

Center for Applied Nanotechnology

Analytics

Characterization of Nanomaterials

In the business segment Analytics CAN GmbH is offering a selection of analytical methods for the characterization of nanoscaled materials. This selection contains several microscopic, spectroscopic and scattering methods. Furthermore CAN GmbH is offering techniques for the investigation of nanostructured surfaces, the energy and gas transport through materials and the characterization of rheological properties. In due of the research-oriented work at CAN GmbH the setups of the most measurement methods are very flexible and allow the investigation of various samples and sample forms.

Method	Instrument	Information
High-resolution transmission electron microscopy (HRTEM) <i>Optional:</i> Energy dispersive X-ray analysis (EDX)	Philips CM300UT	Micrographs of nanoparticles. Determination of crystal lattices and defects. Elemental analysis at selected parts of samples.
High-resolution scanning electronen microscopy (HRSEM) <i>Optional:</i> Energy dispersive X-ray analysis (EDX)	Leo 1550 ultra	Micrographs of nanostructured surfaces. Elemental analysis at selected parts of samples.
Dynamic light-scattering (DLS) <i>Optional:</i> Zeta potential	Malvern Zetasizer Nano ZS	Determination of hydrodynamic radius of colloiddally solved particles. Characterization of the zeta potential of colloiddally solved particles.

Table 1/2

CAN GmbH offers companies and research institutions contract research and development services in the area of nanotechnology and participates in national and international research programs. The focus of activities is on the utilization of new findings made in chemical nanotechnology and analysis, particularly in the areas of consumables, special polymers and health care. The main areas of expertise include the production of numerous nanoparticulate materials, the encapsulation of active substances, the development of toxicity assays as well as the development of nanoparticle-based biological and medical markers.

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Method	Instrument	Information
Small-angle X-ray scattering (SAXS)	Seifert DRF-Cu0,3	Determination of structures and particle forms in nanoscaled materials.
X-ray diffraction (XRD)	Philips X'Pert	Determination of the crystal structure and crystallinity in solids.
UV-VIS spectroscopy	Cary 500 Scan	Absorption measurement between 130 and 3300 nm in transmittance.
Fluorescence spectroscopy	Photon Technology International	Absorption measurements in reflection of solid and liquid samples between 250 and 800 nm. Emission measurements of luminescent samples.
Viscosity	Brookfield DV-II+	Determination of the viscosity of liquids and gels at room temperature.
Rheological characterisation	Malvern Gemini HR Nano	Investigation of the deformation and flow properties of liquids, gels or solids.
Thermal conductivity measurement	Netzsch LFA 447 NanoFlash	Measurement of the thermal diffusion and conductivity in a temperature range of 25-300 °C.
Oxygen permeability measurement	Mocon Ox-Tran Model 2/10	Measurement of the oxygen permeability at different temperatures and relative humidity.
Atomic force microscopy (AFM)	JPK Nanowizard	Topographical images of surfaces.
Contact angle measurements	Krüss DSA 100	Measurement of the contact angle of droplets on surfaces.
Nanoindentation	Micro Materials NanoTest	Mechanical properties of surfaces and thin layers: cohesive and adhesive collapse of layers, scratching resistance, coefficient of elasticity, creep behaviour, ductile and elastic deformation.

Table 2/2

CAN GmbH offers companies and research institutions contract research and development services in the area of nanotechnology and participates in national and international research programs. The focus of activities is on the utilization of new findings made in chemical nanotechnology and analysis, particularly in the areas of consumables, special polymers and health care. The main areas of expertise include the production of numerous nanoparticulate materials, the encapsulation of active substances, the development of toxicity assays as well as the development of nanoparticle-based biological and medical markers.

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