

Symposium Magnetic Nanoparticles in Biomedical Diagnostics and Therapy (SYBD)

jointly organized by
 the Magnetism Division (MA),
 the Biological Physics Division (BP),
 the Chemical and Polymer Physics Division (CPP), and
 the Radiation and Medical Physics Division (ST)

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Magnetic nanoparticles (MNP), e. g., superparamagnetic iron oxide nanoparticles, are used as nanomedical agents in diagnostics and therapy of different diseases. This symposium addresses MNP-related topics in this multidisciplinary field, comprising physics, chemistry, biology and medicine. One prominent example is, e.g., the attachment of chemotherapeutic agents to ligands of the MNP and their injection as water based suspension into a supplying artery of a tumor. The MNPs are targeted towards the tumor by local magnetic field gradients. The agents are released locally, thus avoiding their spread over the whole body. The issues to be discussed are magnetic properties at the nanoscale, synthesis and surface functionalization with biological or chemotherapeutic active agents, biocompatibility, transport of ferrofluids, choice of magnetic drug targeting ligands and in vitro and in vivo biomedical and clinical applications. Specifically, applications and simulations of local drug accumulation and controlled release, novel contrast agents for magnetic resonance imaging, cancer therapy using magnetic fluid hyperthermia, and the emerging magnetic particle imaging technique are highlighted.

Overview of Invited Talks and Sessions

(Lecture Room H1)

Invited Talks

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| SYBD 1.1 | Mon | 15:00–15:30 | H1 | Functionalization and Pharmaceutical Aspects of Magnetic Nanoparticles (Magnetic Carriers) — ●URS O. HÄFELI |
| SYBD 1.2 | Mon | 15:30–16:00 | H1 | Fluid mechanical aspects of therapeutic application of suspensions of magnetic nanoparticles — ●STEFAN ODENBACH |
| SYBD 1.3 | Mon | 16:00–16:30 | H1 | Magnetic Particle Imaging: A new Medical Imaging Modality — ●THORSTEN BUZUG |
| SYBD 1.4 | Mon | 16:30–17:00 | H1 | Superparamagnetic iron oxide nanoparticles for MR-visible mesh implants and novel drug targeting models — ●IOANA SLABU, ANJALI ROETH, CHRISTIANE KUHL, THOMAS SCHMITZ-RODE, MARTIN BAUMANN |
| SYBD 1.5 | Mon | 17:00–17:30 | H1 | Magnetic measurement techniques assisting biomedical applications of magnetic nanoparticles — ●LUTZ TRAHMS |

Sessions

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| SYBD 1.1–1.5 | Mon | 15:00–17:30 | H1 | Magnetic Nanoparticles in Biomedical Diagnostics and Therapy |
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