Special Issue

FIB Preparation and TEM Characterization of Materials for Nuclear Industry

Message from the Guest Editors

As of today, UO2 represents the most commonly used fuel material in nuclear power reactors, and since nuclear fuels must operate safely for years exposed to severe radiation damage conditions, the ability to fully understand the impact of defect creation on their physicochemical properties is fundamental. Sample preparation is a critical step for any successful TEM analysis, in particular when the aim is to detect and characterize defects on a scale within the nanometer range, and although focused ion beam (FIB) milling is a well-established technique in this sense, its efficiency is strongly material dependent. Uranium-based materials are particularly challenging, due to their physical characteristics rendering the thinning process extremely time consuming and delicate. Here, we present a collection of research works and review papers exhibiting new results, dealing with experimental challenges and proposing original solutions. I am delighted to invite you to submit original research papers, short communications and state-of-the-art reviews for this Special Issue.

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Message from the Editor-in-Chief

Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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