Seminar

Institute for Plasma Research

Title : Study of Boron Nitride Erosion Behavior at Elevated Temperature

Speaker: Dr. Basanta Kumar Parida
FCIPT, Institute for Plasma Research, Gandhinagar

Date : 2nd February 2021 (Tuesday)

Time : 10.00 AM

Venue : Online - Join the talk:
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Abstract :

Boron Nitride (BN) materials are of specific importance due to their use as Hall-Effect Plasma Thrusters Anode Liner material owing to good thermal stability, chemical inertness and low erosion behavior [1-3]. While long operation, the temperature of plasma thrusters may rise to around 700^{o}C, at this elevated temperature the sputtering yield of the material may get changed and erosion rate becomes faster. Therefore lots of efforts are going on to develop higher temperature stable BN material. In the current work, we have developed a UHV compatible heating arrangement to externally heat the BN specimen and observe the change in its erosion rate with the help of in-situ QCM sensor and various ion energies and angle of incidence. A linear rise in erosion rate was observed when the temperature was varied from 100 to 700^{o}C in the steps of 100^{o}C. The similar experiments were performed for various grades of BN samples.

1. M. Ranjan et al., AIP Advances 6, 095224 (2016).
2. Rubin et al., J. Phys. D: Appl. Phys. 42, 205205 (2009).
3. Rubin et al., Rev. Sci. Instrum. 80, 103506 (2009).