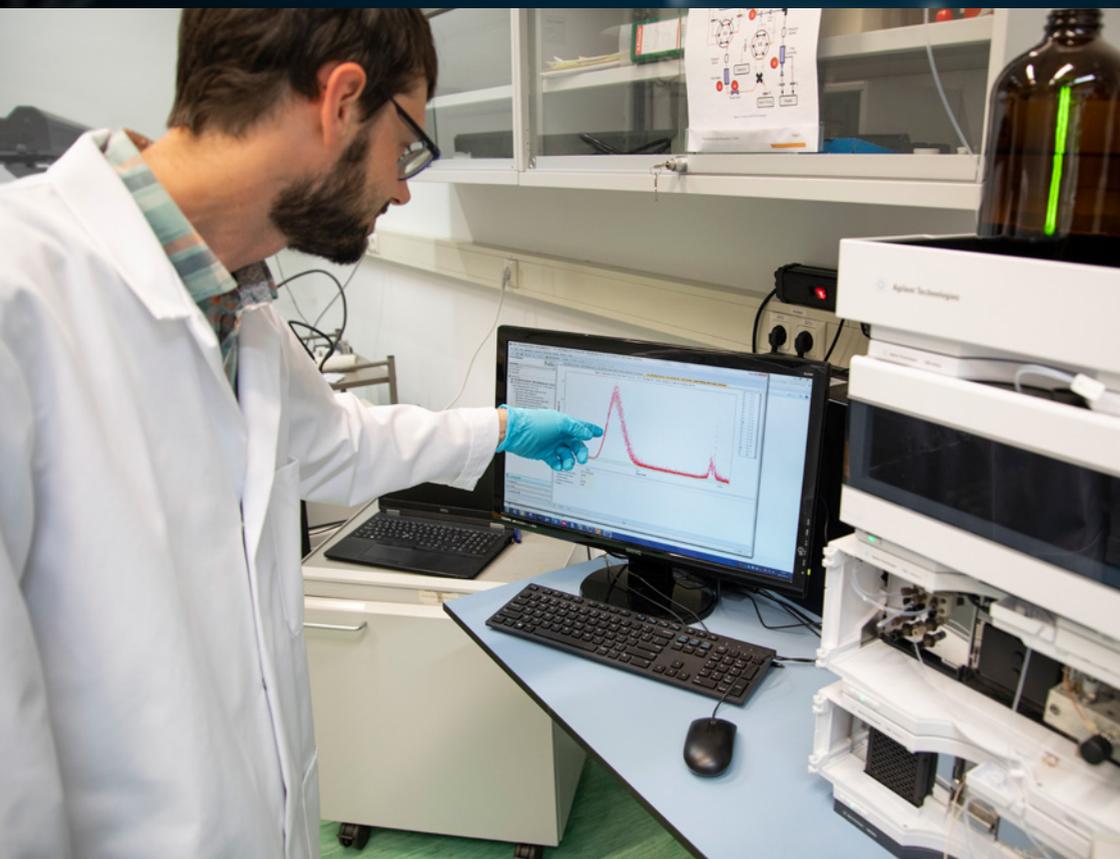


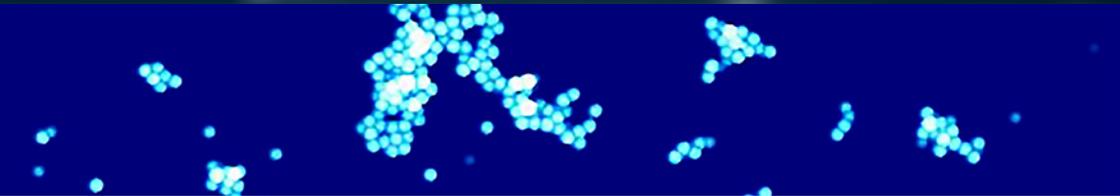
# Metrology for the nanotechnologies





The Belgian National Metrology Institute **SMD**, founded in 1970, endeavours to support the Belgian industry and to ensure the general product safety. This is done by putting forward the technical infrastructure and the scientific skills to provide high-quality metrological standards and services that lay the foundation of reliable measurements. As signatories of the Mutual Recognition Agreement, our CMCs are consistent with those of the other countersigning countries.

At SMD, the nanometrology laboratory was inaugurated back in 2009. Within a decade it has achieved the prestige of being **the first European national laboratory that conducts accredited nanoparticle (NP) diameter size and distribution calibrations, as well as calibration of step height nanogratings**. These are performed by means of atomic force microscopy (AFM).



## What we offer

- Calibration of reference NPs and standard gratings that can further serve our customers for their equipment conformity assessment;
- Direct measurement of NP samples to validate a production batch;
- Statistical analysis of measurement data for different uncertainty evaluation methods.

Our BELAC scope covers the characterization of isolated spherical, incompressible nanoparticles by means of AFM: mean nanoparticle diameter and size distribution (10 nm to 200 nm with an associated uncertainty of 3 nm).



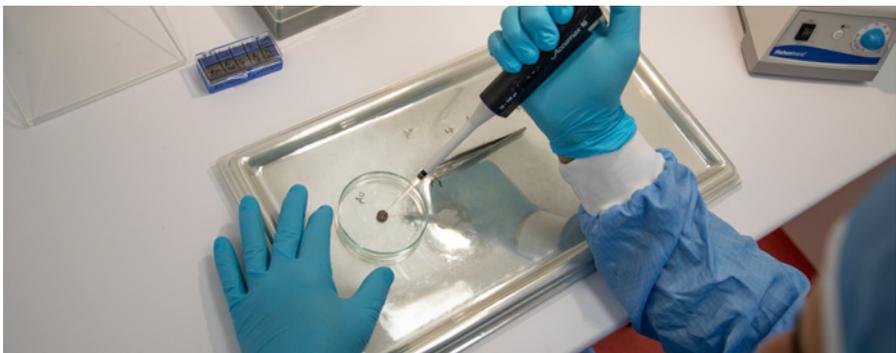
## Our assets

- Provide internationally recognizable measurements, underpinned by competitive CMCs;
- Act as third party analysis laboratory, with competence and impartiality;
- Flexible services adapted to meet particular measurement needs.

## What we develop

Within the context of the national Belgian legislation relative to the placing on the market of NP based substances, in order to support the manufacturers in their R&D projects, and to enable the consumer protection, the nanometrology laboratory of SMD has developed an infrastructure composed of:

- A 30 m<sup>2</sup> cleanroom facility, designed to maintain low particle levels (class 7) under controlled environmental conditions.
- A metrological AFM directly traceable to the SI meter (standard lasers) via interferometric and diffraction techniques.
- A characterization platform for NPs issued from complex embedded media (gel, cream, soil) that is composed of a Field Flow Fractionation-based separation technique, alongside light scattering and scanning probe microscopy-based measurement techniques.



Discover more about our R&D activities and resources on:

<https://economie.fgov.be/fr/themes/qualite-securite/metrologie/metrologie-scientifique/la-nanometrologie>

Contact us by email: [metrology.scientific@economie.fgov.be](mailto:metrology.scientific@economie.fgov.be)

