

MM 26 Invited Talk Virk

Time: Thursday 09:30–10:00

Room: IFW A

Invited Talk

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Ion Tracks in Solids: An Overview of Technological Applications — ●HARDEV SINGH VIRK — 360, Sector 71, SAS Nagar, 160071, India

Heavy ion irradiation of solid materials has become an interesting field of basic and applied research during the last few decades. Ion tracks in solids have been used in material modification. Our laboratory has been engaged in the study of heavy ion tracks in insulators (mineral crystals, polymers and glasses) since 1980 using ion beams from UNILAC (GSI, Darmstadt), Synchrocyclotron (JINR, Dubna) and Pelletron (NSC, New Delhi). Ion beams from Li to U with fluences ranging from a single ion to 10^{14} ions/cm² were used for material modification.

Polymers have been used in our laboratory for fabrication of ion track filters/membranes and investigation of optical and electrical response after heavy ion irradiation. The morphology of heavy ion latent tracks was revealed by atomic force microscopy. Etching and annealing behaviour of ion tracks and fission fragments in insulators was studied in great detail and single activation energy model for radiation damage annealing was proposed. Ion track filters were used for purification of contaminated water, air and blood samples. Microstructures comprising dots, wires, cones and tubules were created using electrochemical cell and template growth technique. Ion tracks technology is a state of art technology with potential applications in many diverse fields.