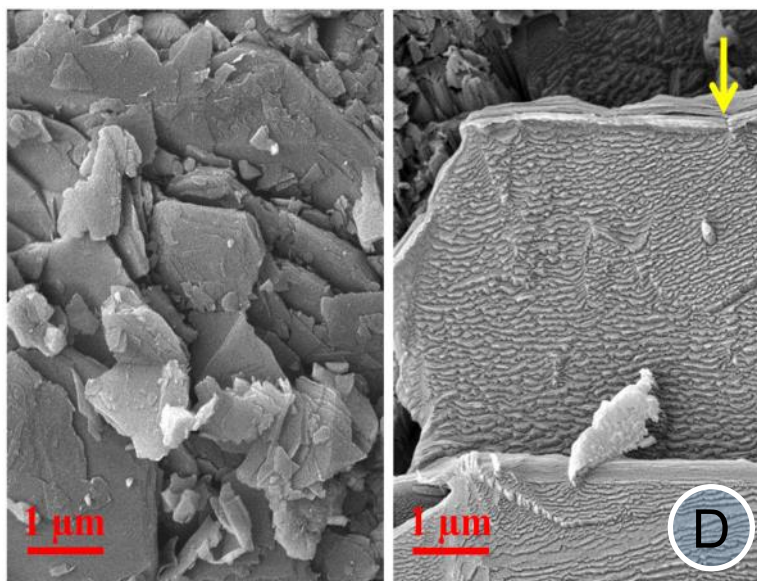
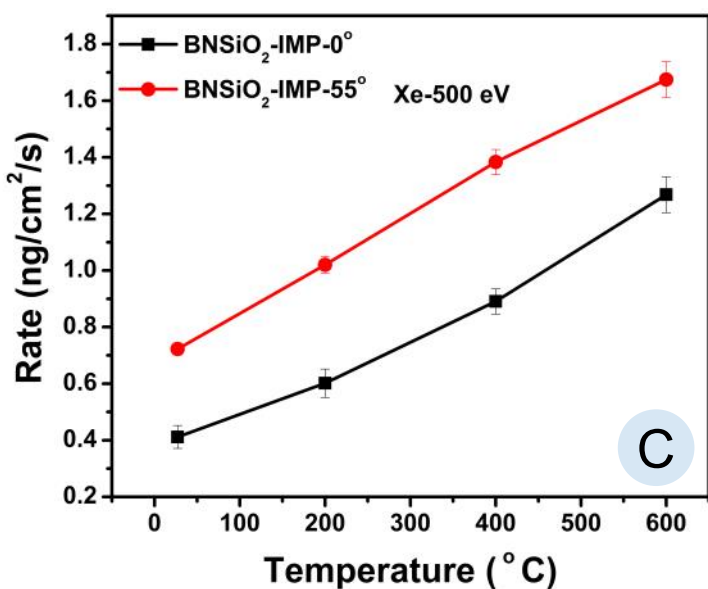
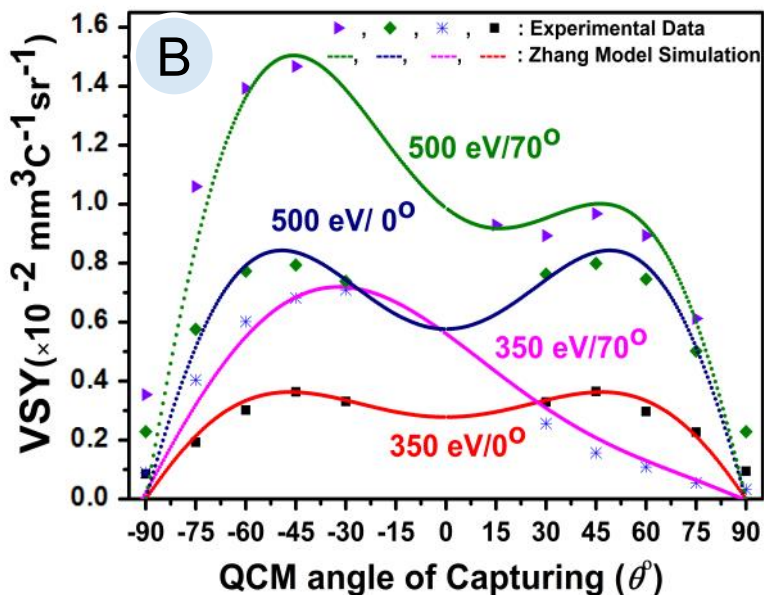


Completion of **VSSC/IPR MoU** on Hall Thruster

Hall Effect Plasma Thrusters (HEPT) are under investigation as a technology aiming to achieve thrust with high exhaust velocities in satellites. In HEPT plasma forms in a narrow annular channel and interact with inner ceramic wall. Ejected ions can erode the ceramic at the ejection point edge. The eroded material may eventually deposit on the crucial parts of the satellite and degrade their efficiency most prone in this case are solar cells. Erosion can also expose the underlying magnetic yoke, causing the magnetic field profile to be altered and change HEPT functionality. Therefore, the investigation of thruster anode liner erosion and choice of material is very important for its long and stable operation. **PSED/IPR** group has recently completed a MoU with Vikram Sarabhai Space Centre (VSSC)/ISRO, Thiruvananthapuram. Under this MoU, a Low Energy Ion Beam facility was developed at FCIPT/IPR to investigate the erosion properties of the ceramic material developed by VSSC/ISRO to be used as Anode Liner Material in HEPT. *in-situ* experiments were performed to investigate the material erosion behavior at various energies, fluence at elevated temperature under this project. With joint efforts of IPR and VSSC, this material has been approved to be used in the indigenously developed HEPT for Indian Satellites. This project was carried out by a team consisting of Akshay Vaid, Basanta Parida, Vivek Pachichigar, Sooraj K. P. and Mukesh Ranjan.



(A) Low Energy Ion Beam Facility (B), Volumetric Sputtering Yield (VSY) profiles (C) Variations in Erosion rate with temperature (D) SEM images of sample before and after irradiation



Members of PSED (L-R) Sooraj K.P., Basanta Parida, Akshay Vaid, Vivek Pachichigar and Mukesh Ranjan