

Seminar

Institute for Plasma Research

Title : The study of magnetic nanostructures in relation to its atomic ordering and oxidation state

Speaker: Ms. Prachi B. Orpe
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Date : 2nd August 2019 (Friday)

Time : 11.00 AM

Venue : Committee Room 4, (New Building), IPR

Abstract:

Nanomaterials have tremendous application potential due to its varied properties from its bulk form. There are various techniques to prepare nanomaterials; among them plasma process has distinct advantages. Thermal plasma process of preparing is fast, simple, results in varied morphologies even for small changes in the plasma parameters etc. The nucleation and growth dynamics of nanostructure formation is influenced by, among others, plasma current, ambient pressure and gas etc. Two different magnetic nanomaterials (viz. Cobalt/cobalt oxide and Iron/iron oxide nanostructures) prepared under varying synthesis parameters were studied and will be presented.

Variation of macroscopic parameters like arc current and gas ambience and its effect on the nanostructure morphology, crystallinity as well as local atomic ordering were studied. The effect of all these parameters on the magnetic was also studied. Results have been interpreted in terms of the influence of plasma parameters on the nucleation and growth as well as oxidation levels of the product nanostructures. A range of techniques like XRD, TEM, VSM, XAS etc were used to analyse the changes both at atomic scale as well as macroscopic properties. The results obtained and its interpretation would be presented during the talk.
