



Name of the Partnering Organization:	Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Institute of Ion Beam Physics and Materials Research	 
Location (town, country):	Dresden, Germany	
Web site address:	<a href="http://www.hzdr.de">http://www.hzdr.de</a>	
<b>Brief description of the organization</b> <p>With the help of large-scale research facilities, HZDR scientists seek to improve conventional materials and develop new ones as prerequisites for innovative products helping to maintain our standard of living in the future. Many of our scientists are interested in matter under extreme conditions and at very small dimensions. They use high magnetic fields or intense beams to investigate fundamental phenomena, but also systematically tailor materials with great potential for future technologies. The five major research facilities at the HZDR are also available to external users; Radiation Source ELBE, Ion Beam Center, PET Center, TOPFLOW facility, Dresden High Magnetic Field Laboratory. The scientists want to examine how liquid steel can be controlled through magnetic fields; thus, improving its quality. The HZDR's Dresden High Magnetic Field Laboratory was founded with the objective of making ultra-high magnetic fields available to materials science. The fields generated only exist for a very short period of time, but they are much stronger than in nature. They are used for studying the properties of new materials e.g., superconductors. Pulsed magnetic fields are also used in industry for the transformation of materials. The Ion Beam Center is operated as a user facility for the ion beam modification and analysis of materials.</p>		
<b>Description of the research group</b> <p>We are working to a large extent on the ion beam modification and analysis of thin solid films. The range of materials investigated spans from oxides and semiconductors to metals and magnetic materials mainly for energy applications and in the field of information technology. A broad range of methods is available to our scientists at the Ion Beam Center, which provides all kinds of ion beams, i. e. highly accelerated charged particles, in a broad energy range for the compositional analysis of materials and the modification of materials either by doping or by radiation damage. In doing so new materials with improved functionalities are developed. The research aims towards potential applications in, e.g., nanoelectronics, optoelectronics, spintronics, and photovoltaics.</p>		
<b>Selected list of relevant publications (3 max, with titles)</b>		
<ol style="list-style-type: none"> <li><b>Magnetic patterning by means of ion irradiation and implantation</b> J. Fassbender, J. McCord J. Magn. Magn. Mater. 320, 579 (2008).</li> <li><b>Introducing artificial length scales to tailor magnetic properties</b> J. Fassbender, T. Strache, M. O. Liedke, D. Markó, S. Wintz, K. Lenz, A. Keller, S. Facsko, I. Mönch, J. McCord New J. Phys. 11, 125002 (2009).</li> <li><b>Spin reorientation transitions in Pt/Co/Pt films under low dose Ga<sup>+</sup> ion irradiation</b> J. Jaworowicz, A. Maziewski, P. Mazalski, M. Kisielewski, I. Sveklo, M. Tekielak, V. Zablotskii, J. Ferre, N. Vernier, A. Mougin, A. Henschke, J. Fassbender Appl. Phys. Lett. 95, 022502 (2009).</li> </ol>		
<b>Key researcher's CV (500-600 characters)</b>		
<p><b>Jürgen Fassbender</b> – Director Institute of Ion Beam Physics and Materials Research, HZDR and full professor of Applied Solid State Physics, TU Dresden, Spokesperson of the German Chapter of the IEEE Magnetics Society, Spokesperson of the division "Thin Films" and member of the advisory board for the board of directors of the Deutsche Physikalische Gesellschaft, over 130 articles in reviewed journals, 3 invited review articles, one book chapter, over 50 invited talks and plenary lectures at International Conferences and Symposia. His scientific interest with respect to the EAgLE project: i) structural, electronic and magnetic properties of ultra-thin films and interfaces; ii) ion beam modification of materials; iii) application of advanced fabrication and characterization tools for functional thin film materials.</p>		