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From development bench to in-line dedicated chemometrics sensor: Encoded Photometric InfraRed (EP-IR) spectrometry delivers ppm to ppb levels of detection (LODs) in seconds.

Date/Time: Thursday, May 19, 2005, 11:45 AM - 1:00 PM

Speaker: Bertrand S. Lanher, PhD, Aspectrics, Inc.

Location: Rocky Rococo's Pizza, 7952 Tree Lane (Madison Beltline Hwy. at Mineral Pt. Rd.), 608.829.1444

Menu: Pizza buffet, salad and soft drinks (cost \$10.00, free for student members)

RSVP: by May 16th to Les Schroeder via email (l.schroeder@ieee.org) or call 608.444.9144

Non-member guests are always welcome!

Encoded Photometrics Infrared (EP-IR) spectrometry is a new technology enabling collection of all relevant spectral information in the infrared region of the electromagnetic spectrum at scanning rates up to 300 scans per seconds.

The instrument has been optically optimized and strictly follows the theoretical curve of improvement of absolute signal-to-noise ratio as a function of the number of scans co-added. When combined with the speed of scanning of the instrument, the technology currently delivers signal-to-noise ratios of the order of 50 microabsorbance units (5.E-05 OD) in only seconds.

Application of multivariate signal analytical treatment techniques (chemometrics) to spectra collected under such conditions enable access to ppm LODs in aqueous phase and ppb LODs in gas phase in only seconds to minutes of spectral collection time.

EP-IR spectrometers are designed and engineered to be in-line chemometrics sensors, capable of operating over a wider range of environmental conditions than traditional infrared spectrometers. The best use of the technology is to develop a quantitative method for one or more chemical compounds in a given matrix using an EP-IR spectrometer configured as a development bench, then proceed to the transfer of the calibration method onto another EP-IR spectrometer configured as an in-line sensor.

Calibration equations can be uploaded onto the SBCs of the in-line EP-IR spectrometer, enabling infrared signal collected to be transformed in real time into calculated concentration for the chemical compound(s) of interest in the mixture (matrix).

Practical live demonstration of such real-time and post-processing spectral collection and treatment capabilities will be proposed to support this discussion.

Bertrand S. Lanher, PhD, is Aspectrics, Director of Customer Application Services. A specialist in chemometrics applied to multi-components IR quantitative analysis (Far-, Mid- and Near-IR), he is responsible for developing chemometrics methods using Aspectrics, analyzer modules and for field customer support. Bertrand has 17 years of experience in all aspects of the development of analytical instrumentation (GC-MS, NDIR, DIR, FT-IR and Flow Cytometry), including hardware, optical accessories, sampling robotics, firmware, software and chemometrics methods development. He also has experience with regulatory approval processes for analytical instrumentation with the FDA, AOAC Int'l and IDF-FIL. Bertrand has worked both for and with government agencies in France and in the United States, respectively, universities and colleges (McGill University; UW-Madison; Edgewood College) and for analytical instruments manufacturers (Thermo Nicolet, Anadis Instruments; Perstorp Analytical). Most recently, Bertrand was teaching chemistry at the UW-Madison and Edgewood College (Madison, WI). Bertrand holds a BS in Biochemistry and a MS in Molecular Biology from the Université des Sciences et Techniques de Lille 1 (France)

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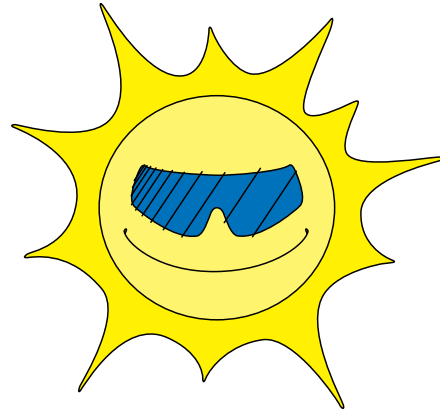
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and a MS in Food Analytical Chemistry and a PhD in Chemometrics & Instrumentation from the Université de Bourgogne (France). He completed 1 year of post-doctoral studies at the UW-Madison (Madison, WI).

Summer Recess:



No Section Meetings June - August

ADT: Information Overload?

Today's busy business environment is presenting serious physical and mental challenges to our well-being, as our bodies and minds become overloaded. In "Overloaded Circuits: Why Smart People Underperform" (Harvard Business Review; 83(1): 55-62, 2005; www.hbr.com), Edward Hallowell discusses how modern office life and an increasingly common neurological phenomenon called "attention deficit trait" (ADT) is affecting our ability to perform effectively. This neurological event occurs when we have to deal with more input than the brain is able to deal with — the brain and body react by shifting into a disturbed state of being. The author provides strategies on how to avoid ADT and how to manage it should you become its victim. As the author concludes "our understanding and recognizing ADT is a critical step in our vigilance and foster more productive, well-balanced and intelligent work environments."

Finding Success and Fulfillment in Your Career

by Georgia C. Stelluto

Can we find both success and fulfillment in our careers? Peggy Hutcheson, a session speaker at IEEE-USA's 2005 Leadership Conference, said that achieving both is one of the leading career challenges of the 21st century. In her session, participants learned to analyze their most important skills and values; examine the "payoffs" from work that were most important to them; identify their career orientation; and differentiate between success and fulfillment.

Hutcheson challenged participants to examine what their response is if someone asks them about the company they work for. Is the answer better than — Ok? She said that we should ask ourselves what we are looking for in our work, and what makes a company an “employer of choice” for us. Do we want freedom in choosing our work? A friendly working environment? How about security, compensation, mutual respect or recognition? Hutcheson said it is crucial to determine which factors are the most important to you personally.

WHAT PEOPLE WANT

Studies reveal, Hutcheson said, that topping the list of what people want at work are opportunities to contribute — a challenge. Others high on the list are working with people who care about them as professionals; competent supervisors; opportunities to grow, learn and develop; employee-friendly environments; socially responsible organizations — and fun! In general, most people would like new challenges, variety, continuous learning and a journey of growth and learning in their jobs.

To determine the factors most important to finding job fulfillment, Hutcheson advised attendees to analyze the skills and values most important to them, and examine work payoffs that are personally valuable. She suggested identifying personal career orientation and then differentiating between success and fulfillment when one thinks about jobs and careers. “Be clear about what you want,” Hutcheson said.

WHAT YOU BRING

According to Hutcheson, competency is a skill, knowledge area, or attribute which, when applied with excellence, leads to higher performance and goal attainment. What kinds of skills do you bring to work? She counseled workshop participants to examine their knowledge, skills and attributes — to look at all their areas of competence. Then, Hutcheson guided the audience to decide their work preferences — in terms of work environment, style of supervision, challenges and values. She asked them to think about what kinds of people, data, things and ideas interest them.

WORK PAYOFFS

“What aspects of the work and work environment are most important to you?” Hutcheson asked the audience. She said the top three people cite most often are challenge, making a contribution, and competent supervision. Interestingly, the least important aspect for most folks is high earnings. The reason? “Most people don’t want to pay the price that comes with making the big bucks,” Hutcheson said. She asked attendees to take a hard look at their values to determine their individual payoff factors at work. To some, location is important. For others, leadership opportunities to direct and influence is key. Some ranked leisure time important — where their schedule would allow non-work pursuits and no significant overtime would be required.

SUCCESS AND FULFILLMENT

“Sometimes the work you enjoy most is not a priority of the organization you work for,” Hutcheson said. She suggested examining these career orientations: getting ahead, getting secure, getting free, getting challenged and getting balanced. Hutcheson noted that an imbalance could indicate not being clear about what one wants or doesn’t — what’s important or what’s not. She said that alignment requires a balance of competencies, values, interests and goals — yours and your organization’s.



Summer/Fall 2005 Short Courses from Engineering Professional Development

- **DC Power System Design for Telecommunications**
May 18–20, 2005 in Madison, WI
- **Modern Wireless Data Communications: Preparing for Next-Generation Systems**
June 8–10 in Madison, WI
- **Electrical Grounding of Communications Systems**
June 15–17, 2005 in Madison, WI
- **Introduction to Planning and Designing Fiber to the Premises**
September 21–22, 2005 in Madison, WI
- **Applying RFID Technology—A Hands-on Workshop**
September 22–23, 2005 in Madison, WI
- **Fundamentals of Cellular and PCS Wireless Communications**
September 28–30, 2005 in Madison, WI

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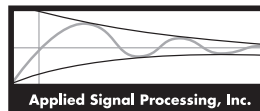
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College of Engineering Department of Engineering Professional Development

Hutcheson told attendees to look first and always at having the lifestyle away from work that they want; and to free themselves from continuously being cycled into doing things they don’t want to do. She encouraged participants to strive for balance in all aspects of their lives. “True alignment,” she said, “is when success and fulfillment square off right in the middle of overlapping circles of your competency, the organizational need, and your passion.”

In closing, Hutcheson quoted Ben Franklin to illustrate every person’s right: *The Constitution only gives people the right to pursue happiness. You have to catch it yourself.* So, take the time to look at all the factors that will help you find success and fulfillment in your personal life and at your work. You’ll be much happier for it — now and over the long haul.

Georgia C. Stelluto is IEEE-USA’s Publishing Manager and Managing Editor of IEEE-USA Today’s Engineer quarterly print digest. Comments may be submitted to todaysengineer@ieee.org.

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