Abstract Submitted
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Spectroscopic characterization and modeling of Ar/Cl_2 microwave glow discharge[1] J. UPADHYAY, M. RASKOVIC, S. POPOVIC, L. VUSKOVIC, Physics Department, Old Dominion University — Ar/Cl_2 microwave glow discharge was applied for plasma etching of niobium, metal of choice for superconducting radiofrequency accelerator technology. Etching rates were determined for different discharge parameters and results of these experiments are published elsewhere [1]. Simultaneously, plasma emission actinometry was used to estimate the absolute densities of Cl, Cl^+ and Cl_2 in the variable plasma conditions. These results, combined with results of discharge diagnostics, were compared with results obtained trough the modeling of Ar/Cl_2 discharge. We have calculated the electron-impact ionization rates of Cl_2 and its fragments for electron energy distribution present in bulk plasma. These ionization rates will be used for modeling of plasma etching process and comparing with experimentally determined etching rates.
[1]. M. Raškovic, et al., J. Vac. Sci. Technol. A **27** (2), 301 (2009).

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