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Study of the secondary electron emission in the limit of low electron energies using Q-machine in transverse magnetic field ALEXANDER MUSTAFAEV, National Mineral Resources University (Mining University), IGOR KAGANOVICH, Princeton Plasma Physics Laboratory, VLADIMIR DEMIDOV, West Virginia University, ARTIOM GRABOVSKIY, National Mineral Resources University (Mining University) — The secondary electron emission (SEE) from surfaces plays an important role in plasma, accelerator and high power microwave applications [2-3]. A recent study proposed that the SEE yield, which is ratio of secondary to primary electron fluxes, approaches unity in the limit of zero energy of incident electron [3]. The high SEE has profound implications especially for plasma applications, including, for example, plasma thrusters for spacecraft propulsion and electric probes. High SEE at low electron energies may be caused by variety of surface effects. In specially cleaned metal surfaces numerous previous experimental studies of the secondary electron emission did not observed high SEE [1]. This talk presents a technique for measurements of SEE yield in a low-pressure plasmas in the presence of transverse magnetic field. It is shown that for poly-crystal surfaces, the SEE yield can be indeed very high (~ 0.8) but still not approaching unity. This result is explained by additional reflection of primary electrons from a potential barrier near the poly-crystal surface. The contribution of electron reflection from the potential barrier and the surface has been identified and studied. [1] A. Andronov, I. Kaganovich, et al. Bull. of the APS, Vol.58, No.16, p.306, 2013. [2] A. Mustafaev, M. Kaganovich, et all. Bull. of the APS, Vol.58, No.8, p.62, 2013. [3] R. Cimino, et al., Phys.Rev.Lett. 93, 014801, 2004.

Alexander Mustafaev
National Mineral Resources University (Mining University)

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