Abstract Submitted
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Analysis of Optogalvanic Transients at 621.7 nm, 633.4 nm and 640.2 nm of Neon in a Discharge Plasma Fitted with a Monte Carlo Mathematical Model.[1] KAYODE OGUNGBEMI, University of Lagos, Nigeria, XIANMING HAN, MICHEAL BLOSSER, Butler University Indianapolis IN 46208 USA, PRABHAKAR MISRA, Howard University Washington DC 20059, LASER SPECTROSCOPY GROUP COLLABORATION — Optogalvanic transitions have been recorded and fitted for $1s_5$ - $2p_7$ (621.7 nm), $1s_5$ - $2p_8$ (633.4 nm) and $1s_5$ - $2p_9$ (640.2 nm) transitions of neon in a Fe-Ne hollow cathode plasma discharge as a function of current (2-19 mA) and time evolution (0-50 microsec). The optogalvanic waveforms have been fitted to a Monte carlo mathematical model. The variation in the excited population of neon is governed by the rate of collision of the atoms involving the common metastable state ($1s_5$) for the three transitions investigated. The concomitant changes in amplitudes and intensities of the optogalvanic signal waveforms associated with these transitions have been studied rigorously and the fitted parameters obtained using the Monte Carlo algorithm to help better understand the physics of the hollow cathode discharge.

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