PRESS RELEASE
Frankfurt am Main, Germany (July 6th, 2016)

Ultrafine grained metallic materials for permanent and bioresorbable medical implants

Plenary Lecture by Yuri Estrin (Monash University)

Wednesday, September 28th, 2016, 8:30 a.m. - 9:00 a.m., Audimax, TU Darmstadt

Contemporary development of metallic implant materials is driven by the biocompatibility requirements combined with the need for improved mechanical performance of biomedical implants. Different paradigms govern this development for permanent and temporary (bioresorbable) implants. While materials for permanent implants, e.g. for bone or tooth replacement, obviously need to be as inert in bodily fluids as possible, those for temporary implants must degrade at a rate comparable with the rate of tissue healing.

Mimicking the cellular design of natural plant tissue anatomy offers a highly attractive approach for creating a novel class of biomorphous ceramics for functional and engineering applications. Basic principles of conversion of plant derived preforms into oxide and non-oxide ceramics mimicking the initial template structure at various hierarchical micro- and macroscopic levels will be presented. The fabrication of multilayer ceramics from cellulose based precursor offers a high flexibility of shaping including advanced generative manufacturing combined with surface modification via printing technologies. Future concepts refer to intrinsic crack healing capability which may trigger change of ceramic component design and application. Examples of applications in the fields of optical sensors, biomedical bone implant, or catalysis will be demonstrated.

For more information on our plenary lectures please visit our **website**. If you wish to register as a media representative and get free access to MSE 2016 please contact us directly at **presse@dgm.de**.

Further plenary lectures include:

Peter Greil (University of Erlangen-Nuernberg, Department of Materials Science (Glass and Ceramics), Erlangen, Germany):

Biomorphous Ceramics

Tuesday, September 27th, 2016, 10:00 a.m. - 10:30 a.m.

Jörg F. Löffler (Laboratory of Metal Physics and Technology, Department of Materials, ETH Zurich, Switzerland):

Metallic biomaterials for absorbable implant applications

Tuesday, September 27th, 2016, 1:45 p.m. - 2:15 p.m.

Patrice E. A. Turchi (Lawrence Livermore National Laboratory, Livermore, USA):

Why is alloy theory still a matter of principles?

Wednesday, September 28th, 2016, 2:00 p.m. - 2:30 p.m.

Laurent Pambaguian (Engineer in the Materials Technology Section of the European Space Agency, Netherlands):

Additive Manufacturing for space industry

Wednesday, September 28th, 2016, 6:15 p.m. - 6:45 p.m.

Christoph Bartneck (HIT Lab NZ, University of Canterbury, Christchurch, New Zealand):

Material Challenges in Human Robot Interaction

Thursday, September 29th, 2016, 8:30 a.m. - 9:00 a.m.

Cesar A. Barbero (Department of Chemistry, Universidad Nacional de Rio Cuarto, Rio Cuarto, Argentina):

Smart Polymeric Nanocomposites and Polymer Alloys. Synthesis and Applications

Thursday, September 29th, 2016, 2:00 p.m. - 2:30 p.m.

About MSE 2016 - https://www.mse-congress.de/home/

Once again the time has arrived: from September 27th to 29th, 2016 Europe´s Material Science and Engineering scientists (MatWerk) will meet at the Materials Science and Engineering Congress (MSE) at the Darmstadt University of Technology, Germany. A special highlight is this year´s guest country, one of the most important research and economic regions in the world, the USA.

With more than 1,400 participants, the MSE is one of the largest English speaking congresses with exhibition in the field of Material Science and Engineering across Europe. In symposia and plenary lectures numerous scientific, social and economic relevant questions of Material Science and Engineering are discussed every two years.

For 2016 the biggest U.S. societies: the Materials Research Society (MRS) and the Minerals, Metals and Materials Society (TMS) have been involved in the concept and design of the congress.

Hosted by the German Materials Society (DGM) in Darmstadt, Germany the MSE is the central platform for material science and engineering experts to present their research field to a large international community and to network across borders since 2008. In addition to different side events, the DGM Tag with its Nachwuchsforum is an integral part of the MSE.

The MSE´s host, the DGM, is the largest technical-scientific society for Materials Science and Engineering in Europe. For almost 100 years it has combined the expertise of the specialist field from science and the industry: by representing the interests of its members from science and the industry - and acting as a guarantor for the systematic development of the field.

Comprehensive information on the **highlights of this year's MSE** and a **program overview** can be found online.

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