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for the nexGEN webinar

MATERIALS CHALLENGES FOR GEN IV REACTORS

The Generation IV reactors offer significant advantages over typical light water reactors including increased power conversion efficiency, passive safety features and in some cases process heat for other applications (e.g. hydrogen production). These families of reactors include 3 fast reactors [sodium fast reactor (SFR), lead fast reactor (LFR) and gas-cooled fast reactor (GFR)], one thermal reactor [very high temperature reactor (VHTR)] and two fast or thermal reactors [supercritical water reactor (SCWR) and molten salt reactor (MSR)]. The extreme environments in these families of reactors create significant challenges to materials ranging from high doses from a fast neutron flux (SFR, LFR, GFR, SCWR and MSR), more corrosive environments from molten salt (MSR) or lead coolants (LFR) and high temperatures in the helium-cooled reactor concepts (e.g. GFR and VHTR). This presentation will discuss the materials challenges in Gen IV reactor concepts and summarize radiation effects in reactor metals proposed for these concepts over prototypic irradiation conditions.

Free webcast

Wednesday February 21, 2018 at 8:30 am EST (UTC-5)



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Who should attend: policy makers, managers, regulators, students, general public

Meet the Presenter...

Stuart Maloy is a Team Leader for MST-8 (materials at radiation and dynamic extremes) at Los Alamos National Laboratory (where he has worked for 28 years) and is the advanced reactor core materials technical leader for the Nuclear Technology Research and Development's Advanced Fuels campaign and the NEET Reactor Materials Technical Lead for DOE-NE. He earned his Bachelors Degree ('89), Masters Degree ('91) and PhD ('94) in Materials Science from Case Western Reserve University and is a registered PE in Metallurgy. He has applied his expertise to characterizing and testing the properties of metallic and ceramic materials in extreme environments such as under neutron and proton irradiation at reactor relevant temperatures. This includes testing the mechanical properties (fracture toughness and tensile properties) of Mod 9Cr-1Mo, HT-9, 316L, 304L, Inconel 718, Al6061-T6 and Al5052 after high energy proton and neutron irradiations using accelerators and fast reactors. Characterization of materials after testing includes using transmission electron microscopy for analyzing defects such as dislocations, twins and second phases, using high resolution electron microscopy to characterize defects at an atomic level and nanoscale mechanical testing. Stuart has >190 peer reviewed technical publications and numerous presentations.



The Generation IV International Forum invites you to attend web-based lectures on the next generation of nuclear energy systems and other cross-cutting subjects. Join internationally recognized subject matter experts and leading scientists in the nuclear energy arena for these short presentations.

Upcoming Webinars

March 21, 2018	SCK.CEN's R&D on MYRRHA. Prof. Hamid Ait Abderrahim
April 18, 2018	Russia BN 600 and BN 800, Dr. Iurii Ashurko
May 23, 2018	Proliferation Resistance of Gen IV Reactor Systems, Prof. Per Peterson

For more information, please contact: Patricia Paviet at patricia.paviet@nuclear.energy.gov or visit the GIF website at www.gen-4.org

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