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IOWA MICROSCOPY

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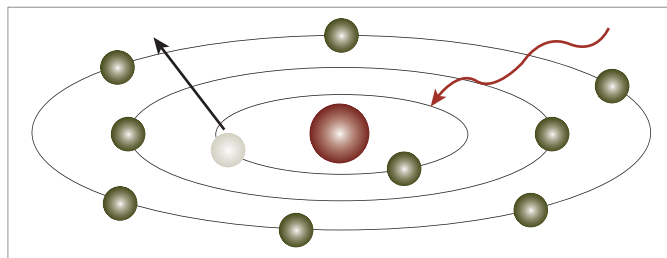
X-RAY PHOTOELECTRON SPECTROSCOPY

> SECOND IN A SERIES OF BRIEF INTRODUCTIONS TO IMS 2005 WORKSHOP TOPICS

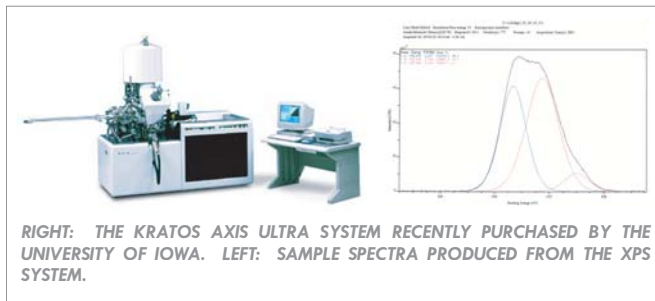
X-ray Photoelectron Spectroscopy (XPS) is a highly sensitive surface analysis technique which utilizes a focused x-ray beam to characterize and probe the surface properties of particles and thin films. The system gives investigators a detailed spectra of the chemical properties present on their specimen as well as maps their location.

X-ray Photoelectron Spectroscopy is often coupled with other surface techniques such as Ultraviolet Photoelectron Spectroscopy and Auger Electron Spectroscopy.

Ultraviolet Photoelectron Spectroscopy (UPS) allows



ABOVE: THE PHOTOELECTRIC EFFECT. X-RAYS ENTER THE ATOM AND PHOTOELECTRONS ARE EMITTED.



RIGHT: THE KRATOS AXIS ULTRA SYSTEM RECENTLY PURCHASED BY THE UNIVERSITY OF IOWA. LEFT: SAMPLE SPECTRA PRODUCED FROM THE XPS SYSTEM.

investigators to gather information on the valence states of their specimens, while Auger Electron Spectroscopy (AES) gathers similar data to XPS including elemental analysis and composition rendering maps and spectra but uses a focused electron beam rather than X-rays. AES utilizes a field emission gun, similar to scanning electron microscopy allowing imaging and elemental analysis of the sample surface.

The University of Iowa Central Microscopy Research Facilities has recently acquired a Kratos Axis Ultra system which will be made available during the workshop for training.

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