
Humboldt Network



Awardees

Materials science

Prof. Dr. Martin Paul Harmer

Field of Research:

Ceramics

Research Period in Germany:

01.02.2010 - 30.04.2010

Profile

Prof. Harmer is internationally recognised as one of the leaders in the field of Technical ceramics. He receives the award for his fundamental contributions in grain growth, atomic structure, and microstructure development of ceramic materials, which have allowed him to produce new composite materials. In Germany, he continues his investigations on the "Mechanics of Grain Boundary Migration in Functional and Transparent Ceramics".

Home Institute

Department of
Materials
Science and
Engineering
Lehigh
University
5 East Parker
Avenue
18015
Bethlehem

Host in Germany

Prof. Dr.
Michael J.
Hoffmann
Institut für
Keramik im
Maschinenbau
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Institut für
Technologie
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Haid und Neu
Straße 7
76131 Karlsruhe

Priv. Doz. Dr.
Peter Van Aken
MPI für
Metallforschung
Heisenbergstr. 3

70569 Stuttgart

Prof. Dr. John J. Jonas

Field of Research:

Materials science and metallurgy

Research Period in Germany:

01.03.2010 - 31.05.2010

Home Institute

Department of
Metallurgical
Engineering
McGill
University

Main field of research

Engineering Science

- Mechanics, Thermodynamics, Optics
- Materials Science
- Civil Engineering
- Electrical, Electronic And Communications Engineering

Humanities

- Philosophy
- General Linguistics And Literature
- German Language And Literature, German Studies
- Foreign Languages And Cultures
- Aesthetics, Art Studies, Musicology
- Law, Jurisprudence
- Economics
- Social Sciences

(Natural) Science

- Mathematics
- Computer Science, Information Science, Statistics
- Physics
- Astronomy, Astrophysics
- Earth Sciences
- Chemistry, Pharmacy
- Biosciences, Life Sciences
- Agriculture, Agricultural Science, Forestry, Forest Science

3610 University
St
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**Host in
Germany**

Prof. Dr. Günter
Gottstein
Institut für
Metallkunde und
Metallphysik
Technische
Hochschule
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Kopernikusstr.
14
52074 Aachen

Prof. Dr. Ricardo A. Lebensohn

Field of Research:

Materials science and metallurgy

Research Period in Germany:

01.02.2010 - 31.07.2010

Profile

Professor Lebensohn is a leading expert in the mechanics of materials. He has pioneered the field of multiscale modelling of plasticity of crystalline materials, developing sophisticated theories and efficient numerical methods to connect the behavior of single crystals and polycrystalline aggregates. These theories and the simulation tools carefully crafted by Professor Lebensohn are nowadays used by researchers worldwide, both for academic research and industrial applications. Two major achievements should be emphasized in detail: The first one is the development of the viscoplastic self-consistent (VPSC) theory and its numerical implementation, the VPSC numerical code. A more recent one is a formulation based on fast Fourier transforms (FFT) for the prediction of the micromechanical fields that develop in heterogeneous materials deforming in different (elastic, plastic) regimes. During his stay in Germany, Professor Lebensohn will work on the theory of polycrystal mechanics.

Professor Lebensohn is hosted by Professor Dierk Raabe at the Max Planck Institute for Iron Research GmbH in Duesseldorf and by Professor Peter Gumbsch at the Fraunhofer Institute for Mechanics of Materials IWM in Freiburg.

Home Institute

Div. of Material
Science &
Technology
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National
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MS G755
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Host in Germany

Prof. Dr.-Ing. Dierk
Raabe
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Mikrostruktur und
Umformtechnik
MPI für
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Prof. Dr. Peter
Gumbsch
Fraunhofer-Institut
für
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Wöhlerstr. 11
79108 Freiburg

Prof. Dr. George M. Pharr

Field of Research:

Materials testing, materials testing methods

Research Period in Germany:

01.08.2009 - 30.04.2010

Profile

Professor George M. Pharr (USA/1128148) from the University of Tennessee, Knoxville, USA

Professor George M. Pharr is a leading expert in the physics of deformation at small scales, in particular, the mechanisms of plasticity and fracture at micrometer and nanometer dimensions. He has developed equipment and basic methods for nanoindentation testing. His contributions to this field have been groundbreaking over the years and his publication on the analysis of nanoindentation data is considered to be the most important reference in the field. During his stay in Germany, Professor Pharr will help to develop a new experimental setup for mechanical tests studying plasticity at very small-scales. The role of different mechanisms such as nucleation, interaction or starvation of dislocations for the deformation behavior of metallic nanostructures and nanowires will be examined.

Professor Pharr is hosted by Professor Oliver Kraft at the Institute for Materials Research at the Karlsruhe Institute of Technology.

Home Institute

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Host in Germany

Prof. Dr. Oliver
Kraft
Institut für
Materialforschung II

Forschungszentrum
Karlsruhe (FZK)
76021 Karlsruhe

Prof. Dr. Paulo Rangel Rios**Field of Research:**

Metals physics

Research Period in Germany:

01.08.2009 - 31.07.2010

Profile

Professor Rios is internationally recognized for his outstanding research on grain growth theory of crystalline materials and related materials science topics. He has made seminal theoretical contributions to challenging materials science problems such as the role of particles during grain growth or coarsening phenomena in 3D. Professor Rios combines a deep understanding of materials behaviour with sophisticated mathematical modelling approaches. During his stay in Germany he will utilize modern computer simulations to derive a more advanced and generalized theory of 3D grain growth and its application to materials processing.

Home Institute

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Prof. Dr. Vladimir V. Tsukruk

Field of Research:

Boundary layer chemistry, interfacial chemistry

Research Period in Germany:

01.01.2010 - 31.07.2010

Profile

Professor Vladimir Tsukruk is an international authority in material research of soft matter systems. His exceptional creativity allows him to combine outstanding expertise in Physics and Chemistry in a highly interdisciplinary approach. His conceptionally pioneering work on biomimetic sensors and nanoparticle-soft matter composites is a great source of inspiration. During his stay in Germany, he will investigate protein gel-nanoparticle composites which have potential applications in sensing and actuation.

Professor Tsukruk is hosted by Professor Andreas Fery and Professor Thomas Scheibel at the University of Bayreuth.

Home Institute

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Host in Germany

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Dr. Sheldon M. Wiederhorn

Field of Research:

Ceramics

Research Period in Germany:

01.03.2010 - 30.04.2010

Home Institute

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**Host in
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Haid-und-Neu-
Str. 7
76131 Karlsruhe

Prof. Dr. Tomasz Wierzbicki**Field of Research:**

Materials testing, materials testing methods

Research Period in Germany:

01.03.2010 - 31.05.2010

Home Institute

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Engineering
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Host in Germany

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