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BOOK OF ABSTRACTS



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Superoxide anion (O_2^-) collisions with molecules in the energy range 10-7000 eV:

Total electron detachment and ionisation cross section measurements

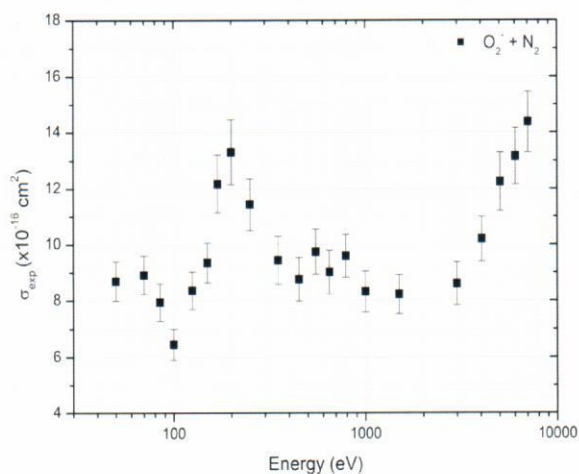
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Reactive oxygen species (ROS) are recognised as one of the most effective radicals inducing radiation damage in biological media. They are formed by irradiation of aqueous media initiating chemical reaction processes which may result damaging DNA bases and other sensitive biomolecules. In this study we present a novel experimental setup to generate ROS species from a pulsed hollow cathode plasma discharge able to be used for scattering cross section measurements with gas phase molecules. In order to calibrate the entire system, we first present absolute values of the total electron detachment cross section in O_2^- collisions with N_2 molecules. Unexpected resonances in the impact energy range 100-200 eV have been found for these collision processes (see figure below). New measurements for biologically relevant molecules (O_2 , H_2O and pyridine) will also be presented, including positive and negative induced fragmentation yields and the relevance of these resonances to induce molecular damage will be discussed.



Electron detachment cross-sections in the 50-7000 eV energy range for O_2^- collisions with N_2