Exhibitor Technology Spotlight Workshops
Room Hall A - Session EW-TuL

Exhibitor Technology Spotlight Workshop II

Moderator: Christopher Moffitt, Kratos Analytical Inc

12:20pm **EW-TuL-2 New Developments from Thermo Fisher Scientific**, ***Timothy Nunney***, *P Mack, R Simpson, A Bushell,* Thermo Fisher Scientific, UK

In this presentation we will highlight the latest developments in surface analysis and materials analysis instrumentation from Thermo Fisher Scientific.

12:40pm **EW-TuL-3 New Trends in Photoelectron Spectroscopy: Momentum Resolved Photoelectron Spectroscopy, Spin-resolved ARPES, Small Spot and Hard X-ray XPS**, *A Thissen,* SPECS Surface Nano Analysis GmbH, Germany; ***Thomas Stempel Pereira***, SPECS Surface Nano Analysis GmbH

Over the last two decades, significant developments have been done in Photoelectron Spectroscopy instrumentation. The significant expansion of XPS into near ambient pressure environments (NAP-XPS), especially new concepts for electron optics, new concepts for X-ray sources, and new type of detectors have opened the field for new applications.

New electron optical concepts have been introduced, allowing for K-resolving lenses in Angle resolved Photoelectron Spectroscopy and Small Spot Momentum Spectroscopy and Microscopy. The brand new ASTRAIOS 150 is a consequently k-resolving hemispherical analyzer for cutting-edge ARPES with large acceptance angles at ultimate energy and k- (or angle) resolutions. For limiting the acceptance areas to µm-ranges or momentum microscopy applications k-resolving immersion lenses have to be used. The KREIOS 150 series demonstrates perfectly the applications to small and/or inhomogeneous samples.

On the detector field the 2D-CMOS detector has proven to be the perfect choice for ultimate resolution and highest linearity at significant time resolution. Especially for momentum microscopy the direct imaging spin detector DISpin allow for highest sensitivities and uncompromising energy and k-resolutions.

Switching gears, on the XPS field the above mentioned new analyzers also can make a significant contribution to small spot-XPS. On the other hand still a high power small spot monochromatic X-ray source is needed. Thus the µFOCUS 195 is presented for the first time, being a Al Ka and Ag La dual anode monochromator source is presented, with a spot diameter smaller than 10µm.

For higher information depth the µFOCUS 730 HE is presented, a Cr Ka monochromator source with a 100µm spot size for laboratory HAXPES and NAP-HAXPES.

1:00pm **EW-TuL-4 Latest Trends and Instrumentation for TOF-SIMS**, ***Nathan Havercroft***, IONTOF USA, Inc.

During the last 30 years IONTOF has continuously made significant development efforts to further improve the instrumentation for Time-of-Flight Secondary Ion Mass Spectrometry (TOF-SIMS) and related techniques. Some of the most recent achievements include in-situ sample preparation and tomography by FIB, enhancement of maximum count rates and dynamic range in conventional depth profiling of inorganic materials, the design of a TOF-SIMS / SPM combination instrument, as well as the integration of an OrbitrapTM mass spectrometer with unrivalled mass resolution and mass accuracy into the TOF.SIMS 5 instrument.

In this spotlight session we will showcase the latest TOF-SIMS developments from IONTOF.

1:40pm **EW-TuL-6 Kratos Analytical – 50 Years of XPS**, ***Christopher Blomfield***, Kratos Analytical Limited, UK

In 1969 Kratos, then AEI, shipped the first commercially available X-ray photoelectron spectrometer to Dr David Clark at the University of Durham. In this presentation we will outline the developments from the first ES-100 to the state-of-the-art AXIS Supra$^+$ and have established Kratos Analytical as a leader in the design and manufacture of XPS instruments.

We will detail the development of the Aberration Compensated Input Lens (ACIL) in the early 1980's. Importantly the nature of the ACIL provided the analyst with an easy to use microprobe-like capability, enabling exact correlation of classic spectroscopic analysis with XPS and physical images – the advent of spatially keyed spectroscopy. A further significant development came with the AXIS series of spectrometers which were the first to incorporate a magnetic immersion (snorkel) lens. The combination of magnetic and electrostatic lenses lead to much greater collection efficiency of photoelectrons when compared to previous instruments, providing a step-change in performance specifications.

Another Kratos innovation, launched in the late 1990's, was the incorporation of the spherical mirror analyser (SMA) with the hemispherical analyser in the AXIS Ultra. The SMA allowed fast, high spatial resolution parallel imaging, where an image of the sample is projected onto a 2D detector. This technology is still used today and allows us to define 1um imaging spatial resolution.

There have been a number of other momentous advances including software, automation and accessories. Probably the most significant of these recent developments is the gas cluster ion source (GCIS). This accessory has allowed the successful depth profiling of organic polymers and inorganic samples with retention of chemistry throughout the profile.

It is hoped that in reviewing milestones in Kratos' development of XPS over the previous 50 years we will trigger discussion on requirements for the technique in the next 50 years.

2:00pm **EW-TuL-7 What's New at PHI**, *K Artyushkova, J Mann, B Schmidt, L Swartz,* ***John Newman***, Physical Electronics

PHI has multiple exciting projects currently underway in our XPS product line. This presentation will provide updates on:

•The PHI Quantes, laboratory based, XPS/HAXPES instrument

•Some new analytical options for complete characterization of electronic band structures on the PHI VersaProbe

•New features for XPS data acquisition and data reduction.

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