

HELIUM NANODROPLET ISOLATION SPECTROSCOPY IN AN UNDERGRADUATE TEACHING LABORATORY

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A home-built helium nanodroplet isolation spectrometer has been utilized by undergraduate students in course-based experiments to investigate the rovibrational dynamics of small molecules. Helium nanodroplets are well known to simplify the spectroscopy of embedded molecules owing to their low temperature (0.4 K) and weakly interacting nature. In the infrared spectral region, this results in a small number of rotationally resolved lines that can often be collected and analyzed in several lab periods. We demonstrate the advantages of using this technique in an upper-level undergraduate chemistry course for which the laser spectroscopy of helium solvated ^{13}C -labelled formic acid was investigated for the first time.