Institute of Ion Beam Physics and Materials Research

HZDR

HELMHOLTZ ZENTRUM DRESDEN ROSSENDORF

16 October 2014

Institute Colloquium

„Ferromagnetic shape memory alloys: From ion beam assisted synthesis to plasma-assisted functionalization for biomedical applications”

Speaker: Prof. Dr. Stefan G. Mayr

Leibniz-Institut für Oberflächenmodifizierung Leipzig

Date: Thursday, 23 October 2014

Time: 10.30 o‘clock

Place: Lecture Hall

Abstract: Yielding magnetically switchable strains of several percent, ferromagnetic shape memory alloys have attracted tremendous interest during the past years for use in contact-less actuators in engineering and biomedical applications.
Energtic ion beams provide a powerful tool to precisely control materials properties, including phase, the martensite-austenite transformation and magnetic behavior. Employing atomistic computer simulations, we unveil the underlying physics, which is dominated by changes in short range order and defect insertion. We also discuss lastest plasma-assisted functionalization strategies with covalently-attached amino acides for mechanical coupling to biological cells and tissue.

[1] A. Arabi\u2010Hashemi and S.G. Mayr, Phys. Rev. Lett. 109, 195704 (2012).
[2] S.G. Mayr and A. Arabi\u2010Hashemi, New J. Phys. 14, 103006 (2012).
[3] M. Zink, F. Szillat, U. Allenstein and S. G. Mayr, Adv. Func. Mat. 23, 1383 (2013).
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You are cordially invited to attend the lecture.

Prof. Dr. Jürgen Fassbender
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and Materials Research