

Abstract Submitted
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Time resolved measurement of NO destruction using Quantum Cascade Laser in the mid-infrared L. GATILOVA, A. ROUSSEAU, LPTP, Ecole Polytechnique, Palaiseau, France, S. WELZEL, J. ROEPCKE, INP, Greifswald, Germany — The recent development of commercially available quantum cascade laser (QCL) in the mid infrared region offers new possibility for dynamic measurements in pulsed plasmas. Such diodes work near room temperature in pulsed mode. In the present study, we use the Q-MACS system to perform in situ time resolved measurement in a pulsed DC discharge. During each diode laser pulse (80 ns), the laser frequency is scanned over the absorption line, which gives the actual time resolution. The plasma is generated in a 50 cm long cylindrical glass tube in Ar/N₂/NO = 90/10/0.9 at 133 Pa. The pulse duration and current are 1 ms and 20 mA respectively. NO line (1894.15 cm⁻¹) is used. The detection limit is about 0.2% for a 80 ns single shot time resolution. Numerical computations of the NO kinetics are compared to experimental results. Work supported by German/French exchange program PROCOPE.

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