEMED UNUSUAL OR UNBELIEVABLE? IF NOT, YOU MAY WANT TO LOOK AGAIN. SOMEWHERE IN THIS ISSUE IS A HIDDEN FAKE AD. IF YOU FIND IT, SEND THE NAME OF OUR FICTITIOUS COMPANY TO **FAKEAD@LABMANAGER.COM** FOR A CHANCE TO WIN AN AMAZON GIFT CARD.

CONGRATULATIONS TO LAST MONTH'S WINNER: DIANE R. FROM ALABAMA



SONNTEK – "STAY FOCUSED"

Still the *Best* Selection of
Research Lamps *Anywhere!*

201-236-9300
www.sonntek.com
sonntek@aol.com

LOOKING FOR THE RIGHT
PRODUCT? WE CAN HELP

**PRODUCT
FINDER**

Lab Manager



WWW.LABMANAGER.COM

ADVERTISER INDEX

| Company | URL | Page |
|---------------------------------------|---------------------------------------|--------|
| A.I.R. Systems, Inc. | www.airsystems-inc.com | 18,120 |
| Adam Equipment Inc. | www.adamequipment.com | 57 |
| AirClean Systems, Inc. | www.aircleansystems.com | 59 |
| AOCS - American Oil Chemists Society | www.aocs.com/methods | 35 |
| Aries Filterworks | www.ariesfilterworks.com | 40 |
| Arizona Instrument, LLC | www.azic.com | 55,120 |
| The Baker Company | bakerco.com | 20 |
| BioTek Instruments, Inc. | www.biotek.com | 2 |
| BMG LABTECH | www.bmglabtech.com | 77 |
| BrandTech Scientific, Inc. | www.brandtech.com | 45 |
| Brookfield Engineering | www.brookfieldengineering.com | 28,120 |
| Carbolite | www.carbolite.com | 49 |
| CEM | www.cem.com | 29 |
| CLMA ThinkLab | clma.org | 32 |
| Conquer Scientific | ConquerScientific.com | 121 |
| Drummond Scientific Company | www.drummondsci.com | 68,69 |
| ELGA LabWater / Veolia Water | www.elgalabwater.com | 3 |
| Environmental Express | www.environmentalexpress.com | 31 |
| Eppendorf North America | www.eppendorfn.com | 11 |
| EquipNet, Inc. | www.EquipNet.com | 121 |
| Erlab, Inc. | www.erlab.com | 96,97 |
| Federal Equipment Company | www.fedequip.com | 121 |
| Flow Sciences, Inc. | flowsciences.com | 53 |
| FOSS | www.foss.us | 42,120 |
| Gilson, Inc. | www.pipetmax.com | 71 |
| Glass Expansion | www.geicp.com | 41 |
| Grainger | grainger.com/lab | 7 |
| Hettich Instruments, LP. | www.hettich.com | 67 |
| Horizon Technology Inc. | www.horizontechnic.com | 39 |
| INTEGRA | www.integra-biosciences.com | 33 |
| International Equipment Trading, Ltd. | www.ietltd.com | 121 |
| JM Science Inc. | www.jmscience.com | 14 |
| Julabo | www.julabo.com | 15 |
| KNF Neuberger Inc. | www.knf.com | 26 |
| Labconco | www.labconco.com | 99 |
| Metrohm USA, Inc. | www.metrohmusa.com | 13 |
| Molecular Devices, LLC | www.moleculardevices.com | 124 |
| Mystaire™ Inc. | www.mystaire.com | 123 |
| Nor-Lake Scientific | www.norlakescientific.com | 101 |
| NuAire Inc. | www.nuaire.com | 17 |
| Panasonic Healthcare | www.twinguardseries.com | 5 |
| Parker Hannifin Corporation | www.parker.com | 105 |
| PHOTONIS | www.photonis.com | 72 |
| Pittcon | www.pittcon.org | 118 |
| PolyScience | www.polyscience.com | 51 |
| Pro Scientific Inc. | www.proscientific.com | 34 |
| Proton Onsite | www.protononsite.com | 42A |
| Questron Technologies Corp. | www.qtechcorp.com | 58 |
| RDM Industrial Products, Inc. | www.labspacesolutions.com | 43 |
| Retsch | www.retsch.com | 48 |
| Ruro | www.ruro.com | 19,27 |
| SCAT Europe GmbH | www.scateurope.com | 75 |
| Shimadzu Scientific | www.ssi.shimadzu.com | 46 |
| Sonntek, Inc. | www.sonntek.com | 120 |
| SPEX SamplePrep | www.splexsampleprep.com | 81 |
| Thermo Fisher - Unity Lab Services | www.unitylabservices.com/smartcapture | 22 |
| Thermo Scientific | www.thermoscientific.com | 6,9,73 |
| Thomas Scientific | thomasci.com | 79 |
| Universal Electric | starlinepower.com | 25 |
| Vacuubrand, Inc. | www.vacuubrand.com | 47 |
| W.A. Hammond Drierite Company | www.drierite.com | 21 |

PRE-OWNED EQUIPMENT MARKETPLACE

Leader in High Quality Pre-owned Lab Equipment

Conquer scientific



ConquerScientific.com • 877-9-CONSCI • info@conquerscientific.com

EQUIPNET **www.EquipNet.com/LMM**
sales@EquipNet.com
800 371 6555

APPRAISERS, BROKERS, AND AUCTIONEERS OF INDUSTRIAL EQUIPMENT

The world's leading provider of proactive asset management services and solutions



Federal Equipment Company

Equipment Solutions for Pharmaceutical, Laboratory, and Research Industries

216-271-3500
www.fedequip.com
pharmaceuticals@fedequip.com

8200 Bessemer Ave., Cleveland, OH 44127



Refurbished Analytical Equipment

INTERNATIONAL EQUIPMENT TRADING LTD.
www.ietltd.com sales@ietltd.com
Phone: 847.913.0777

Mass Specs • HPLC • NMR • Biotech

since 1979




PARTING POINTS

Takeaways from this month's issue:



YOUR LAB, YOUR BUSINESS

Science has always been the paramount focus of laboratory managers. But that's no longer sufficient. Now, lab leaders need to be profoundly conversant with the business side of things. Key areas that successful labs should focus on include:

- Business strategy
- Talent management
- Portfolio and project management
- Problem solving and collaboration

10



16

DROWNING IN REGULATIONS

Government agencies and regulations are not going away. Rather, there has been a huge proliferation of federal, state, and local laws and regulations that affect businesses, especially those in the technical and scientific arenas. Some ways to stay on top of such regulations include:

- Enlist in-house or third-party environmental health and safety (EH&S) professionals
- Focus on OSHA and the EPA as 90% of regulatory dealings involve these two bodies
- Use social media to focus your interests and stay current on the latest facts, changes in regulations, and any alerts or warnings that might be announced



38

IT'S COMPLICATED

Today's laboratory instruments, which rely heavily on complex software to drive them, have forced previously isolated labs into a more dependent relationship with information technology. Some of the issues that complicate the use of information technology in lab work are:

- The nature of lab work
- Unplanned software/hardware changes that can disrupt lab operations
- The need for computer-based systems and equipment to support lab operations
- The size of the organization relative to the size of the lab staff



56

ASK THE EXPERT: EFFICIENCIES OF LAB AUTOMATION

Louis Scampavia, PhD, associate professor in the Department of Molecular Therapeutics at the Scripps Research Institute in Florida, discusses how automation has been a critical part of their high-throughput screening activities. He advises those going automated to:

- Focus on integrating the informatics
- Look for reliability and robustness
- Minimize human or manual interactions that can lead to errors
- Have instruments and protocols undergo QC so automation failures can be identified



80

TECH NEWS PITTCON PREVIEW

This month, we give you a sneak peek at the lab products and services that will be showcased at this year's Pittcon Conference & Expo in Chicago from March 2-6. Our preview consists of:

- Nine categories, with a Services & Education section exclusive to this issue
- Almost 130 products and services
- Descriptions of the key features of the technologies on display
- Booth numbers so you can see and get more info on these products in person

AURA® FUME HOODS

Superior Protection from Fumes, Vapors and Particulate

Mystaire® ductless fume hoods are self-contained, filtered enclosures that remove hazardous fumes, vapors and particles from virtually any laboratory application.

Standard Features:

- EverSafe II™ advanced microprocessor controller
- Electronic monitoring; low airflow and filter saturation alarms
- Filtrak™ filter locking system
- Powder coated aluminum head and chassis
- Removable fiberglass spill tray
- Available in 30", 42" and 54" widths
- 110V or 220V

ESD Model Features:

- Stainless steel spill tray
- ESD rated clear panels



Aura 30 ESD Model

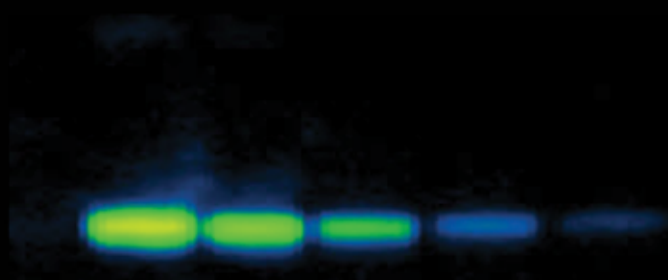


Aura 42 model

Aura meets applicable OSHA and ANSI standards

ASHRAE110-1995 tested

AURA® — Built to LAST!



See how it works.

Western blot + Plate reader =
ScanLater™ Western Blot Detection System

www.moleculardevices.com/westernblot



For research use only. Not for use in diagnostic procedures.
©2014 Molecular Devices, LLC. The trademarks mentioned herein
are the property of Molecular Devices, LLC or their respective owners.