Abstract Submitted
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Energy dissipation in plasma treated Nb and Secondary Electron Emission for modeling of multipactor discharges[1] ANA SAMOLOV, SVETOZAR POPOVIC, LEPOSAVA VUSKOVIC, CAS, Department of Physics, ODU, Norfolk, VA, MILOS BASOVIC, CAS, Department of Mechanical Engineering, ODU, Norfolk, VA, FILIP CUCKOV, College of Science and Mathematics, UMass Boston, Boston, MA, YEVGENY RAITSES, IGOR KAGANOVICH, PPPL, Princeton, NJ — Electron-induced Secondary Electron Emission (SEE) is important in many gas discharge applications such as Hall thrusters, surface and multipactor discharges. Often they present the inhibiting phenomena in designing and operating of these systems, examples being the Superconducting Radio Frequency (SRF) accelerator cavities. The multipactor discharges depend on the resonant field configuration and on the SEE from the cavity surface. SEE is proportional to the energy dissipated by the primary electrons near the surface. Our analysis of energy spectra of secondary electrons indicates that the fraction of dissipated energy of primary electrons in solid reaches the maximum at the primary energies that produce the maximum yield. The better understanding of this mechanism is crucial for successful modeling of the multipactor discharge and design of vacuum electronic devices. We have developed an experimental set up to measure energy distribution of SEE from Nb coupons under different incident angles, since Nb is used for manufacturing of SRF accelerating cavities. Samples are placed in carousel target manifolds which are manipulated by robotic arm providing multiple degrees of freedom of a whole target system.

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