ECASIA'07
BRUSSELS

ECASIA '07 – Short courses.

Three short courses on practical surface analysis techniques will be held during the ECASIA'07 conference:

2-day course on X-ray Photoelectron Spectroscopy (XPS/ESCA)
Monday/Tuesday, September 10-11, 2007.
550 EUR (200 EUR for students) - Add 200 EUR/day for non-participant to the conference.

1-day course on nano-AES
Thursday, September 13, 2007.
375 EUR (100 EUR for students) - Add 200 EUR/day for non-participant to the conference.

1-day course on Data Processing in XPS/ESCA and Auger Electron Spectroscopy
Friday, September 14, 2007.
375 EUR (100 EUR for students) - Add 200 EUR/day for non-participant to the conference.

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The courses are given by **John Grant** (see http://surfaceanalysis.org/).

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Course descriptions (from surfaceanalysis.org) :

X-Ray Photoelectron Spectroscopy (XPS/ESCA)

XPS is used to determine the atoms present at a surface and their concentrations, chemistry, and lateral and depth distributions. This course emphasizes:

The principles of XPS -- production of photoelectrons, electron escape depth, surface sensitivity, plasmons, multiplet splitting and shake-up.

Instrumentation -- x-ray sources, satellites, analyzers, detectors, analyzed area, nonhomogeneous specimens, photoelectron diffraction, small-area analysis, and imaging.

Qualitative analysis -- identification of elements, energy scale calibration, interpretation of chemical shifts, relaxation effects, Auger parameteer, peak widths, and line shapes.

Quantitative analysis -- approaches, photoelectron cross-sections, asymmetry parameter, analyzer transmission, sensitivity factors, detection limitss, and the effect of thin overlayers.

Artifacts -- x-ray satellites, ghost peaks, x-ray damage, and specimen charging and handling.

Data processing -- analog and digital acquisition, background subtraction, measurement of peak area, x-ray satellite removal, curve-fitting, and deconvolution.

Methods for depth profiling -- angular studies, inelastic losses, and sputtering.

Instrument selection.

Applications to solve surface-related problems.

Data Processing in XPS/ESCA and AES

XPS and AES are used to determine the atoms present at a surface, and their concentrations, chemistries, and lateral and depth distributions. This course will show attendees how to process and evaluate XPS and AES spectra:

Spectra -- the many features present in spectra will be described.

Background subtraction methods will be described and compared.

Shapes of peaks will be described and approaches for curve fitting will be illustrated.

Approaches for quantitative analysis will be demonstrated and errors illustrated.

Data processing methods to improve images will be demonstrated.

Data processing methods for near-surface, non-destructive depth profiling will be illustrated.

Data processing methods to remove peak overlap problems, separate different chemical states, and improve signal-to-noise in sputter depth profiles will be demonstrated.

Nano Auger Electron Spectroscopy

AES is used to determine the atoms present at a surface, their concentrations, and their lateral and depth distributions. Nano AES involves its application to the analysis of very small regions of a surface, including nano-size particles. Sputter depth profiles of nano-thickness thin films will also be included. Introduction – surfaces, types of surfaces.

The principles of AES – production of Auger electrons, peak labeling, handbooks, books, surface sensitivity, information depth.

Qualitative analysis – direct and derivative spectra, identification of elements, energy resolution, chemical effects, plasmons.

Quantitative analysis – Auger intensities, sensitivity factors, detection limit, matrix factors, backscattering, angle of incidence and emission, diffraction.

Instrumentation – field emission electron source, spatial resolution (beam), signal-to-noise, beam damage, cylindrical mirror analyzer (CMA), hemispherical type analyzer (HSA), pulse counting.

Imaging and spatial resolution – scanning electron microscopy, acceptance area, locating regions of interest, corrections for topography and backscattering, beam energy, spatial resolution (analysis), comparison of analyzers, electron energy loss (EELS) imaging, ratioed scatter diagrams, line scans, image registration.

Applications – nano analysis of spheres, particles, via holes, insulators, sputter depth profiles of nanolayers.

Summary – general summary.