

Seminar

Institute for Plasma Research

- Title :** Studies on Helium Cooled Plasma Facing Components (PFC) for tokamak based Fusion Reactor Applications
- Speaker :** Mr. Sandeep Rimza, DGFS- Scholar, Institute for Plasma Research, Gandhinagar
- Date :** 19th June 2015 (Friday)
- Time :** 03.30 PM
- Venue :** Committee Room 4 (New Building), IPR

Abstract:

It is generally accepted that fusion power is one of the promising sources of sustainable energy in the future. There are many challenges towards successful design of the fusion reactor. One among them is the design of the divertor which is an important part of the fusion reactor that handles extremely high heat flux (10 MW/m^2) escaping from the hot core plasma region along Scrape-Off-Layer (SOL). In the present Helium Cooled Divertor concept study, divertor target is made up of numerous “finger” type assemblies to reduce the thermal-mechanical stresses. Helium gas is preferred as a coolant in “finger” type divertor due to its chemical and neutronic inertness and superior safety aspect. However, its low thermo physical characteristics need high pressure to remove large heat flux encountered in a fusion power plant.

In the perspective of future fusion reactor, it is desirable to explore efficient cooling technology for divertor that can handle the high heat flux at acceptable pumping power limit. Towards this, a novel sectorial extended surface (SES) was proposed and Experimentally & Numerically investigated. Other than the “finger” concept, an innovative high efficiency divertor heat sink (HEDHS) concept is also proposed and numerically investigated for a divertor target of fusion reactor. In the presentation, all the results of Experimental and Numerical worked carried out for “finger” type divertor with SES as well as proposed HEDHS concept for fusion reactor will be discussed.
