



13th July 2016

Press Release

Max Planck Director awarded Ernst Mach Medal

Prof. Jörg Neugebauer receives the highest honour in physical sciences of the Czech Academy of Sciences

Prof. Jörg Neugebauer, director of the department “Computational Materials Design” at the Max-Planck-Institut für Eisenforschung (MPIE) in Düsseldorf (Germany), was awarded the Ernst Mach Medal of the Czech Academy of Sciences. This prize is awarded since 1996 for internationally outstanding research in physics and is the academy’s highest award for achievements in physics.

Neugebauer is director at the MPIE since 2004. His research focusses on the development of novel approaches that allow to predict and design properties of advanced materials solely on the computer. This allows to screen the suitability of hitherto unknown materials, i.e., materials not yet synthesized, for automotive, energy or optoelectronic applications. Developing and designing materials solely on the computer helped to reduce the number of time and money consuming experiments. These breakthrough simulations of advanced engineering materials became possible by pushing existing quantum-mechanical approaches to their limits. In order to develop for example a new steel with certain properties, Neugebauer and his team use powerful supercomputers to predict which elements and structures are needed to achieve the targeted functionality and give specific design recipes to their experimental colleagues. This very close interaction between theory and experiment resulted in numerous concepts for industrial applications such as a new class of ductile and at the same time strong steels, formable light-weight magnesium alloys or magneto-caloric materials for novel and highly efficient cooling systems.

The award of the Czech Academy of Sciences is named after Ernst Mach (1838-1916), one of the most important scientists in the late 19th century. Mach’s research paved the way for Albert Einstein’s theory of relativity. His research interests were in the fields of experimental physics, especially wave dynamics, optics and mechanics. The special impact of Mach on the Czech Republic was a result of his professorship at the Charles University in Prague, where he was chair for experimental physics for 28 years. The prize does not only award internationally outstanding research but also German Czech cooperation like the very successful cooperation established by Prof. Neugebauer with his colleagues at the Academy of Sciences Institute on Materials in Brno, Czech Republic.



Prof. Jörg Neugebauer, director of the Max-Planck-Institut für Eisenforschung (to the right) and Prof. Jiri Drahos, president of the Czech Academy of Sciences, at the Ernst Mach Medal award ceremony. Photo: Viktor Černoč, Department of Media Communication of the Head Office of the Czech Academy of Sciences.



Ernst Mach Medal, named after one of the most eminent physicists of the late 19th century. Photo: Viktor Černoč, Department of Media Communication of the Head Office of the Czech Academy of Sciences.

The Max-Planck-Institut für Eisenforschung GmbH (MPIE) conducts basic research on metallic alloys and related materials to enable progress in the fields of mobility, energy, infrastructure, medicine and safety. It is financed by the Max-Planck Society and the Steel Institute VDEh. In this way, basic research is amalgamated with innovative developments relevant to applications and process technology.

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