

Abstract Submitted  
for the GEC10 Meeting of  
The American Physical Society

**Differential and Integral cross sections for electronic-state excitation of O<sub>2</sub> by electron impact** DAISUKE SUZUKI, MIZUHA OHKAWA, HIDETOSHI KATO, MASAMITSU HOSHINO, Sophia University, MICHAEL BRUNGER, Flinders University, HIROSHI TANAKA, Sophia University, SOPHIA UNIVERSITY TEAM, FLINDERS UNIVERSITY COLLABORATION — We report absolute differential cross sections (DCSs) and integral cross sections (ICSs) for electronic excitation of the B<sup>3</sup>Σ<sub>u</sub><sup>-</sup> state, also called the Schumann-Runge continuum (SR), and the E<sup>3</sup>Σ<sub>u</sub><sup>-</sup>(*v*= 0,1) state of O<sub>2</sub> by electron impact. The present measurements were conducted with a crossed-beam apparatus for impact energies in the range 20-200eV, with the energy loss spectra and therefore the DCSs being placed on an absolute scale using the relative flow technique. ICSs are subsequently derived from these DCSs using a GOS technique. In addition BE*f*-scaled ICSs of these dipole-allowed electron impact transitions, using the Plane Wave Born (PWB) approximation, are also reported. While previous studies of these excitation processes do exist in the literature, they are not in very good agreement with one another and so the available cross sections cannot be considered to have been bench marked. The present data seek to rectify that situation.

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Date submitted: 10 Jun 2010

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