

Metastable production from D₂O, H₂O and H₂O₂ following electron impact.*

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A channeltron has been used to detect metastable oxygen atoms O(⁵S) and hydrogen atoms H(2s) or D(2s), produced by electron impact dissociation of D₂O, H₂O and H₂O₂ over an incident energy range from threshold to 300eV. A crossed-beam apparatus with a pulsed electron beam is used to obtain time-of-flight (TOF), and hence energy, spectra of metastable H,

D and O atoms. A sample of the TOF data obtained is shown in the Figure. Here a pulse of 300 eV electrons is incident on D₂O. The intense peak, A, at time zero is due to the VUV photons excited by the e-beam pulse. Peaks B and C, at short and long flight times respectively, are due to D(2²S) and O(⁵S) fragments respectively. Relative cross sections as a function of electron energy have been obtained for the different fragments. Some cross sections have been made absolute by comparison with data for production of H(2s) from H₂ [Ajello *et al* The Astrophysical Journal **371**, 422 1991]

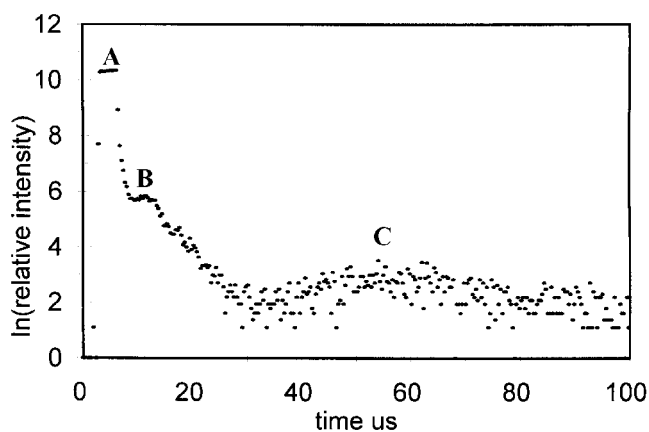


Figure 1 TOF data from D₂O at 300eV.
See text for details.

* Research supported by the Natural Sciences and Engineering Research Council of Canada (NSERC), the Canadian Foundation for Innovation (CFI) and the Ontario Innovation Fund (OIF).