



Keep-in-Touch meeting (May 27, 2022, 11.30am)

Modelling chemistry and transport in microwave discharges for CO₂ conversion

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The study of CO₂ conversion by means of microwave (MW) plasma discharges involves a complex interplay of many effects, namely transport of reactive flows, chemistry with several species and degrees of freedom and electromagnetic fields. The interplay of these effects is not well known but is important for optimization of reactor performances. In this work, a steady-state 1D-radial plasma fluid model is developed to study the contraction of CO₂ MW discharges. The calculated species molar fractions, gas temperature and electron temperature are validated against spatially-resolved measurements performed at DIFFER, in The Netherlands. The model is then used to complement experiments, by providing new insights into the contraction dynamics of CO₂ MW discharges.