Challenges in Optical Emission Spectroscopy[1] SARAH SIEPA, FeP/TEF14, Robert Bosch GmbH, Germany, BIRK BERGER, JULIAN SCHULZE, Department of Physics, West Virginia University, USA, Institute for Electrical Engineering, Ruhr-University Bochum, Germany, EDMUND SCHUENGEL, Department of Physics, West Virginia University, USA, ACHIM VON KEUDELL, Institute for Experimental Physics II, Ruhr-University Bochum, Germany — Collisional-radiative models (CRMs) are widely used to investigate plasma properties such as electron density, electron temperature and the form of the electron energy distribution function. In this work an extensive CRM for argon is presented, which models 30 excited states and various kinds of processes including electron impact excitation/de-excitation, radiation and radiation trapping. The CRM is evaluated in several test cases, i.e. inductively and capacitively coupled plasmas at various pressures, powers/voltages and gas admixtures. Deviations are found between modelled and measured spectra. The escape factor as a means of describing radiation trapping is discussed as well as the cross section data for electron impact processes.

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