

Editors Favor Innovation at Pittcon® '08

As in the presidential primaries, a subgroup of the 200 editors attending Pittcon® gather each Wednesday afternoon of the conference to caucus and announce their selections for the most significant product introductions made there. Generally, innovative new concepts and capabilities trump significant product updates or extensions. This year was no exception.

Gold Award

At Pittcon 2008, the Gold Award went to **Bruker AXS** (Madison, WI) for the SMART X2S™, where X2S stands for X-ray crystallography-to-structure (see *Figure 1*). This benchmark instrument offers a discontinuous advance in X-ray crystallography that may impact the application of other techniques such as NMR, IR, and MS for compound identification. The X2S is the first walkup, X-ray crystallography system for fully automated 3-D structure determination of crystals with molecular size smaller than about 1000 Da. It is designed to provide chemists with no prior training in X-ray crystallography an accurate image of the compound structure in a few hours. When we were in college,

such a study took several years and was rewarded with a Ph.D.

Dr. Charles Campana, Senior Scientist for Structural Chemistry at **Bruker AXS**, stated: "It has long been a dream to automate the process of X-ray small molecule structure determination, so that it can become a powerful, yet routine analytical tool in the hands of most chemists. Now, advances in technology, automation, and algorithms have finally made this possible. The SMART X2S system allows chemists to do routine, publication-quality crystal structures in only a few hours without specialized crystallography expertise." Thousands of chemists have been trained in spectrometric identification of compounds, which was always an intriguing bit of detective work that produced a structure that was, at best, "consistent with the spectra." Now, we can have the absolute 3-D structure in an afternoon, just P.H.D. (that is, as simple as "push here, dummy").

Silver Award

Separations in capillaries are growing in sophistication in GC, HPLC, and even CE (capillary electrophoresis).

Special techniques require making strong, reliable joints between capillaries. In GC, the problem is particularly difficult since thermal cycling can loosen joints all too frequently. **NLISIS BV** (Veldhoven, The Netherlands) took the Silver Award for the Melfit One (see *Figure 2*). This simple system provides butt-to-butt connections with fused-silica capillaries that are strong and leak-free. The two capillary pieces to be joined are slipped inside the Melfit One joining capillary on the stage. The pieces are all clamped in place. Air pressure and heat are applied externally, and in 60 sec the joint is made and ready for use. The joint is not particularly brittle or fragile. The thermal mass is very low, so cold spots should not be an issue.

Bronze Award

The Bronze Award went to **Bruker AXS** for the Ultra-Sensitive S2 PICO-FOX™ Benchtop TXRF system (see *Figure 3*). This is the first time since the awards began that one firm earned two awards at a single Pittcon. The PICO-FOX is designed to provide ultrasensitive elemental analysis using total reflection X-ray fluorescence (TXRF). For



Figure 1 The Gold Award went to **Bruker AXS** for the SMART X2S™.



Figure 2 **NLISIS BV** took the Silver Award for the Melfit One.



Figure 3 The Bronze Award went to **Bruker AXS** for the Ultra-Sensitive S2 PICO-FOX™ Benchtop TXRF system.

TXRF, X-rays from a tube are focused on the surface of a flat sample at glancing incidence such that total reflection occurs. This eliminates matrix effects and allows for precalibration of the system. The X-rays excite atoms in the top layers of the material and the fluorescence is detected by a 30-mm² XFlash® detector placed above the sample. Samples can be liquids, suspensions, filters, particles, and body fluids, with sample sizes of micrograms or less. Count rates are usually higher than 100,000/sec. The S2 PICOFOX does not require external gases or cooling water. Detection limits are in the range of 100 ppt and extend up to percent range for elements

from Al to U. The speed and ease of use make TXRF highly competitive with ICP (inductively coupled plasma) techniques and AA (atomic absorption).

The editors consider the input of any member of the press, even if they do not participate in the caucus session. Accordingly, products that do not receive an award are given “Honorable Mention” status and are listed in alphabetical order by firm.

Honorable Mention nominees for 2008:

A2 Technologies Exoscan
Agilent TILL Photonics Microscope

Bruker Daltonics MALDI-FT-MS smartbeam™
CEM Sprint™ Rapid Protein Analyzer
Dionex ASE® 350
Erlab GreenFumeHood®
Formulatrix Formulator®
GE Analytical Sievers InnovOx Lab TOC Analyzer
GE Analytical Check Point Portable/ On-Line Total Organic Carbon (TOC) Sensor
HiperScan SGS2500
Horiba XplorRA Raman System
JEOL NeoScope
Nanoliter Induction Based Fluidics Actuator
Ocean Optics Jaz
PerkinElmer EcoAnalytix™
Picarro G1101-i
Shimadzu MCE-202 MultiNA
Thermo Fisher Scientific MALDI-MS with LTQ Orbitrap™
Thermo Fisher Scientific DXR Smart Raman Spectrometer
Varian 920-MS
Waters PATROL™ UPLC™
WITec Alpha 500 Confocal Raman and AFM System
Wyatt Technologies Calypso

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