

Seminar

Institute for Plasma Research

Title : Role of Fusion-Plasma Surface Interactions in Tokamaks: Recent Results and Emerging Areas

Speaker: Dr. P. N. Maya
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Date : 30th April 2019 (Tuesday)

Time : 02.00 PM

Venue : Board Room, New Building, IPR

Abstract :

Interactions of a reactor-like plasma with the surrounding walls in a tokamak present a bewildering variety and complexity in comparison to present day operating devices. This is because of the role played by alpha particles, neutrons, externally injected impurities and the non-linear response of the wall/surface which get impacted by the above. One of the most important aspects is the survival of the divertor under extreme heat loads and their mitigation by controlling the impurity radiation losses from the edge. Another key aspect is the radiation damage and its consequences, e.g., undesirable buildup of tritium in the surrounding wall. Third critical aspect is 'drivenerosion', where a synergistic effect of alpha, neutrons and fuel-gas atoms may cause the surface to exfoliate at high rate, thereby adding more complications in plasma purity.

In this talk, we look at the advances made in understanding the underlying physics by a short review of the results from some tokamaks and non-tokamak experiments (e.g. ion-irradiation) as well as simulations and how it connects to the works that I have carried out in the recent past. We also speculate on what can possibly be done using existing facilities in India by which one can contribute to a global database for PWI.
