Student 5

THE FORMATION OF THE STABLE RADICALS •CH_2CN, CH_3•CHCN AND •CH_2CH_2CN FROM THE ANIONS $^-CH_2CN$, $CH_3{}^-CHCN$ AND $^-CH_2CH_2CN$ IN THE GAS PHASE. A JOINT EXPERIMENTAL AND THEORETICAL STUDY.

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Franck–Condon one-electron oxidation of the stable anions $^-CH_2CN$, $CH_3{}^-CHCN$ and $^-CH_2CH_2CN$ (in the collision cell of a reverse-sector mass spectrometer) produce the radicals •CH_2CN, CH_3•CHCN and •CH_2CH_2CN, which neither rearrange nor decompose during the microsecond duration of the neutralisation–reionisation experiment.[1] Acetonitrile (CH_3CN) and propionitrile (CH_3CH_2CN) are known interstellar molecules[2] and radical abstraction of these could produce energised •CH_2CN and CH_3•CHCN, which might react with NH_2• (a known interstellar radical)[2] on interstellar dust or ice surfaces to form NH_2CH_2CN and $NH_2CH(CH_3)CN$, precursors of the amino acids glycine and alanine.[1]

1 H.J.Andreazza, M. Fitzgerald and J.H.Bowie. *Org. Biomol. Chem.,* 2006, **4**, 2466-2472.

2 http://www.cv.nrao.edu/~awootten/allmols.html