MATERIALS ENGINEERING

SEMINAR

"Neutron Irradiation Effects on Mechanical Properties and Fracture of PM-HIP and Cast G91 Steel"

By

Sowmya Panuganti

Purdue MSE Preliminary Exam

Advisor: Professor Janelle Wharry

ABSTRACT

Non-traditional processing routes have been suggested for manufacturing various parts of Generation IV and Light Water Reactors. Processing methods such as Powder Metallurgy Hot Isostatic Pressing (PM-HIP) an Additive Manufacturing (AM) have been suggested as alternative routes to replace these traditionally fabricated parts. However, irradiation effects on PM-HIP and AM alloys have not been thoroughly researched as of yet. These alloys offer several advantages over typically produced alloys, such as higher levels of uniformity, alloy customization, better quality, and lower costs. It is important to understand how these alloys evolve under irradiation to gain a better scope of whether or not they are suitable for widespread use in reactor parts. This work will review the current state of research about Ferritic Martensitic alloys and that were manufactured through PM-HIP and AM for nuclear applications, and how these alloys' microstructures evolve under various conditions.

Date: Thursday, September 15, 2022
Time: 2:00pm
Place: ARMS 1028 or via WebEx https://purdue.webex.com/meet/jwharry

PURDUE UNIVERSITY

School of Materials Engineering