

FAR-INFRARED SPECTROSCOPY OF SHORT-LIVED SPECIES

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Detection and characterization of short-lived species, or radicals, have been one of the main targets of high-resolution molecular spectroscopy. These kinetically unstable substances can be produced only in a very small amount under ordinary laboratory measurement conditions, it is essential to increase the sensitivity of the spectrometer and/or to improve the production efficiency of the molecules to be studied. Conventional microwave spectroscopy has taken an approach to raise the operating frequency to far-infrared region, expecting that effective absorption coefficient will increase. Sensitivity of the spectrometer in far-infrared region, or THz frequency region, has greatly improved thanks to successful development of frequency multiplication techniques. Along with searching for an efficient production method of the short-lived species, many kinds of short-lived species can be possible to observe. Based on this situation, I would like to show several examples of far-infrared spectroscopy of reactive species such as CH_2 , NH_2 , and CHF_2 .