Abstract Submitted
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O atom number density measurements in repetitively pulsed plasmas by two photon laser induced fluorescence MRUTHUNJAYA UDDI, NAIBO JIANG, KRAIG FREDERICKSON, YVETTE ZUZEEK, IGOR ADAMOVICH, WALTER LEMPERT, Ohio State University — We present measurements of atomic oxygen number density in high pressure, non-equilibrium plasmas created by a high repetition rate (50 kKz) – short (20 nsec) pulse duration discharge. Measurements are performed using two photon absorption laser induced fluorescence (TALIF). Atomic oxygen mole fractions are presented as a function of time after plasma initiation in oxygen/helium, air, and air/methane mixtures at pressures of approximately 60-100 torr. Two approaches will be described for absolute number density calibration, comparison with two photon xenon spectra, and chemical titration with NO_2. Diagnostic issues relevant to short pulse plasmas, in particular mitigation of electromagnetic interference, will be described in detail.

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