



Tutorial #1

Nonequilibrium kinetics of molecular plasmas

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In molecular plasmas different kinetics are often at play, namely electron, vibrational, chemical and surface kinetics. Each of them can have a dominant role, depending on the specific discharge and afterglow conditions. However, in general the various kinetics are very strongly coupled and the situation is very complex. This tutorial addresses the study of each of these kinetics and their interplay. The starting point is the formulation of volume-averaged zero-dimensional models, which allows for an investigation that primarily focuses on the actual kinetics rather than the complex discharge physics, from where the importance of experiments and procedures for model validation are emphasized. To illustrate the concepts, low-pressure DC and MW discharges in N_2-O_2 , CO_2 , and their mixtures are used as case studies.