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Synopsis We report the study of dissociative electron attachment to ozone (O_3) in the energy range of 1 to 10 eV using velocity slice imaging technique. Based on the momentum images that we obtained for O^- and O_2^- channels at various electron energies we unravel the molecular dynamics leading to DEA.

Dissociative electron attachment (DEA) to ozone has been studied in the past including measurement of absolute cross-sections [1]. However, the dynamics that leads to DEA has not been reported so far. Here we report the study of DEA dynamics for ozone using velocity slice imaging technique.

Here we report the study of DEA dynamics of O_3 using velocity slice imaging [2]. The VSI spectrometer was modified with longer flight tube and larger (75 mm diameter) phosphor screen based position sensitive detector [3]. We observed O^-, and O_2^- ions from the DEA measurements on Ozone formed at various electron energies. The O^- being the most dominant channel was found to peak around 1.4 eV along with 3 eV and 7.5 eV whereas O_2^- signals peaked around 1.2 eV, 3.2 eV, 7.5 eV.

We carried out the momentum imaging of various fragment ions across different resonances using velocity slice imaging. Around 3 eV peak the angular distribution shows a forward-backward asymmetry in the O^- channel and that asymmetry is reversed in the O_2^- channel as shown in Fig. 1. Around 1.5 eV there is considerable kinetic energy release (~1.4 eV) in the O^- channel.

In this poster we shall describe the dynamics involved in DEA to ozone using velocity slice images for both the fragments observed at various resonances.

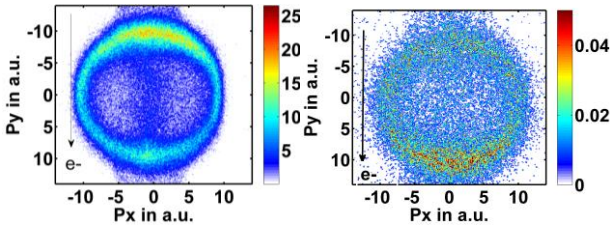

Figure 1. Image of O^- and O_2^- from O_3 at 2.5eV and 3.7eV electron energy.

References

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