

Wednesday Lunch, November 2, 2011

Exhibitor Technology Spotlight

Room: West Exhibit Hall - Session EW-WeL

Find out more at the Spotlight Session on SpringerMaterials at AVS 58

Exhibitor Technology Spotlight

Moderator: Langley

12:20pm EW-WeL2 Granville Phillips Autoresonant Ion Trap Mass Spectrometer, *S. Lass*, Brooks Automation, Inc.

Granville-Phillips®, the Instrumentation Center for Brooks Automation Inc., recently introduced the VQM830 Vacuum Quality Measurement (VQM) System for gas analysis at high and ultra-high vacuum levels that is comprised of a high-speed Autoresonant Ion Trap Mass Spectrometry (ART MS) Sensor and High Performance VQM Controller. With advantages in speed, power consumption, simple calibration, accurate low mass reporting, and UHV performance, the VQM surpasses the traditional RGA products. In addition to explaining the advantages of this next generation mass spectrometer, new additions to the VQM family since initial product shipment will be covered.

12:40pm EW-WeL3 Combining NEG and Sputter Ion Pump Technologies to Meet the Challenges of UHV-XHV Systems, *B. Garcia, F. Siviero, A. Conte, L. Viale, A. Bonucci, P. Manini, L. Caruso, A. Cadoppi*, SAES Getters

Current UHV and XHV vacuum technology requires better vacuum, lower power consumption and smaller components. The NEX Torr pumping system meets these requirements by providing large pumping, good gas capacity, low power consumption and vibration free pumping in an unprecedented small size. Specifications and data will be presented to discuss advantages of the NEX Torr pumping system.

1:00pm EW-WeL4 EW - No Title - EW - No Title, *S. Palmer*, Agilent - Varian Vacuum Division

1:20pm EW-WeL5 Faster, Higher Resolution and More Accurate Imaging with the Cypher™ Atomic Force Microscope, *K. Jones*, Asylum Research

Within four years of the invention of the AFM, micro-fabricated cantilevers with integrated tips appeared, saving early practitioners from the joys of hand-assembling their cantilevers. However, even though many researchers soon understood the benefits of further miniaturization of the lever, standard commercial levers remained at the same 100 to 300 μm size for nearly the next two decades, in part because making a commercial instrument capable of using much smaller levers presented significant technical challenges.

Within the past few years, commercial instruments like the Cypher AFM, from Asylum Research, have appeared which are capable of using cantilevers as small as 10 μm in length and with resonance frequencies 5 MHz and higher and those levers are now readily available. Small levers bring two major benefits to AFM. The first is much smaller thermal noise, enabling quieter force measurements and higher resolution imaging with Angstrom-scale cantilever amplitudes. The second is a major speed boost for AC modes (tapping, non-contact) in both air and liquid. When coupled with other instrumental improvements such as a high-speed scanner, the shorter levers allow scanning with good tracking at rates 20X to 40X what was possible with conventional levers. I will talk about the technical details behind both these improvements. I will also present images and movies highlighting the improvements, including images showing individual vacancy defects on crystals and movies showing fast scanning on polymers, crystals, and biological samples.

1:40pm EW-WeL6 SpringerMaterials – An Online Resource Facilitating Vacuum Research and Development, *M. Shaikh*, SpringerMaterials

SpringerMaterials is an invaluable database for research both exploring and requiring vacuum science, as well as for the development of equipment that harnesses vacuum technology. Use this online resource to search for data on materials' interactions with photons and electrons, molecular constants, coupling constants via nuclear magnetic resonance data, band structures via Photoelectron Spectroscopy, electronic transport, thermal and optical properties for a huge range of semiconductors, surface sciences and properties, characterization methods, metallic and organic thin films, particle detector systems, and so much more! With over 100,000 critically evaluated documents on properties of about 250,000 different substances, a robust metacontent system and advanced search engine, you are sure to find what you are looking for vacuum research and development.

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