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Nanomaterials characteristics and applicable analytical technologies

Analytical Technique		Concentration	Particle Size	Particle Size Distribution	Surface Charge	Surface Area	Shape	Agglomeration	Structure	Composition
Inductively Coupled Plasma – Mass Spectrometry	ICP-MS	●								●
Field-flow Fractionation + ICP-MS	FFF-ICP-MS	●	●				●	●		●
Liquid Chromatography – Mass Spectrometry	LC-MS	●								●
Optical Spectroscopy – UV/Vis	UV/Vis	●	●							●
Fluorescence Spectroscopy	FL	●	●					●		●
Turbidity			●	●				●		
Scanning Electron Microscopy	SEM		●	●			●	●	●	
Transmission Electron Microscopy (+EDX)	TEM		●	●		●	●	●	●	●
Atomic Force Microscopy	AFM		●	●	●	●	●	●		
Confocal Microscopy			●	●			●	●	●	
Field Flow Fractionation	FFF		●	●			●	●		
Dynamic Light Scattering	DLS		●	●			●	●		
Static Light Scattering	SLS		●				●	●		
Molecular Gas Adsorption (BET)	BET				●	●				
Dialysis			●							
Electrophoresis and Capillary Electrophoresis			●	●						
Ultrafiltration			●	●	●					
Centrifugation			●	●				●		
Filtration			●	●						
Nanoparticle Tracking Analysis	NTA		●	●				●		
Size Exclusion Chromatography	SEC		●	●						
Selected Area Electron Diffraction	SAED		●	●					●	
Zeta Potential by DLS					●					
X-ray Diffraction	XRD								●	
Thermogravimetric Analysis	TGA		●							●
Quartz Microbalances			●							●
Differential Scanning Calorimetry	DSC									●
Dynamic Mechanical Analysis	DMA									●
Fourier Transform Infrared Spectroscopy	FT-IR									●
FT-IR Imaging									●	●
Raman Spectroscopy			●						●	●
TGA coupled with Gas Chromatography – Mass Spectrometry	TGA-GC/MS									●
Laser Induced Plasma Spectroscopy	LIPS		●							
Hydrodynamic Chromatography	HDC		●	●						
Laser Induced Breakdown Detection	LIBD		●	●				●		
X-ray Photoelectron Spectroscopy	XPS				●	●				●
Electron Energy Loss Spectroscopy	EELS (+EDX)									●

For more information, please visit www.perkinelmer.com/nano

● Commonly used in the characterization of nanomaterials

● Microscopy techniques

● Not widely applicable

● Available from PerkinElmer

HUMAN HEALTH | ENVIRONMENTAL HEALTH