

Abstract Submitted
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A PLASIMO global model for plasma assisted CO₂ conversion
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Eindhoven University of Technology — Conversion of CO₂ has become a major
challenge of our time as it is of interest for the reduction of greenhouse gases in
our atmosphere, but also to store energy thereby relieving the supply and demand
discrepancy of many alternative forms of energy. Plasma assisted CO₂ conversion is
heavily investigated as an efficient method to achieve this goal. Numerical modeling
is an important aspect of this investigation, but is difficult due to the complex
chemistry. A global model has been constructed to focus on the CO₂ chemistry
including its vibrational kinetics. The model has been realized using the global model
module of PLASIMO, a highly modular plasma modeling framework. It is based
on another model¹ that was constructed using the well-established code Global_kin.
The aim of the model is therefore twofold. First, to study the chemistry and identify
the most important species and reactions and perform parametric studies. The
knowledge gained can be applied to other, spatially resolved models. Second, by
implementing the same chemistry in the two different global model codes, a cross
validation can be performed, a vital scientific process often overlooked in practice.

¹Tomáš Kozák and Annemie Bogaerts, submitted to Plasma Sources Sci. Tech.

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