OH LASER-INDUCED FLUORESCENCE MEASUREMENTS in NANOSECOND PULSE DISCHARGE PLASMAS

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We present recent results of laser-induced fluorescence measurements of hydroxyl radical density in repetitively pulsed nanosecond plasmas, created using 10-20 nsec duration, high (up to 20 kV) voltage pulsers, capable of operation at repetition rates as high as 40-50 kHz. OH mole fraction as a function of time with respect to discharge creation is determined, with absolute calibration performed using a Hencken flat flame burner. This paper will focus on a series of low temperature, non-equilibrium kinetics measurements in hydrogen and hydrocarbon-air mixtures, with results compared to predictions of a recently developed plasma chemical oxidation model.