Nanoparticle Characterization and Surface Analysis

Focus Industries:
- Food and Pharma, Cosmetics, Agriculture, Forestry, Speciality Chemicals, Packaging and Textiles, Energy, Construction, Mining and Automotive
- Product development for raw materials and final product manufactures

Services: Consultancy and Analytical Measurements
Many problems can be solved by knowing what is at the surface!

Chemistry at the Surface
- Non-destructive investigations of materials' properties and interaction behaviour on the nanoscale
- Chemical information of the elements, molecules and functional groups
- Structure, oxidation states, isotopes and crystallinity
- Depth of analysis down to 2nm and detection limit of 0.1% of atom (XPS/ESCA)
- Lateral resolution from 0.2µm (ToF-SIMS) and 0.3µm (Raman Spectroscopy)


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Particle Size Measurements

Particle size is critical to many industries and is a valuable indicator of performance and quality. It determines:

✓ Appearance and gloss of a coating
✓ Flavour of food powder
✓ Reflectivity of a paint
✓ Absorption rates of pharmaceuticals
✓ Strength of cementitious materials

**Instrumentation:** Dynamic Light Scattering – DLS, Laser light diffraction, UV-VIS spectrometer, Nanosizer, Viscometer, Turbiscan, and Zeta probe.

Microscopy and Surface Topography Capabilities

- Particles and surfaces can be imaged and characterized quantitatively
- Material properties, surface characteristics, mechanical properties and interactive forces can be measured
- Almost any type of surface can be investigated under various environmental conditions
- Nanotribology and electrical properties can be evaluated

**Instrumentation:** Atomic force microscopy - AFM, Environmental Scanning Electron Microscopy – ESEM

AFM Topography of a hair fibre (left), AFM adhesion image of a PS/LDPE polymer blend (middle), and SEM/EDX image on contaminant found on waste-water treated membrane (right).

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