Seminar

Institute for Plasma Research

Title : Deformation and fracture of metallic single crystals

Speaker : Dr. Sunil Rawat
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Date : 9th June 2017 (Friday)

Time : 03.30 PM

Venue : Seminar Hall, IPR

Abstract :

Materials used in various engineering applications, such as crash worthiness of vehicles, bullet proof armours, impact resistant pressure vessel, shipping cask for transfer of nuclear materials etc., undergo high strain rate deformation. In addition to this, high velocity impact leads to the material under extreme conditions of temperature, pressure and large deformation. To design the materials which can withstand under these circumstances and enhance the mechanical properties, the knowledge of basic mechanisms of deformation and fracture is required. The experiments are costly, time consuming and sometimes very difficult to perform under desired loading conditions. In addition to this, the in-situ measurements of basic mechanisms are major challenges due to short time- and length-scales involved in deformation and fracture processes. In this regard, the computer simulations can serve as useful tools not only to understand basic mechanisms of deformation and fracture at atomistic scale but also to predict the material response at macro-scale. I will talk about the basic mechanisms of deformation and fracture in metallic single crystals and how the information obtained at atomistic scale can be used for predictive simulations at macro-scale.