micromod Partikeltechnologie GmbH

modular designed particles

Publications and Reviews

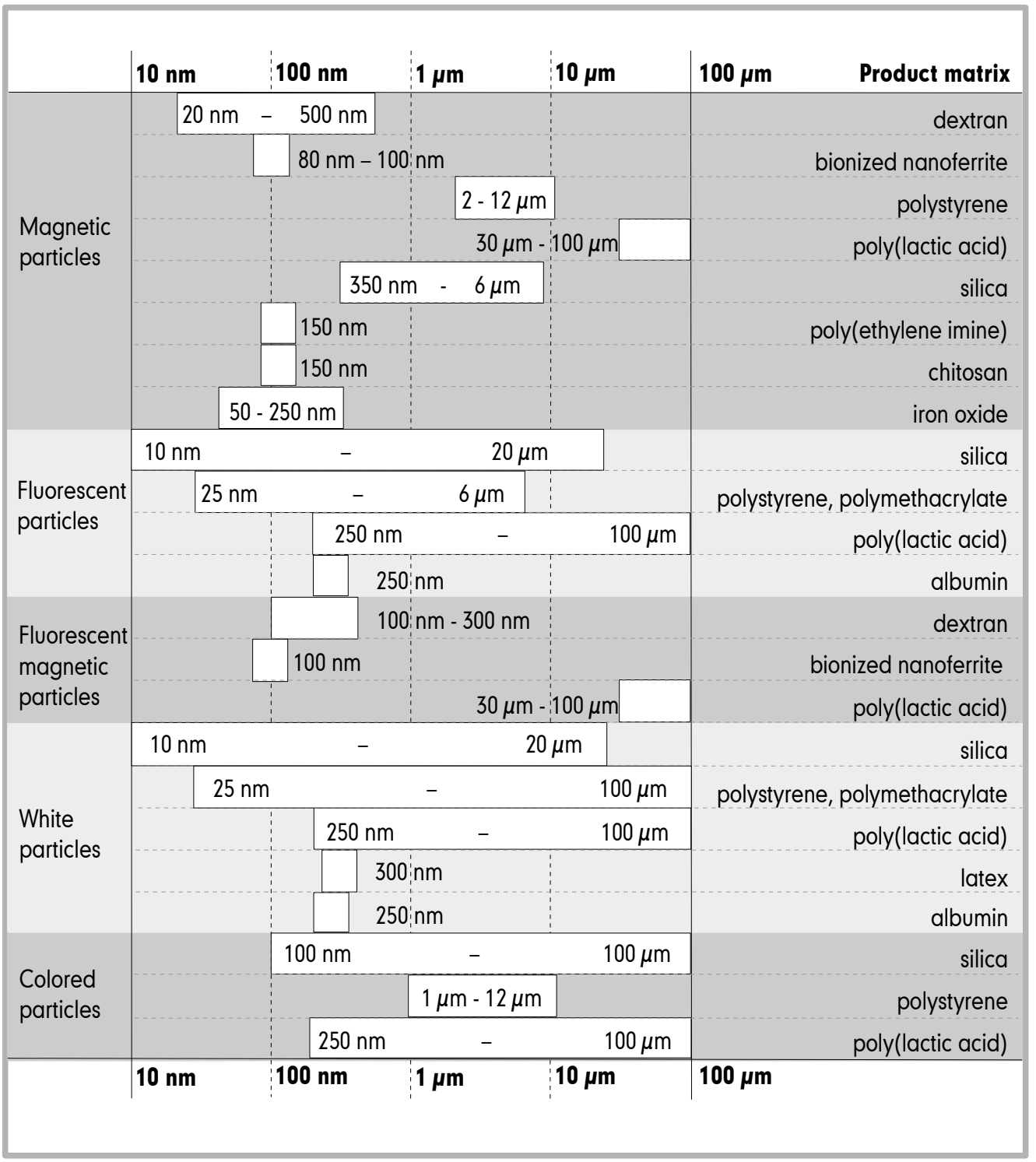
Technological Applications

Implementation in Life Sciences

magnetic micro- and nanoparticles

www.micromod.de

Product overview



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1 Introduction

For more than 20 years, **micromod Partikeltechnologie GmbH** has been the reliable supplier of magnetic nano- and microparticles located in Rostock. The focus of micromod as a technology-oriented company is directed to the development and the production of monodisperse micro- and nanoparticles. The particles are made from various materials, including different sizes and covering a large spectrum of physical and chemical modifications. This has been widely utilized by our customers which have performed studies with micromod's magnetic micro- and nanoparticles.

The manifold application fields of magnetic micro- and nanoparticles comprise for example

- the separation of biomolecules like proteins or nucleic acids,
- the separation and sorting of cells,
- the separation of radionuclides or other metal ions,
- magnetic resonance imaging (MRI) and magnetic particle imaging (MPI),
- hyperthermia with alternating magnetic fields,
- biosensor and lab-on chip design,
- homing and tracking of stem cells,
- the specific targeting of cells and organs, or
- the magnetic supply and removal of reagents.

All these applications require customized physical, chemical and biochemical particle properties. Therefore micromod provides a large variety of magnetic particles with different magnetic properties, diameters, matrix materials and surface functionalizations.

We offer various products for separation with permanent magnets or for separation using high gradient magnetic fields.

Magnetic particles for separation *with permanent magnets* are provided in the size range from 130 nm – 100 µm:

- nanomag®-D - dextran based nanoparticles with magnetite core material
- PEI-M particles - nanoparticles with a poly(ethylene imine) coating
- Iron oxide particles - nanoparticles based on clusters of magnetite crystals
- micromer® -M - polystyrene based microspheres
- sicastar®-M - silica based microparticles
- sicastar®-M-CT - cluster-typed magnetic silica microparticles
- PLA-M particles - poly(lactic acid) based microparticles

Magnetic nanoparticles for separation *in high gradient magnetic field* possess particle sizes between 20 and 100 nm:

- nanomag®-D-spio - iron oxide embedded into a dextran matrix
- nanomag®-CLD-spio - iron oxide embedded into a matrix of crosss-linked dextran

magnetic micro- and nanoparticles

Our assortment of magnetic particles is completed by particle types with a special design of magnetic properties.

- Bionized NanoFerrite - magnetic dextran or hydroxyethyl starch nanoparticles

  Bionized NanoFerrite (BNF) particles are thermally blocked at room temperature and suitable for hyperthermia treatment.

- perimag® - dextran coated magnetic nanoparticles

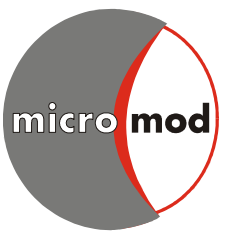
  Particles of perimag® series are designed for imaging applications (MPI, MRI) and are employable for homing and tracking of stem cells as well as for hyperthermia treatment.

Micromod is the reliable supplier of magnetic nano- and microparticles as system components for *in-vitro* diagnostics, high-throughput screening, magnetic bioseparation, cell labeling as well as for research and development of novel diagnosis and therapy methods.

A modern quality management according to EN ISO 13485 in combination with a sophisticated particle analysis system allows the micromod Partikeltechnologie GmbH to ensure customers (predominantly producers of diagnostic kits and high-throughput equipment, biotechnology companies and various research institutions) a high quality standard in all product categories. Selected types of magnetic particles can be manufactured under clean room conditions upon request.

This brochure provides a review of third party papers on applications of micromod's magnetic nano-and microparticles

- in biosensors and bioassays,
- as contrast agent for Magnetic Resonance Imaging (MRI),
- as tracer for Magnetic Particle Imaging (MPI),
- in magnetic field assisted hyperthermia,
- for selective targeting applications,
- for homing and tracking of stem cells,
- in combination with fluorescence labeling for optical imaging, and
- for magnetic separation of radionuclides or other metal ions.



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