INFRARED SPECTROSCOPY OF THE PROPARGYL RADIAL IN SUPERFLUID LIQUID HELIUM DROPLETS

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An effusive pyrolysis source for the generation of a continuous beam of radicals suitable for the helium droplet pick-up process is presented as applied to the pyrolysis of Propargyl-Bromide to produce the Propargyl Radical. Rotationally resolved spectra are reported for the ν_1 vibrational mode of the Propargyl radical in helium droplets. Stark spectra were also recorded that allowed for the first experimental determination of the permanent electric dipole moment of Propargyl, namely 0.15 D and 0.148 D for ground and excited state, respectively, in good agreement with previously reported *ab initio* results of 0.14 D [a]. The infrared spectrum of the ν_1 mode of Propargyl-Bromide and future applications of these methods for the production of novel radical clusters will also be discussed.

[a] P. Borschwina, R. Oswald, J. Flügge, and M. Horn, *Z. Phys. Chem.* **188,** 29 (1995).