

Foreword

TMS 2013: Materials and Fuels for the Current and Advanced Nuclear Reactors II

Globally, significant efforts are ongoing to meet the growing energy demand with the increased use of nuclear energy. Extensive work is being performed to develop materials and fuels for the advanced nuclear reactors. In addition, efforts are also ongoing to extend the life of existing nuclear power plants. Scientists, engineers, and students at various national laboratories, universities, and industries are working on a number of material challenges for the nuclear energy systems.

The symposium “Materials and Fuels for the Current and Advanced Nuclear Reactors II” embedded in the TMS 2013 Annual Meeting (March 3-7, 2013) was held in San Antonio, TX, USA. This symposium was sponsored by the TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee and TMS/ASM: Nuclear Materials Committee.

The objective of this symposium was to provide a platform for the researchers to congregate, exhibit and discuss their current research work, in addition to sharing the challenges and solutions with the professional community and thus, shape the future of nuclear energy.

Abstracts were solicited in (but not limited to) the following topics:

- Nuclear reactor systems
- Advanced nuclear fuels—fabrication, performance, and design; properties and modeling
- Advanced structural materials—fabrication, joining, properties, and characterization
- Lifetime extension of reactors—nuclear materials aging, degradation, and others
- Experimental, modeling, and simulation studies
- Fundamental science of radiation-material interactions; Irradiation effects in nuclear materials
- Materials degradation issues—stress corrosion cracking, corrosion, creep, fatigue, and others
- Nuclear waste—disposal, transmutation, spent nuclear fuel reprocessing, and others

The TMS 2013 Annual Meeting was attended by over 4000 business leaders, engineers, scientists, students and other professionals in the field of Materials Science and Engineering for an outstanding exchange of technical knowledge leading to solutions in the workplace and society. This symposium had 7 technical sessions with 61 talks, including 4 invited talks.

I would like to thank the symposium co-organizers, Dennis Keiser (Idaho National Laboratory, USA) and Raul Rebak (GE Global Research, USA) for their support. I would also like to thank the symposium session chairs, authors/co-authors/presenters and attendees, for their role in making this symposium as one of the important forums for the scientific and technological discussion on Nuclear Materials and Fuels. The following five articles from this symposium were selected by the reviewers to be published in this journal. Finally, I would like to acknowledge the reviewers and journal staff for their support.

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