

## **Keep-in-touch meeting**

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### **Influence of N<sub>2</sub> on the asymmetric vibrating mode of CO<sub>2</sub>**

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The effect of nitrogen addition in CO<sub>2</sub> cold plasmas is explored in this presentation, and more specifically, the influence of N<sub>2</sub> on the asymmetric population CO<sub>2</sub>(00<sup>0</sup>v<sub>3</sub>), in order to reach an energy-efficient dissociation involving non-equilibrium processes. Experimental results show a greater conversion rate of CO<sub>2</sub> into CO when N<sub>2</sub> gas at room temperature is added to the plasma. Experiments are performed in non-thermal plasmas sustained by DC pulsed discharges, for pressure and current ranges of [1; 5] Torr and [20; 50] mA, respectively. A self-consistent model, previously validated for pure CO<sub>2</sub> discharges, is further extended to take into account e-V, V-T and V-V reactions involving N<sub>2</sub>. The presentation focuses on the validation of the model, as well as the choice of the databases, by comparing the time-resolved densities of CO<sub>2</sub>(0v<sub>2</sub><sup>1</sup>20) and CO<sub>2</sub>(00<sup>0</sup>v<sub>3</sub>) between experimental results and modelling ones.