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**Electron Impact Ionization of  $\text{SO}_x$ ,  $\text{NO}_x$  and  $\text{H}_2\text{SO}_4$  - The Aerosol Relevance** B G VAISHNAV, Physical Research Laboratory, U R PATEL, Gandhinagar Institute of Technology, K N JOSHIPURA, Retired Professor, Sardar Patel University, S H PANDYA, KKSJ Maninagar Science College, Gujarat, India — This paper reports our theoretical studies on electron impact ionization of reactive molecules  $\text{SO}_x$ ,  $\text{NO}_x$  ( $x = 1-3$ ) and  $\text{H}_2\text{SO}_4$ , at incident energies from threshold to 2000 eV. Motivation for this work derives from the relevance of these molecules in connection with atmospheric aerosols analysis through mass spectrometric studies and quantification of mass concentrations amongst the aerosol species. The ionization efficiency of a molecule is directly proportional to ionization cross section, which represents the efficiency on a per-molecule basis. Study of electron impact ionization cross sections of molecules, like  $\text{H}_2\text{SO}_4$ , versus number of electrons in the molecule can lead to information about mass concentrations of aerosol species. We have employed in this work, the well-known spherical complex potential formalism (SCOP), which provides total elastic as well as inelastic cross sections, wherein the latter includes ionization cross sections. We have developed a method to extract ionization cross section from calculated inelastic cross section by introducing a ratio function, in a semi-empirical formalism known as CSP-*ic* method. For  $\text{SO}_x$  and  $\text{NO}_x$  targets single-centre scattering calculations are performed, while for  $\text{H}_2\text{SO}_4$ , the additivity rule augmented with overlap or screening corrections, has been employed. The calculated cross sections are examined as functions of incident electron energy along with comparisons (theoretical or experimental) as available.

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No Company Provided

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