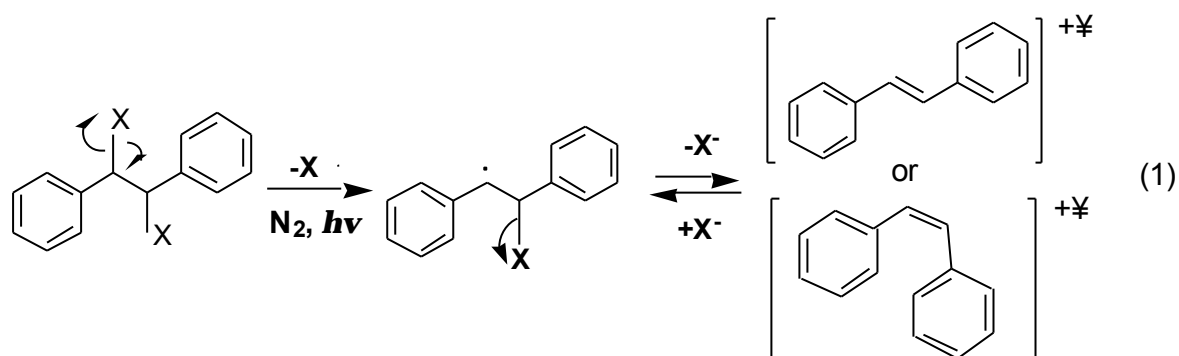


Ionization of α -Substituted 1,2-Diphenethyl Radicals?

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α -Chloro and α -bromo substituted 1,2-diphenylethyl radicals undergo rapid ionization of chloride or bromide to generate stilbene radical cations, eq. 1. In the present work, the ionization of halides from radicals generated upon 266 nm laser irradiation of diastereotopic precursors in different solvents was investigated to determine if the solvent and the structure of the precursor influenced the relative yield of the *cis*- and *trans*- stilbene radical cations formed.



In addition, rate constants for the reverse reaction, namely addition of chloride to *cis*- and *trans*- stilbene radical cations, eq. 1, was examined as a function of solvent to look for evidence of reversible addition of chloride. The *cis*- and *trans*-stilbene radical cations were formed via electron transfer reactions involving 9,10-dicyanoanthracene and biphenyl, using a 355 nm YAG laser.

The effect of adding electron-withdrawing groups such as cyano groups was also investigated. With the 1,2-dichloro-1,2-bis(4,4'-cyano phenyl)ethane precursor, laser irradiation appears to result in rapid formation of 4,4'-dicyanostilbene, indicating that rapid homolytic cleavage of a chlorine radical is the preferred reaction route, eq. 2.

