

Midlands Branch Workshop: Surface Analysis for Corrosion

Date: 24th January 2018

Location: Aston University, Birmingham B4 7ET

Overview:

It is estimated that corrosion in industrialised nations can cost up to 5.0% of GNP per year. Thus reduction or elimination of corrosion has the potential to save vast amounts of money.

Under normal circumstances, corrosion concerns very thin layers at a surface, when a protective or passivating surface oxide film breaks down allowing contact between the active metal and invading molecular species. To tackle these issues, it is necessary to understand the corrosion process in each specific case, which can only be done by understanding the chemistry within the first few atomic layers of a surface.

Appropriate analytical techniques for surface analysis and depth profiling can help to provide a competitive edge in understanding and controlling corrosion.

Loughborough Surface Analysis Ltd (LSA) and Midlands Surface Analysis Ltd (MSA) in association with the Institute of Corrosion Midlands Branch are organizing a one-day workshop addressing surface analysis and depth profiling techniques and how they can be used to help with a variety of challenges relating to corrosion. The workshop draws upon a wealth of real-world experience in using these techniques to assist with issues such as:

- Corrosion and corrosion protection
- staining
- coatings
- delamination
- contamination and impurities
- cleaning
- etching
- adhesion
- surface treatment

The workshop will be held at Aston University, Birmingham, located at the heart of England, with good road, rail and air links to all parts of the UK. The workshop will consist of a series of seminars given by experts in the field on the individual techniques (including case studies), together with an optional practical demonstrations on some of the techniques in the laboratories of MSA Ltd.

Opportunities will also be provided to discuss participants' specific cases either in an open forum or in private with the analysts present.

Who should attend?

This workshop provides a unique opportunity for failure analysts, process engineers, yield improvement managers, quality control managers and R&D staff to learn about or refresh their knowledge of surface

analytical and depth profiling techniques. If you have the task of fixing the material related problems when they arise then this is the workshop for you.

Agenda:

9.30 *Coffee and Registration*

10.00 Welcome, introduction and overview of workshop

10.15 X-ray photoelectron Spectroscopy (XPS) (provides compositional and chemical state information) and Auger electron spectroscopy (AES) (elemental information at very high spatial resolution).

11.00 Optical topographical profiling

11.15 *Coffee break, networking*

11.45 Environmental scanning electron microscopy (SEM) and Energy-dispersive X-ray spectroscopy (EDX) (provides topographical, elemental and chemical characterization of surfaces).

12.30 Secondary ion mass spectrometry (SIMS) – ultra-high sensitivity to all elements

12.45 Atomic force microscopy (AFM), nano hardness and nano scratch testing

13.00 *Lunch, networking*

14.00 Optional tour and laboratory demonstration.

There will be the opportunity for participants to discuss problems of a commercially confidential nature with representative from LSA and MSA on a one to one basis after the close of the meeting. If required, NDAs should be supplied to cover items discussed in these separate meetings.