Abstract Submitted
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High resolution infrared spectra of helium clusters doped with carbon dioxide or nitrous oxide ROBERT MCKELLAR, National Research Council of Canada — Infrared laser spectroscopy is used to study low temperature ($\sim$0.2 K) helium clusters in a pulsed supersonic jet expansion. The clusters are doped with a probe molecule (CO_2 or N_2O) whose vibration-rotation spectrum is observed as a function of cluster size. Our previous work on smaller clusters ($N < 20$) is extended to larger clusters ($N \sim 70$) using a new apparatus with a skimmed jet nozzle. Various isotopes are studied in order to make the assignment of cluster size more secure, including the asymmetric species $^{16}O^{13}C^{18}O$. The cluster rotational parameters exhibit broad oscillations, similar to those recently observed in He_N - OCS, which are related to the formation of superfluid helium solvation shells around the probe molecule.

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