38th Risø International Symposium on Materials Science - 4-8 September 2017

Advanced Metallic Materials by Microstructural Design

Materials design is a multidisciplinary theme which combines processing, microstructure, properties and performance of materials. The symposium will focus on design of advanced metallic materials with a structural scale from the micrometer to the nanometer dimension in the bulk and at the surface/subsurface region. Material groups will reach from conventional polycrystalline metals to multilayer composites, gradient metals and super strong steels. Processing will cover a variety of plastic and thermal treatments including syntheses by deposition techniques and 3D printing. Characterization techniques will be ex-situ and in-situ by electron, x-ray and neutron diffraction methods.

A goal of the symposium is to extend our knowledge of physical mechanisms, which control metallurgical reactions and microstructure. Experimental characterization will form the basis of analytical and numerical modelling on multiple length scales, also including materials performance under a diversity of mechanical and chemical loading conditions. An expected outcome of the symposium is guidelines and models with predictive capability of scientific and industrial interest and of relevance to the use of metallic materials in important sectors in society as energy, transport and defence.

The Proceedings contain 9 invited papers, and 46 contributed papers.

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