X-ray Photoelectron Spectroscopy (XPS)

Band: **Kratos/Shimadzu Amicus**

Model: **Amicus**

Custodian: **Ketwadee Wetsuwan**

Location: **R02 Room, SC1 Building, B Floor, Faculty of Science (Salaya Campus)**

Description and Specification:

X-ray photoelectron spectroscopy using the AMICUS instrument is an invaluable tool for the characterization of thin film materials. The fully automated operation using VISION control software allows repetitive depth profiling to be completed with ease.

The key features of AMICUS demonstrated are:

- Concentration depth profiling,
- Unsupervised, fully computer controlled data collection using VISION software,
- Chemical state determination of surface atoms.
- Multi sample Automated Analysis

System summary:

❖ VACUUM SYSTEM: - Sample analysis chamber (SAC)

- 150l/s turbomolecular pump (base pressure $5x10^{-7}$Pa)

❖ SAMPLE INTRODUCTION CHAMBER: - 50l/s turbomolecular pump

- 10 sample introduction chamber (optional)

❖ SYSTEM BAKING: integrated timer controlled heating tapes

❖ SAMPLE DIMENSIONS: ≤10mm diameter, ≤ 5mm thick

❖ X-ray Source: 300W max power 12kV 25mA, and Dual Mg/Al anodes.

❖ ELECTRON ENERGY ANALYSER: Low pass/high pass filter, selectable pass energy, 25, 75, and 150eV, single channeltron detector.

❖ ION ETCHING SYSTEM: ♦ Standard ion etching source

- 0.5, 1, 1.5, and 2kV accelerating voltage
- Etch rate 5-100 Angstrom/min (material dependent)
- sample rotation during etching

♦ Kaufman high speed etching source (option)

- 0-1000V accelearting potential (continuously variable)
- Etch rate 50-800 Angstrom/min (material dependent)

Applications:

♦ Surface analysis of organic and inorganic materials

♦ Determining composition and chemical state information from surfaces

♦ Depth profiling for thin film composition