

CUSTOM MADE PARTICLE SYSTEMS



FRAUNHOFER INSTITUTE FOR SILICATE RESEARCH ISC

Your application area

Particle based

- immunodetection assays
- contrast agent for medical imaging
- drug delivery systems

You need multifunctional particle systems for your work as physician, health professional or medical scientist in university, hospital or in the pharmaceutical and biotech industry? We have the solution for your project!

We offer all-round particle solutions from one source

- Synthesis
- Characterization
- Surface modification and biofunctionalization
- Biocompatibility tests
- Adaptation of modular designed particle systems to your application techniques



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Neunerplatz 2
97082 Würzburg

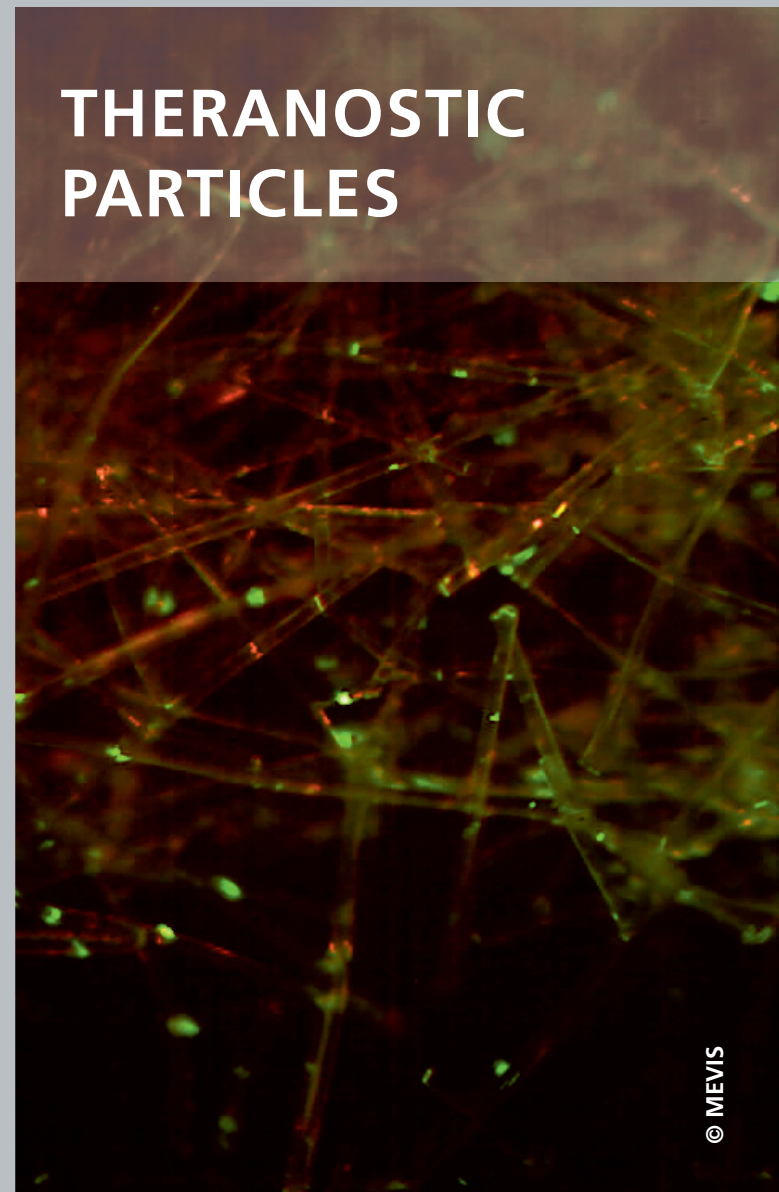
Dr. Sofia Dembski

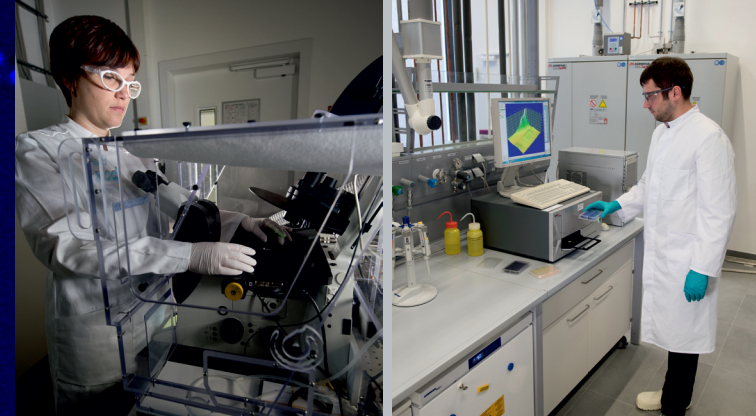
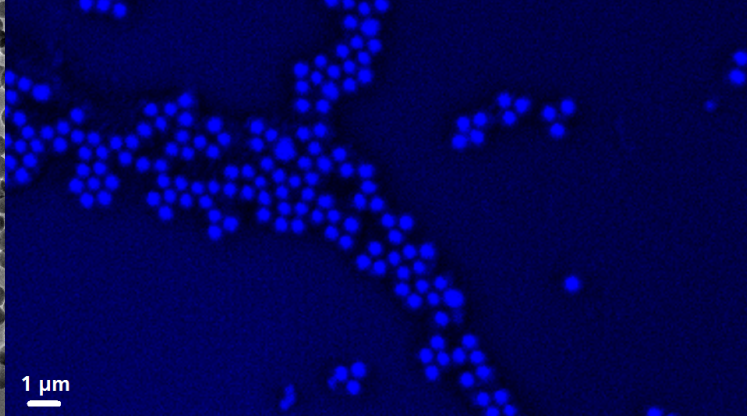
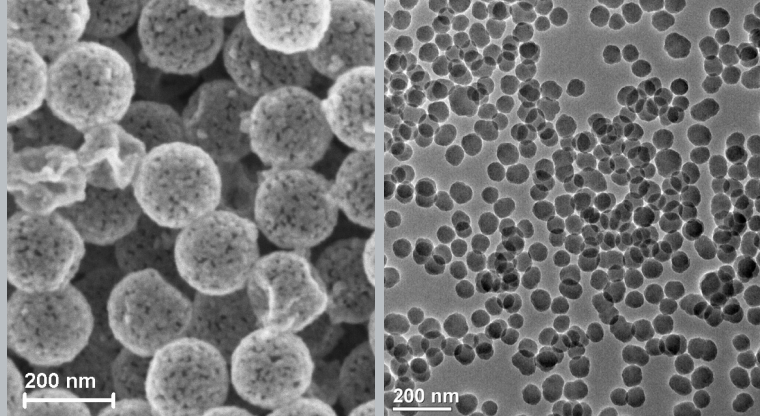
Competence Team Manager Theranostics
Competence Unit Materials Chemistry
Phone +49 931 4100-516
sofia.dembski@isc.fraunhofer.de

In cooperation with Translational Center "Regenerative Therapies for Oncology and Musculoskeletal Diseases"

Würzburg branch of the Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB
Röntgenring 11
97070 Würzburg

THERANOSTIC PARTICLES





OUR PARTICLE SYSTEMS

- consist of inorganic and hybrid materials
- are synthesized by wet-chemical methods, e. g. sol-gel technology
- have a sophisticated design strategy based on a modular principle

We upscale the particle systems inhouse up to your production requirements.

**Custom made
(nano) particle
systems**

SURFACE MODIFICATION

By conventional functionalization methods we imply reactive chemical functionalities to the surface that allow adaptation into different environments or matrix materials.

Various surface modifications are available, e. g. carboxyl, amine, thiol and isocyanate.

We analyze particle surface coverage with chemical functionalities qualitatively and quantitatively.

PARTICLE PROPERTIES

- Adjustable properties:
 - Size, shape and polydispersity
 - Crystal structure
 - Optical or magnetic properties
- Narrow particle size distribution
- High particle stability in various environments

We customize the material composition according to your application.

BIOFUNCTIONALIZATION

Covalent and non-covalent attached biomolecules by bioconjugation methods:

- Antibodies
- Nucleobases
- Selected proteins

We verify the functionality of the coupled biomolecules by subsequent biological assays.

PARTICLE CHARACTERIZATION

In the field of particle characterization, Fraunhofer ISC provides a comprehensive range of highly specialized methods, processes and devices such as:

- Transmission electron microscopy (TEM) as direct imaging method providing reliable data on particle morphology and particle size
- Dynamic light scattering (DLS) for the determination of the hydrodynamic radius of particle-size distribution
- Nitrogen sorption (BET) measurements for the determination of porosity and surface
- Chemical analysis in combination with spectroscopic, gravimetric and photometric analysis methods for the determination of composition of particle systems
- UV-VIS and fluorescence spectroscopy and microscopy for the characterization of optical properties of luminescent particle systems