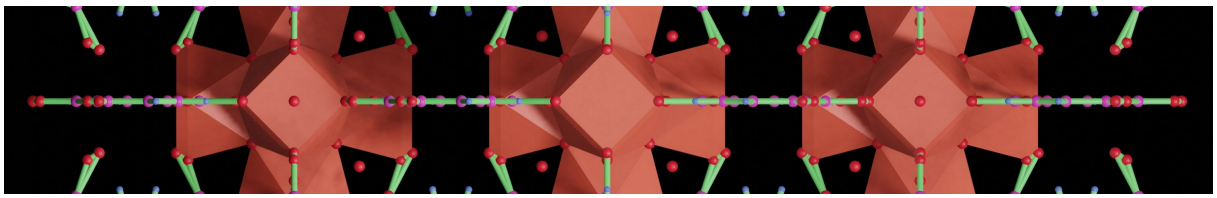
Characterization methods for MOFs and other synthetic, highly porous materials

Norlab offers a whole range of testing and analysis instruments for MOFs (metal-organic frameworks) and other synthetic, highly porous materials

A number of material classes with inherent porosity exists, which are discovered or currently optimized in research and development departments and groups. Next to the more classical adsorbents such as zeolites, activated carbons and silica gels, recent research publications put out a display of materials such as MOFs, POFs, MCMs, porous glasses, aerogels, ALPOs, SAPOs and pillared clays among others. Relevant targets for optimization and variation of these materials are usually defined in academic or industrial research and development. This means that mostly laboratory methods are applied, even though development processes include the analysis of parameters and characteristics for applications at very early stages. Analytical methods and processes for standard texture analysis (such as BET-surface area and pore size distributions) remains a cornerstone in characterization of new materials, however, the development of these materials tends to include the study of technically relevant adsorption capacities or completely new fields of application.



Parameter	Method	Instrument
Active surface area	Chemisorption	AMI-300 series BenchCAT series µBenchCAT series
Adsorption, desorption and other reaction data	Temperature programmed reactions	AMI-300 series BenchCAT series µBenchCAT series
BET surface area and pore analysis	Gas adsorption	3P micro series 3P meso series 3P sync series 3P surface DX
Density, solids	Gas pycnometry	3P densi 100
Gas mixture adsorption	Breakthrough curves	mixSorb L mixSorb S mixSorb SHP
Particle shape	Image analysis	BeVision D2 Bettersizer S3 Plus
Particle size, concentrated dispersions	Acoustic spectrometry	DT-1202 DT-100
Particle size, nanometer range	Dynamic light scattering	BeNano series
Particle size, powders	Laser diffraction	Bettersizer S3 Plus Bettersizer S3 Bettersizer 2600 Bettersizer ST
Pore volume and size distribution	Mercury intrusion porosimetry	Contract analysis Please ask for a quote
Tap density	Tapping volumetry	BeDensi T series
Water uptake and release	Dynamic vapor sorption (DVS)	3P graviSorb series

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Parameter	Method	Instrument
Zeta potential, concentrated dispersions	Electroacoustic spectrometry	DT-1202 DT-310 DT-300
Zeta potential, nanoparticles	Electrophoretic light scattering (ELS)	BeNano series