School of Mechanical Engineering
SHRI MATA VAISHNO DEVI UNIVERSITY
Katra 182320, UT of J&K

Invited Guest Lecture on
Hydrogen Management in a Nuclear Reactor Management
by Prof. Kannan N. Iyer, IIT Jammu

Abstract : The talk will present the systematic methodology evolved to assess the hydrogen management in nuclear reactor containment during a severe accident. The focus is on the methodology evolved. It will demonstrate that as a student moves to solve a research problem, it expands in different directions and the student has to acquire new skills and innovate in many different directions before the problem is completely solved. First, the method to quantify mixing of hydrogen is presented. It is demonstrated that buoyancy modified κ-ε model is adequate to quantify the process satisfactorily. On noting that the hydrogen levels are higher than the safe limits, effort is then directed towards mitigating the concentration by the use of Passive Auto-catalytic Recombiners (PAR). Efforts are then directed to model these and a satisfactory one-step reaction derived from a 12 reaction model. Finally, the coupling of Recombiner model with the Containment Mixing Model turns out to be a multi-scale problem and a methodology is evolved to reduce the computational time. Finally an interesting error based methodology is evolved to demonstrate its power to optimise the number of grids to obtain efficient numerical solution.

Date: 20.03.2023 Time: 3.00PM to 5.00PM Venue: B-208

ALL ARE INVITED