FLASH PYROLYSIS IR LASER JET SPECTROSCOPY OF KETENE DERIVATIVES

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We have used the flash pyrolysis technique, introduced by Chen and co-workers [a], to generate free radicals and other short lived species for diode laser absorption spectroscopy in a supersonic jet [b]. The flash pyrolysis technique has proved to be particularly useful for producing ketene derivatives and we have recorded the carbonyl antisymmetric stretching modes of chloroketene (ClHCCO), methyl ketene (CH_3HCCO) and propadienone (H_2C_3O). The ν_2 band of ClHCCO was measured between 2153 and 2161 cm^{-1}. The molecule was formed by pyrolysis of chloroacetyl chloride at 1500 K. Over 200 lines of ^{35} ClHCCO were fitted, fixing the ground state constants to the microwave values [c]. We obtained A=1.201028(64), B=0.100399(3) and C=0.092530(3) cm^{-1} and a band origin of ν_2 = 2157.19238(16) cm^{-1}. We have also measured many lines of methyl ketene and propadienone generated from propionyl chloride and acrylic anhydride respectively. Their analysis is currently in progress.

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