12:10-12:30 November 03rd
Session 2

Vibrational kinetics of CO2 in non-thermal plasma

Bart Klarenaar[1], Mark Damen[1], Marija Grofulović[2], Olivier Guaitella[3], Richard van de Sanden[1,4], R. Engeln[1]

Technische Universiteit Eindhoven University of Technology
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[1]Department of Applied Physics (PMP), Eindhoven University of Technology, Eindhoven, The Netherlands, [2] Instituto de Plasmas e Fusão Nuclear, Instituto Superior Técnico, Universidade de Lisboa, Portugal, [3]LPP, Ecole Polytechnique-CNRS-Univ Paris-Sud-UPMC, 91128 Palaiseau, France, [4]Dutch Institute for Fundamental Energy Research, 5600 HH Eindhoven, The Netherlands
Email address: r.engeln@tue.nl

During the presentation I will discuss the development of two diagnostics to increase our current level of understanding of the vibrational kinetics within CO_2 discharges, with the intention to ultimately contribute to a controlled and efficient dissociation process. The diagnostic techniques are (1) time resolved *in situ* Fourier transform infrared (FTIR) spectroscopy and (2) spatiotemporally resolved *in situ* rotational Raman spectroscopy. Both techniques are used to obtain information about the ro-vibrational density distributions in the electronic ground state of CO_2 in a pulsed glow discharge. During the active part of the plasma pulse a clear non-equilibrium is observed between the rotational and the v_3, and the (v_1, v_2) and v_3 vibrational density distributions. The results provide ample experimental foundation to expand our knowledge on CO_2 vibrations and dissociation, especially through comparison with numerical models.

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