THE C-H STRETCH SPECTRUM OF ETHYLENE IN LIQUID HELIUM DROPLETS

C. MICHAEL LINDSAY, WILLIAM K. LEWIS, and ROGER E. MILLER, *Department of Chemistry, The University of North Carolina at Chapel Hill, Chapel Hill, NC, 27599*.

In this talk we report our study of $^{12}C_2H_4$ monomer and its clusters in ^{4}He with the new, "second generation" helium droplet/infrared spectroscopy apparatus at UNC. The region containing the ν_{11} and ν_9 asymmetric C-H stretches of the monomer was scanned using a tunable, cw OPO aligned collinearly with the droplet beam and detected with a quadrupole mass spectrometer. Rotationally resolved spectra were observed with line widths as narrow as 0.08 cm^{-1}, FWHM. Details of the new instrument and the analysis of the spectra will be presented.