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Coulomb Explosion Imaging of C-S and S-S Bond Breaking with X-rays[1] SURJENDU BHATTACHARYYA, SHASHANK PATHAK, SVEN AUGUSTIN, UTUQ ABLIKIM, Kansas State University, RAZIB OBAID, University of Connecticut, KIRSTEN SCHNORR, LBNL, Berkeley, ILEANA DIMITRIU, Hobart and William Smith Colleges, RENE BILODEAU, NORA BERRAH, University of Connecticut, DANIEL ROLLES, Kansas State University — Photofragmentation of dimethyl sulfide (DMS) can produce reactive radicals by cleavage of C-S bonds, while dimethyl disulfide (DMDS) can additionally undergo cleavage of the S-S bond. Owing to this S-S bond, the DMDS backbone has an open-book geometry. In the present investigation, Coulomb explosion imaging (CEI) was used to study the C-S and S-S fragmentation processes after inner-shell ionization in the photon energy range of 130-300 eV by measuring the momenta of coincident ions. Preliminary analysis showed that the dissociation has both sequential and concerted contributions. We also look towards exploiting CEI to identify the geometry of molecules in their initial states. Simulations are being performed to get further insight into the experimental results. These results will pave the way for future time-resolved experiments.

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