

Emulation of irradiation damage in reactor structural materials using ion beams at VECC

World-wide, ion beams are being used as a surrogate of neutron irradiation in studying the damage in nuclear reactor structural materials. By using a judicious choice of ion, its energy, fluence, flux and irradiation temperature, one can span the neutron equivalent damage produced in the reactors [1].

The short-irradiation time and low induced activity caused in the materials due to the ion irradiation, enables one to carry out quick screening and bench-marking of new alloys. By characterising the ion irradiated materials, one can establish a structure-property correlation which helps in understanding the irradiation response of the material, which in turn helps in new alloy design.

In this talk, we will discuss, how the irradiation damage program in respect of the nuclear structural materials is being carried out at VECC using the different ion beams available in-house.

[1] G.S.Was, Fundamentals of radiation materials science: Metals and alloys, second edition, 2016

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