Nuclear Waste Management Strategy for Molten Salt Reactor Systems

Molten salt reactors (MSRs) are being considered as one of the potential nuclear options to meet future energy demands. While the MSR designs differ from the more traditional light water reactor, many of the waste streams are similar between the concepts. Other streams differ drastically. This presentation outlines strategies for the treatment and processing of MSR-type wastes from concepts of reconditioning and recycle of certain components to partitioning and direct immobilization of other waste components. The primary focus will be on the management of fuel salt related wastes while other streams unique to MSRs are also briefly discussed.

Dr. John Vienna is a Laboratory Fellow in Materials Science at the Pacific Northwest National Laboratory (PNNL). He earned B.S. and M.S. degrees in Ceramics Engineering from Alfred University and a Ph.D. degree in Materials Science from Washington State University. Dr. Vienna joined PNNL in 1993. Throughout his career, has served in numerous technical leadership roles in nuclear waste management, including serving the U.S. Department of Energy’s Office of Nuclear Energy as a technical lead for nuclear waste treatment.

Dr. Brian Riley has a PhD in Materials Science and Engineering from Washington State University. He is a Senior Materials Scientist in the Radiological Materials Group at PNNL and is a Technical Team Leader for the Waste Form Development Team. His research primarily focuses on salt waste form development and salt waste partitioning methods with funding from DOE Office of Nuclear Energy. Recently, Dr. Riley has been performing and leading research on various projects in these areas as well as looking at methods for treating salt wastes from molten salt reactor, as well as developing and testing sorbents for capturing volatile radionuclides such as iodine gas.

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26 October 2022, Sodium Integral Effect Test Loop for Safety Simulation and Assessment (STELLA), Dr. Jewhan Lee, KAERI, ROK

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