

Kinetic mechanisms in CO₂-N₂ plasmas

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Abstract (about 150 words with free format)

This contribution reports the comparison of simulation results from a 0D self-consistent kinetic model with recent experimental data obtained in low-pressure DC discharges in CO₂-N₂. This work will thus contribute to further develop the existing models [1-3] and will allow us to investigate the impact of N₂ on the plasma kinetics, relevant, since the admixture of N₂ is beneficial for CO₂ decomposition [1,4].

The system of election is a DC glow discharge, operating at a few Torr and tens of mA in a Pyrex tube of radius 1 cm. The set of measurements provides the gas temperature, vibrational temperatures of CO and the various modes of CO₂, reduced field E/N, and densities of O(³P), CO(X¹Σ⁺) and CO₂(X¹Σ⁺_g). The simulations are carried out with the LoKI simulation tool [5]. The reasons underlying the positive effect of N₂ in CO₂ dissociation will be discussed at the conference.

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Reference

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