Abstract Submitted
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Electron density and electron temperature measurements for repetitive nanosecond pulsed discharges using Thomson scattering[1] JARED MILES, STEVEN ADAMS, Air Force Research Laboratory, JAMES HORNEF, CHUNQI JIANG, Old Dominion University, AFRL TEAM, ODU PLASMA AND PULSED POWER LAB TEAM — Measurements of electron temperature and electron density in repetitive nanosecond pulsed plasmas provide key insight to the properties and kinetics of non-equilibrium plasmas. This work applies non-invasive Thomson scattering to spatially and temporally resolved measurements of electron temperature and electron density in repetitively pulsed plasmas in ambient air and inert gas flows. Plasmas were generated by a pin-to-pin electrode system driven by 12 ns, 6-10 kV pulses at a repetition rate up to 300 kHz. A <1mm in width He/O_2 plasma jet produced by a tubular electrode configuration and powered by 140 ns kilovolt pulses at 10 Hz was also used for the study. The dependence of the plasma properties including the electron temperature, electron density and gas temperature on pulse duration, pulse rise time, and gas composition are discussed here.

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