MICROWAVE SPECTROSCOPIC STUDIES OF MOLECULES EMBEDDED IN HELIUM NANODROPLETS

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We have installed a microwave resonator into a molecular beam apparatus in order to measure the microwave spectra of molecules embedded in helium nanodroplets. The resonator is formed by two spherical aluminium mirrors mounted orthogonal to the helium droplet beam. The droplet beam traverses the microwave cavity, via apertures near the center of each mirror. The microwave radiation is coupled into the resonator with a wire hook antenna located in the center of one of the mirrors. The resonator can be tuned to resonance with the external microwave radiation by moving one mirror with a stepper motor. An automatic scanning procedure was developed. We will report on first measurements of microwave transitions found for OCS in helium droplets.