

COST D43: Colloid and Interface Chemistry for Nanotechnology

Program Workgroup 1: Analytical methods and their standardization

Target of the WG activities

The study of nanoscale objects is impossible without adequate experimental tools. Recently, there has been a remarkable revolution in the availability of experimental techniques for their study, where new synchrotron and neutron sources are only the most visible indications to outsiders. When combined with laboratory-scale equipment, these techniques provide a powerful means to probe and to analyse nanostructured systems. The most important examples include small and wide-angle static scattering techniques (light, neutrons, and X-ray), photon correlation spectroscopy (light and X-rays), non-linear optical spectroscopy, and various reflectometry techniques to characterise thin films. Another quickly evolving avenue involves imaging techniques: real-time video-microscopy, electron microscopy (high-resolution SEM and TEM, cryo-TEM), tomography, atomic force microscopy (AFM), X-ray microscopy, and other techniques offering spatial resolution of system properties (e.g., elements, thickness) on the nanometre scale. A particular focus will be on the development of a toolbox of standardised methods to analyse nanostructured materials, particularly those capable of addressing size distributions and morphology of soft materials.

Furthermore, the workgroup will develop new experimental techniques, improve and automate existing ones, and foster the improvement of the necessary theoretical and software tools. Sharing of expertise within the Action shall also be stimulated. The long-term goal is to transfer the necessary instrumental knowledge to the market, with a focus on techniques necessary for standardised analyses.

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22-11-2006, revised 02-02-2007, 02-10-2007

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