

# SURFACE ANALYSIS

At Lucideon, we specialize in surface, near surface and interface analysis, using a wide range of techniques to:

- solve failures (contamination, adhesion, wear, lubrication)
- optimize new product development
- support quality control systems
- validate new products and processes
- support product claims

Direct surface analysis reveals exactly what is on the sample surface, what it looks like, where it is, and how any residual compounds/surface treatments interact with or affect other properties of the base material (chemically and physically).

## WE OFFER:

- Coating characterization
  - uniformity, dispersion of API, composition, roughness
- 3D imaging of surface
  - surface finish, defect analysis, wear patterns
- Surface characterization
  - assessing the effect of treatments such as acids, lubricants, and wear
- Depth profiling
  - understanding the penetration of a chemical or treatment into a material

- Interface analysis
  - adhesion/interaction of a coating or laminate, and possible cause of failure
- Identifying and mapping of trace elements
  - identification and distribution of contaminant, corrosion products
- Porosity/void identification
  - possible cause of leakages in a material, or fracture initiation points
- Validation of cleaning processes
  - identification and quantification of detergents, lubricants and trace elements

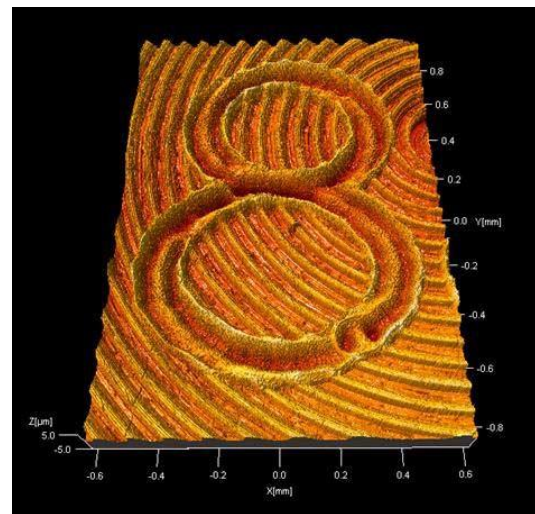


Fig. 1. White Light Interferometry

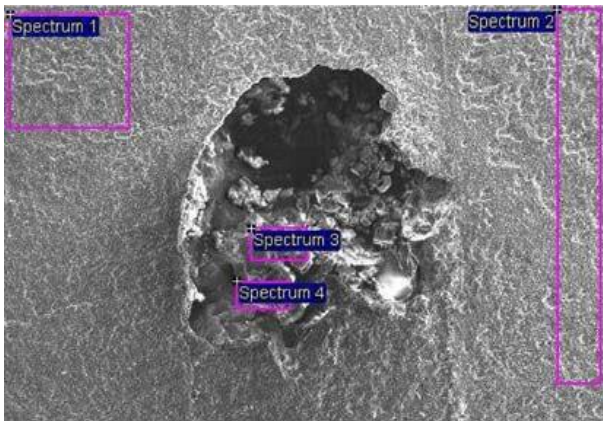


Fig. 2. SEM/EDX

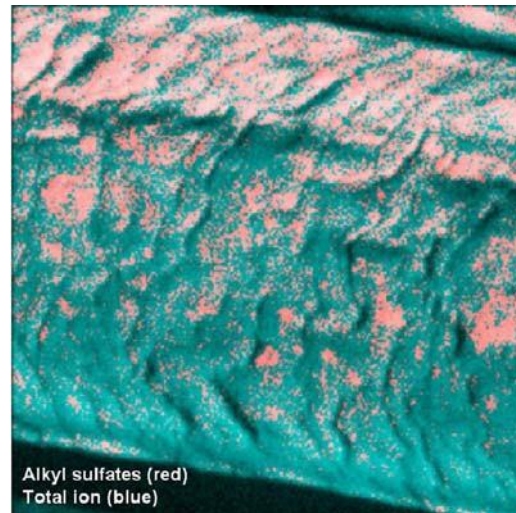


Fig. 3. ToFSIMS Chemical Image

## TECHNIQUES

Using state-of-the-art equipment, our surface analysis capabilities include:

- Time-of-Flight Secondary Ion Mass Spectrometry (ToFSIMS)
- Dynamic Secondary Ion Mass Spectrometry (DSIMS)
- X-ray Photoelectron Spectroscopy (XPS)
- Fourier Transform Infra-Red Spectroscopy (FT-IR) with Microscopy
- White Light Interferometry
- Scanning Electron Microscopy (SEM) with Energy Dispersive Spectroscopy (EDS) & Wavelength Dispersive Spectroscopy (WDS)
- X-Ray Diffraction (XRD) - X-Ray Reflectometry (XRR), Grazing Incidence X-Ray Diffraction (GID) & Micro Diffraction ( - XRD)
- Glow Discharge Mass Spectrometry (GDMS)
- Transmission Electron Microscopy (TEM) & Electron Energy Loss Spectroscopy (EELS)
- Electron Microprobe (EDS & 7 WDS) with color X-ray elemental mapping
- Further Bulk Techniques

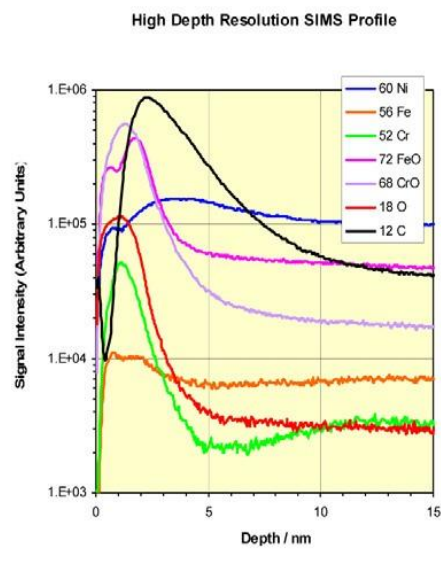


Fig. 4. DSIMS Profile