

# Seminar

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## Institute for Plasma Research

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**Speaker :** Dr. Sunil Rawat

Institute for Plasma Research, Gandhinagar

**Date :** 11<sup>th</sup> July 2018 (Wednesday)

**Time :** 10.00 AM

**Venue :** Seminar Hall, IPR

### **Abstracts:**

#### **Title: Molecular dynamics simulations for the primary state of damage in tungsten single crystals**

The response of materials under irradiation environments is of interest for future fusion reactors. The deuterium-tritium reaction is supposed to be a primary source of energy in future fusion reactors which produces neutrons of energy 14.1 MeV. These neutrons affect the response of the material in two ways: (a) they can initiate the nuclear reactions (neutron-induced transmutations) leading to new chemical species (chemical contamination), and (b) they can produce the energetic recoiling atoms leading to displacement cascade. This talk will focus on the latter, i.e. damage induced by recoiling atoms. When an energetic neutron interact with the solid, it displaces an atom from its lattice site leading to the formation of a vacancy (a vacant site) and an interstitial (displaced atom residing in a location in between the lattice sites). The pair of vacancy and interstitial is called Frenkel pair and the primary atom that recoils due to the impact of high energy neutron is called a primary knock-on atom (PKA). In this talk, I will present results on the primary state of damage resulting from the energetic PKA in tungsten single crystals with a particular emphasis on the influence of irradiation temperature and PKA energy.

#### **Title: Probe voltage due to the driver coil and eddy current loops in a conducting plate**

These induced currents are commonly known as eddy currents. The magnetic field produced by an eddy current opposes the magnetic field that created it. It is well known that the large eddy currents will be induced on the surface of the vacuum vessel in the Steady State Tokamak (SST-1) and will affect the plasma control parameters. Therefore, an accurate measurement of the eddy currents is required to understand their impact on the plasma controlling parameters. This will include experimental measurements as well as theoretical predictions. In this talk, I will discuss about our preliminary experimental as well as computational modelling results for the probe voltage due to driver coil and eddy current loops in a conducting plate.

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