GEN IV International Forum
Expertise | Collaboration | Excellence

Webinar Invite

Education and Training Working Group

Join us on May 25, 2021, 8:30 am EDT (UTC-4)

Opportunities for Generation-IV Reactors Designers through Advanced Manufacturing Techniques

The development of critical design criteria for new advanced reactor systems, components, and materials requires an understanding of both fabrication and the irradiation environment during normal operating and accident conditions. Next-generation researchers and designers are therefore challenged not only by demands for improved performance, they must also work to shorten the development and commercialization lifecycle for new nuclear reactors and systems to remain competitive. This provides unique and exciting opportunities for all contributors to this field of study. This presentation will offer a strategic overview of the impact that advanced manufacturing has on the lifecycle of new generation reactors. By evaluating state-of-the-art practices found in other large manufacturing industries, this presentation provides an overview of major innovation areas that are considered to benefit the GEN-IV systems (SFR, GFR, LFR, FSMR...). Synergetic advanced manufacturing approaches beneficial to the collective GEN-IV systems, with some examples of differentiating approaches necessary for specific reactor designs, are discussed. Furthermore, new paradigms in licensing approaches for additively manufactured parts will be discussed.

Free webcast!

May 25, 2021 8:30 am EDT (UTC-4)

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Who should attend:
policymakers, managers, regulators, students, general public

Dr. Isabella J. van Rooyen holds a PhD in physics, an MSc in metallurgy, and an MBA. She is the National Technical Director for Advanced Methods for Manufacturing Programs for the Department of Energy-Nuclear Energy Enabling Technologies.
She is also a distinguished staff scientist at the Idaho National Laboratory (INL) where she has led as principal investigator (PI) a variety of research projects for nuclear applications through competitive awards by industry strategic partners, lab-directed research funds, National Scientific User Facility (NSUF), and the Nuclear Engineering University Program (NEUP). These research projects focus on tristructural isotropic (TRISO)-coated particles, U_3Si_2, integrated fuel fabrication processes, high-temperature compact heat exchangers, SiC-ODS alloy gradient nano-composite cladding, fission product transport mechanisms, additive manufacturing qualification reviews, and advanced manufacturing methods. Dr. van Rooyen also led the advanced electron microscopy and micro-analysis examinations for the Advanced Gas Reactor TRISO fuel development program from May 2011–January 2021.
Dr. van Rooyen's engineering and scientific exposure includes hands-on experience in a wide variety of pursuits; examples include heat treatment, surface treatments and coatings, welding procedures, casting processes, powder fabrication, and consolidation processes. Prior to joining INL in 2011, Dr. van Rooyen held various technical leadership roles in the nuclear, aerospace, and automotive industries in South Africa, most notably the research at Pebble Bed Modular Reactor (PBMR) Company and NECSA and DENEL Aviation.

Dr. van Rooyen has more than 50 peer-reviewed journal publications, more than 40 conference papers and presentations, over 100 company-specific technical and scientific reports, seven invention disclosures, one additive manufacturing patent awarded in 2020, one patent in process of issuing, and five patents filed on additive manufacturing in 2018–2020.

Upcoming Webinars

24 June 2021
In Service Inspection and Repair Developments for SFRs and Extension to other Gen4 Systems, Dr. Francois Baque, CEA, France

27 July 2021
Evaluating Changing Paradigms Across the Nuclear Industry, Ms. Jessica Lovering, Winner of the ANS 2020 Pitch your PhD Competition

26 August 2021
Comparing and Contrasting Approaches to Quality Assurance fro Nuclear Applications, Mr. Vince Chermak, INL, US

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