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Threshold collision induced dissociation experiment for azobenzene and its derivatives. MOHAMMADREZA REZAEE, Physics Department, University of Tennessee, Knoxville; The Department of Physics and Astronomy; TEXAS AM UNIVERSITY, ROBERT COMPTON, Physics Department, University of Tennessee, Knoxville;Chemistry Department, University of Tennessee, Knoxville — In this study we investigated protonated azobenzene cation and properties of trans 2,2',6,6'-tetrafluoroazobenzene anion using the collision induced dissociation method and the results are compared with the results from ab initio electronic structure calculations. We measured the bond dissociation energies experimentally and found which theoretical quantum chemistry methods yield best results. Several high accuracy multi-level calculations such as CBS-QB3, G3 and G4 had been carried out to obtain reliable thermochemical information for azobenzene and several of its derivatives and their anion or cation. We also performed other experiments such as Raman spectroscopy to study these light sensitive molecules with promising applications such as photo-switching.

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