

Seminar

Institute for Plasma Research

Title : Heat transfer studies under single sided heating condition

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Date : 18th December 2018 (Tuesday)

Time : 3.00 PM

Venue : Seminar Hall, IPR

Abstract :

PFC (Plasma Facing component) is an important component of the divertor in a tokamak whose main function is to serve as a plasma exhaust and is subjected to very high heat loads. Hence it is important to cool divertor for effective operation and to prevent any damage to the PFCs. This is accomplished with pressurised water operating in the subcooled region, extracting heat out of divertor. The importance of subcooled water is that it increases the heat capacity and overall efficiency of the system. However, the Critical Heat Flux (CHF) must be accurately predicted while designing PFCs for safe operation.

A variety of correlations have been proposed to predict CHF for divertor operating conditions. Many of these correlations have been derived from uniform heating condition. Hence it is important to check their applicability for single sided heating condition. The present work evaluates sub-cooled CHF models against the latest experimental CHF data reported for ITER relevant geometry under single sided heating conditions. A new model is also proposed which can better predict CHF compared to existing models for single sided heating conditions.

In addition to above, heat transfer experiments have been carried out at the High Heat Flux Test Facility (HHFTF) for determination of calorimetric power and also to estimate the accuracy of measurements using various diagnostics such as thermocouples, IR camera, Pyrometers and flow meters used, and other experimental parameters affecting measurements
