Seminar

Institute for Plasma Research

Title : Impact of neutron irradiation in Al_2O_3

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Date : 14th February 2018 (Wednesday)

Time : 11.30 AM

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

Abstract :

The future need of energy can be fulfil only after successful implementation of functional fusion reactors. Fusion reactors take huge effort to build and to produce electricity. Moreover fusion reactors have harsh radiation environments which may affect its own building materials. So it is necessary to study materials properties in radiation environments for successful use of these materials in fusion reactors. ITER is advance type of nuclear reactor for which special grade Al_2O_3 ceramic material is proposed for various applications. Al_2O_3 is a good insulating material with mechanical hardness. Neutron radiation may alter properties of Al_2O_3 including loss of insulating property. We studied the impact of 14 MeV irradiation on the electrical and structural properties of ceramic. It is observed that radiation induced conductivity changes the resistance of material from GΩ to MΩ during irradiation. Partial recovery in resistance occurred after cooling the material. The change in structural properties was also observed. Surface morphology of Al_2O_3 changes with Am-Be neutron irradiation. In this presentation, I will present the analytical assessment results, gamma spectroscopy results and electrical properties of neutron irradiated Al_2O_3.