

# 14th German Ferrofluid Workshop

## Ilmenau, March 17-19, 2014

Preliminary program

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|             | <b>Monday, March 17<sup>th</sup>, 2014</b>                                                                            |                                                                                                                                              |
| <b>Time</b> | <b>Lecture Session 1 (Chair: J.H. Clement)</b>                                                                        |                                                                                                                                              |
| 13:00-13:30 | P. Scharff (Rector of the TU Ilmenau), K. Zimmermann, S. Odenbach                                                     | Opening                                                                                                                                      |
| 13:35-14:20 | I. Hilger                                                                                                             | Keynote presentation                                                                                                                         |
| 14:20-14:45 | J. Schotter, S. Schrittwieser, F. Ludwig, J. Dieckhoff, K. Soulantika, S. L. Mozo, B. Pelaz, W. Parak                 | Homogeneous breast cancer biomarker detection by optically measuring the rotational dynamics of magnetic nanorods                            |
| 14:45-15:10 | N. Pömpner, M. Stapf, I. Hilger                                                                                       | Cytotoxicity und uptake levels of methotrexate coupled magnetic nanoparticles in different breast cancer cell lines for multimodal treatment |
| 15:10-15:35 | P. Tripal, J. Zaloga, R. P. Friedrich, E. Schreiber, B. Weigel, R. Tietze, J. Nowak, S. Odenbach, S. Lyer, C. Alexiou | Magnetically controlled cell seeding for vascular tissue engineering using endothelial cells loaded with iron oxide nanoparticles            |
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| 15:35-16:15 | <b>Coffee break</b>                                                                                                   |                                                                                                                                              |
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|             | <b>Lecture Session 2 (Chair: K. Zimmermann)</b>                                                                       |                                                                                                                                              |
| 16:15-16:40 | N. Buske                                                                                                              | Tailored magnetic dispersions for spectacular applications                                                                                   |
| 16:40-17:05 | P. Cremer, A.-M. Menzel, H. Löwen                                                                                     | Finite-element simulation of ferrogels: magneto-mechanical coupling and stress-strain behaviour                                              |
| 17:05-17:30 | A. Attaran, J. Brummund, T. Wallmersperger                                                                            | A contribution to the modeling of ferrogels                                                                                                  |
| 17:30-18:15 | O. Mollenhauer                                                                                                        | Keynote presentation                                                                                                                         |
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| 18:30-19:30 | <b>Poster Session 1</b>                                                                                               |                                                                                                                                              |
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|             | <b>Tuesday, March 18<sup>th</sup>, 2014</b>                                                         |                                                                                                                                                                                               |
| <b>Time</b> | <b>Lecture Session 3 (Chair: S. Dutz)</b>                                                           |                                                                                                                                                                                               |
| 09:00-09.45 | T.M. Buzug                                                                                          | Keynote presentation                                                                                                                                                                          |
| 09:45-10:10 | F. Wiekhorst, N. Löwa, S. Metzkow, W. Poller, A. Ludwig, L. Trahms                                  | Magnetic particle spectroscopy detecting changes during cellular uptake of magnetic nanoparticles                                                                                             |
| 10:10-10:35 | S. Disch, P. Bender, M. Kundt, D. Honecker, A. M. Schmidt                                           | Field-induced reorientation of shape anisotropic magnetic nanoparticles                                                                                                                       |
| 10:35-11:00 | C. Kuhlmann, T. Wawrzik, M. Schilling, F. Ludwig                                                    | Concept for a 10 MHz ac susceptometer with adjustable sample temperature                                                                                                                      |
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| 11:00-11:30 | <b>Coffee break – Poster Session 2</b>                                                              |                                                                                                                                                                                               |
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|             | <b>Lecture Session 4 (Chair: A.M. Schmidt)</b>                                                      |                                                                                                                                                                                               |
| 11:30-11:55 | I. Appel, R. Müller, S. Behrens                                                                     | Synthesis and properties of catalytically active and magnetic Co@SiO <sub>2</sub> and Co@ZSM-5 nanoparticles                                                                                  |
| 11:55-12:20 | C. Stötzel, H.D. Kurland, J. Grabow, S. Dutz, E. Müller, M. Sierka, F.A. Müller                     | Control of the crystal phase composition of Fe <sub>x</sub> O <sub>y</sub> nanopowders prepared by CO <sub>2</sub> laser vaporization                                                         |
| 12:20-12:45 | P. Quiroz, B. Halbedel                                                                              | Kinetic study of crystallization titanium substituted barium hexaferrite in a glassy matrix of the system BaO-Fe <sub>2</sub> O <sub>3</sub> -TiO <sub>2</sub> -B <sub>2</sub> O <sub>3</sub> |
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| 12:45-14:00 | <b>Lunch</b>                                                                                        |                                                                                                                                                                                               |
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|             | <b>Lecture Session 5 (Chair: D. Baumgarten)</b>                                                     |                                                                                                                                                                                               |
| 14:00-14:45 | D. Fischer                                                                                          | Keynote presentation                                                                                                                                                                          |
| 14:45-15:10 | R. Müller, O. Stranik, F. Schlenk, S. Werner, D. Malsch, D. Fischer, W. Fritzsche                   | Optical detection of nanoparticle aggregation in a living system und the influence of magnetic field                                                                                          |
| 15:10-15:35 | J. Zaloga, J. Nowak, C. Janko, R. Tietze, R. P. Friedrich, S. Odenbach, S. Lyer, G. Lee, C. Alexiou | Developing a fatty acid - protein coated SPION system with enhanced biocompatibility for drug delivery                                                                                        |
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| 15:45-17:15 | <b>Guided tour in Ilmenau</b>                                                                       |                                                                                                                                                                                               |
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| 17:30-18:30 | <b>General Assembly of the Ferrofluidverein Deutschland e.V.<br/>Poster Session 3</b>               |                                                                                                                                                                                               |
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| 18:45-??    | <b>“Thuringian Evening”</b>                                                                         |                                                                                                                                                                                               |
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|             | <b>Wednesday, March 19<sup>th</sup>, 2014</b>                             |                                                                                                                |
| <b>Time</b> | <b>Lecture Session 6 (Chair: R. Richter)</b>                              |                                                                                                                |
| 09:00-09:30 | J. Schumacher                                                             | Keynote presentation                                                                                           |
| 09:30-09:55 | T. I. Volkova, V. A. Turkov, K. Zimmermann, V. A. Naletova                | Ferrofluid volume between plates in the field of an electromagnetic coil                                       |
| 09:55-10:20 | P. Sánchez, J. Cerda, T. Sintes, S. S. Kantorovich                        | Supramolecular magnetic filaments: fundamental physics and potential applications                              |
| 10:20-10:45 | S. Förster, T. Friedrich, S. Mehdizadeh Taheri, I. Rehberg, S. Rosenfeldt | How frustrated can 8 dipoles be?                                                                               |
| 10:45-11:10 | J. Linke, D. Borin, S. Odenbach                                           | First-order reversal curve (FORC-) analysis of magneto-active materials with mixed magnetic phases             |
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| 11:10-11:45 | <b>Coffee break – Poster Session 4</b>                                    |                                                                                                                |
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|             | <b>Lecture Session 7 (Chair: S. Odenbach)</b>                             |                                                                                                                |
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| 11:45-12:10 | J. Landers, L. Roeder, A. M. Schmidt, H. Wende                            | Measurement of microviscosity in crosslinked polyacrylamide ferrohydrogels by Mössbauer spectroscopy           |
| 12:10-12:35 | E. Roeben, S. Teusch, M. Dörfer, M. Effertz, L. Kibkalo, A. M. Schmidt    | Magnetic Particle Nanorheology of Complex Fluids                                                               |
| 12:35-13:00 | M. Schümann, S. Odenbach                                                  | The effect of the addition of magnetic micro particles on the mechanical properties of soft polyurethane foams |
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| 13:00-13:15 | <b>Closing (Best Poster Award, Best Presentation Award)</b>               |                                                                                                                |
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