

# MATERIAL TESTING



## Polymer and Organic Materials Consultancy

### Materials Include:

- Experimental rheometry of complex fluids and soft solids—particularly with respect to process/product optimisation and troubleshooting.
- Polymer synthesis and characterisation—polymer design, structure-property relationships.
- Formulation optimisation of inks (electronics, sensors, displays, ink jet), functional coatings, pharmaceutical delivery systems, polymers for sensors and biomedical devices.
- Extraction, characterisation and utilisation of hydrocolloids and polymers from biological/renewable sources.

### Facilities Include:

- Controlled stress and controlled deformation rotational rheometry
- Capillary breakup extensional rheometry for study of fluids in uniaxial extension
- Capillary/extensional rheometry of low viscosity fluids
- Mechanical and texture analysis of soft solids
- Polymer fractionation by SEC, FPLC, asymmetric FFF
- Polymer molar mass determination by static light scattering (online analysis available)
- Particle size distribution by photon correlation spectroscopy and laser diffraction.
- Colloid stability assessment [zeta potential, multiple light scattering (Turbiscan)]
- Static and dynamic surface tensiometry of low viscosity and structured fluids by maximum bubble pressure technique

## Surfaces, Thin Films and Coating Materials Consultancy

### We have expertise in thin film deposition of inorganic materials by:

- Vacuum coating (shortly, sputter coating will be available)
- Chemical Vapour Deposition (CVD)

### Materials Include:

- Compound semiconductors
- Carbon nanotube thin films as dense mats with high surface area

### We can characterise and analyse surfaces using:

- SEM with elemental analysis (EDX)
- TEM with specialisation in cross-sectional analysis of thin film structures (multilayer)
- Atomic Force Microscopy (AFM) for surface roughness, morphology at nanometer scale
- Optical microscopy from low power stereo-zoom to high power metallurgical microscopes: Reflection with Normarski to x 1500 magnification (non-immersion) Transmission with phase contrast and fluorescence image processing and analysis. Dimensional measurements: length, area etc.

### Additional Facilities Include:

- Rapid induction heating of small parts
- Controlled atmosphere furnace to 1200°C (NH<sub>3</sub>, N<sub>2</sub>, H<sub>2</sub> and mixtures)
- Photoluminescence for phosphor characterisation
- Diamond wafer saw cutting/slicing
- Diamond polishing/lapping
- Ultrasonic drill for very hard materials or glass

For more information on any of our Material Testing, please contact us on 01978 293491 or by email at [solutions@glyndwr.ac.uk](mailto:solutions@glyndwr.ac.uk)

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