



## **Cluster of Excellence „Materials in New Light“**

### **Abstract of the Draft Proposal for the Excellence Initiative 2006**

**"New light is the key for the development of new technologies."**

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#### **Light and Material**

"New light" is a term which describes, among other things, extremely short light pulses or individual photons which are ideally suited to directly following the movement of atoms in materials, to saving information in single molecules, or to safely and confidentially transmitting data over long distances. The interaction between light and material, one of the fundamental themes of modern science, represents a key to understanding many fundamental phenomena in physics, chemistry, materials and life sciences and is also a basis for a broad spectrum of new technologies. The cluster "Campus Adlershof" Materials in New Light combines

1. new methods of light production over an extremely broad parameter spectrum
2. the utilization of such new light in decoding and controlling the relationships between structure, dynamics and functions of complex quantum systems and materials, and
3. the development of new applications in optical electronics and material analysis based upon the interaction between materials and light.

With this cluster, Humboldt-Universität and its partners will strengthen their international position in this field through outstanding interdisciplinary research, the transfer of research findings into new innovations, and the promotion of young scientists.

The university thereby is building on its experience in six Collaborative Research Centers in the fields of materials, surfaces, fast reactions and complex processes, and on the close connections which exist at Campus Adlershof between university researchers and researchers at non-university research institutions and in private industry.

**Speaker: Prof. Dr. Jürgen Rabe**

**Prof. Dr. Jürgen P. Rabe**

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**Participating Institutions**

- Berlin Electron Storage Ring Company for Synchrotron Radiation (BESSY)
- Federal Institute for Materials Research and Testing (BAM)
- Ferdinand Braun Institute for High-Frequency Technologies (FBH)
- Freie Universität Berlin (FU)
- Fritz Haber Institute of the Max Planck Society (FHI)
- Hahn-Meitner Institute (HMI)
- Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy (MBI)
- Max Planck Institute of Colloids and Interfaces (MPI)
- Universität Potsdam (UP)
- Weierstrass Institute for Applied Analysis and Stochastics (WIAS)

**Existing Research Associations**

- Collaborative Research Center 448 "Mesoscopically Organized Composites"
- Collaborative Research Center 555 "Complex Non-Linear Processes"
- Collaborative Research Center 658 "Elementary processes in molecular switches at surfaces"
- Collaborative Research Center 450 "Analysis and control of ultrafast photoinduced reactions"
- Collaborative Research Center 449 "Structure and function of membrane-integral receptors"
- Collaborative Research Center 296 "Growth Correlated Properties of Low-Dimensional Semiconductor Structures"
- Research Training Group 1025 "Fundamentals and functionality of size and interface controlled materials"
- International Max Planck Research School on Biomimetic Systems
- EU-FP6: Laserlab Europe
- EU-FP6: Integrated Initiative on Synchrotrons and FELs
- EU-FP6: Double Tungstate Crystals (DT-Crys)
- EU-FP6: EUROFEL

**Further Information on this Project**

<http://www.exzellenz.hu-berlin.de/>