Abstract Submitted
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Comparative Study of RF Discharge in Neon by OES, Langmuir Probe, CR and PIC/MC Modelling[1] ZDENEK NAVRATIL, Masaryk University, Brno, PAVEL DVORAK, OTO BRZOBOHATY, DAVID TRUNEC — A novel method of determination of electron temperature and electron density in plasma based on optical emission spectroscopy and collisional-radiative modelling was compared with Langmuir probe measurement and PIC/MC simulation. An RF(13.56 MHz) capacitively-coupled discharge in neon at 10 Pa was investigated by intensity-calibrated optical emission spectroscopy. The intensities of neon transitions between 3s – 3p states were fitted with CR model to determine the electron temperature and density. Metastable density measured in absorption was used in the calculations. A good agreement between electron temperature measured by OES+CR method and PIC/MC simulation was obtained close to driven electrode. The decrease of the electron temperature going into the bulk plasma, as expected from PIC/MC simulation, was not observed in experiment. Electron density determined from the fit of absolute intensities was found to be 5× larger than the result of Langmuir probe measurement. The axial dependencies of electron density determined by OES+CR and Langmuir probe were very similar.

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