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Press Release

Self-Reporting Materials

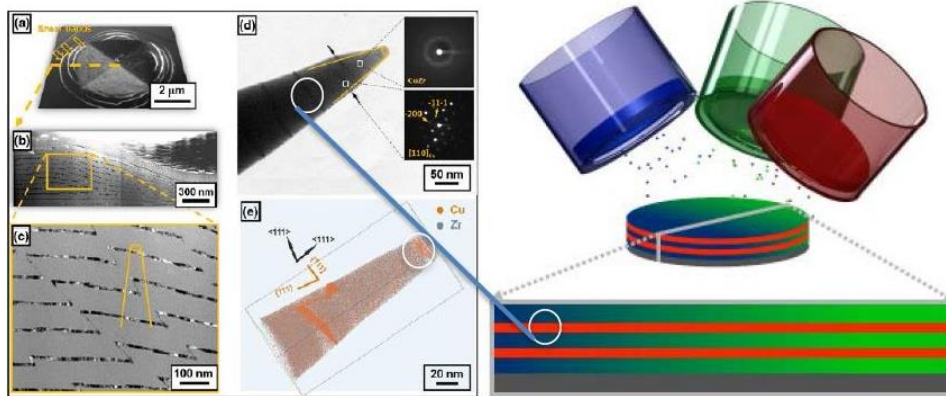
Prof. Jochen M. Schneider appointed Max Planck Fellow in Düsseldorf

Prof. Jochen M. Schneider, Chair of Materials Chemistry, RWTH Aachen University, has been appointed Max Planck Fellow at the Max-Planck-Institut für Eisenforschung (MPIE) in Düsseldorf, Germany. Started in October 2015 he is leading a research group developing self-reporting materials.

Weakening and degradation of engineering materials is rarely visible from the outside and may result in costly failure of components during application. By combining theoretical as well as experimental methods Schneider's group at the MPIE will design so-called self-reporting materials, reporting a change in performance during application through property changes. This property alteration is based on changes in chemical composition at the atomic level and/or structure and will be detected during application, enabling direct damage assessment. Initially, materials with periodic charge density distributions are in the research focus. Based on these investigations and quantum mechanical calculations, self-reporting materials will be developed by substituting and adding elements to the material in question. The realization of this concept will enable Industry 4.0 on an atomic scale.

Jochen M. Schneider, born 1969, studied materials engineering in Germany, the United Kingdom, and the USA and received his Ph. D. in 1998. Subsequently, he worked as post doc at the Lawrence Berkeley National Laboratory in Berkeley, California, USA, and as an Assistant Professor and Docent at the Linköping University, Sweden. In 2002, he was appointed Professor and Chair of Materials Chemistry at the RWTH Aachen University. His research focus is quantum-mechanically guided materials design. He was awarded the Sofja Kovalevskaya-Prize for outstanding materials research by the President of the Alexander von Humboldt-Foundation in 2001. Moreover, he was appointed Fellow of the American Vacuum Society (AVS) in 2013.

The Max Planck Society awards the Max Planck Fellow Group to outstanding university professors, offering the opportunity to establish and lead a Max Planck research group, initially for 5 years. By awarding the Fellow Group the MPIE strengthens the scientific cooperation with the RWTH Aachen University.



Representation of the synthesis technology to be employed in the Fellow Group (right) as well as of the three dimensional chemical composition analysis that will be utilized for such materials (left) based on previous collaborative work. Copyright: Phys. Rev. Lett. 113, 069903 (2014)



Prof. Jochen M. Schneider has been appointed Fellow of the Max Planck Society and leads since October 2015 a group on self-reporting materials at the Max-Planck-Institut für Eisenforschung in Düsseldorf, Germany. Copyright: Anke Köhler

The MPIE conducts research on structural metallic alloys and related materials. New high-performance materials with outstanding physical and mechanical properties are developed for use as high-tech structural and functional components. In this way, basic research is amalgamated with innovative developments relevant to applications and process technology. The MPIE is financed in equal proportions by the Max-Planck Society for the Advancement of Science and the Steel Institute VDEh.

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