NANOPARTICLE SOURCE PVD SYSTEM

Nanoparticle System

Specialist nanoparticle source integration for functional films, coatings and hybrid materials research.

NPS	Hybrid	Modular	$<5\times10^{-7}$
NANOPARTICLE SOURCE	FUNCTIONAL FILMS	MINILAB PLATFORM	BASE PRESSURE (MBAR)

Nanoparticle source integration for hybrid materials

Built on the MiniLab 125 platform, the Nanoparticle System enables controlled synthesis and integration of nanoscale materials directly within a vacuum environment. By combining nanoparticle generation with thin-film deposition in one platform, researchers can fabricate hybrid materials and functional coatings with control over particle size, composition and distribution — relevant to catalysis, sensing, energy storage and antimicrobial surfaces.

- Specialist source integration for nanoparticle deposition
- Combine nanoparticle generation with thin-film deposition
- Application-led configuration around chamber geometry
- Controlled particle size, composition and distribution
- Useful for functional coatings and hybrid materials
- Modular MiniLab pathway for process development

Why choose the Nanoparticle System

Specialist capability
Adds nanoparticle source integration that standard sputtering or evaporation alone cannot provide.

Hybrid material fabrication
Combine particle generation and thin-film deposition for tailored functional films.

Application-led configuration
Built around chamber geometry and source needs for catalysis, sensing and energy work.

Integration flexibility
Add load-lock, transfer and automation capability when the application requires it.

Key features

Nanoparticle source
Specialist source integration for controlled nanoparticle deposition.

Hybrid film capability
Combine nanoparticle generation with conventional thin-film methods.

Modular research platform
Built on MiniLab 125; configure sources, stages and monitoring.

Controlled particle properties
Control over size, composition and distribution for functional surfaces.

High-vacuum environment
Turbomolecular pumping for clean, controlled deposition conditions.

Recipe-led control
PC / touchscreen control with QCM monitoring options.

Typical configurations

Start with a proven configuration, then tailor sources, gases, substrate handling and integration around your materials and workflow.

Functional nanoparticle films

Coatings where nanoparticle structure drives performance.

- Specialist source integration
- Functional materials research
- Hybrid film development

Nanostructured coatings

Exploratory coatings and surface engineering.

- Material-specific configuration
- Process development support
- Research workflow fit

Hybrid materials

Particles combined with conventional thin films.

- Modular integration
- Application-led specification
- Future process flexibility

Technical specifications

Parameter	Specification
System type	Nanoparticle source integration for PVD
Best fit	Functional, nanostructured & hybrid films
Platform	Specialist MiniLab 125 configuration
Base pressure	$<5\times10^{-7}$ mbar

Parameter	Specification
Deposition methods	Nanoparticle source + sputtering / evaporation
Substrate handling	Heating, rotation by configuration
Control	Recipe-led; QCM monitoring
Warranty	2 years

MiniLab platforms are configurable; exact specifications depend on the final build and are confirmed at quotation.

Selected publications citing the MiniLab range

- Nanoparticle vacuum deposition sources — Published study
- Insights into the self-inhibiting photoreduction of Cu_2O in bicarbonate electrolytes — University of Antwerp
- HexAuFoil: cryo-EM with sub-1 Å specimen movement — MRC Laboratory of Molecular Biology
- Thin-film Bragg reflector for monolithic GaAs devices — Published study
- Direct single-molecule detection with a low-cost smartphone microscope — University of Fribourg
- Cadmium- and zinc-doped p-type Sb_2Se_3 single crystals and solar cells — University of Liverpool