Crossed-beam dc slice imaging studies of Cl(2P_{3/2}) reactions with n-pentane, isopentane, and neopentane

ARMANDO ESTILLORE, LAURA VISGER, ARTHUR SUITS, Chemistry Department, Wayne State University, Detroit, MI 48202 — The interaction of chlorine with hydrocarbons has become an important aid in understanding the chemistry in combustion, atmospheric, and marine environments. Here, we present a systematic study of the reactions of ground state Cl(2P_{3/2}) atoms with n-pentane, isopentane, and neopentane. The reactions are studied using crossed molecular beam and dc slice ion imaging techniques. The product alkyl radical m/z = 71 were detected via single photon ionization at 157 nm. Center-of-mass translational energy and angular distributions were directly obtained from the images. Product angular distributions showed backward scattering and that most of the available energy (~50-75%) are partitioned among the products.

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