

SPECTROSCOPIC PROBES OF THERMAL EXCITATIONS IN LIQUID HELIUM

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We have shown in previous studies that linear chains of HCN can be formed by cluster growth in helium nanodroplets. Although these clusters are linear, the parallel vibrational bands associated with the C-H stretches of many of them show strong Q branches, suggesting that the moment of inertia about the molecular axis is significant. The experimental spectra for these systems are discussed in the context of recent theoretical calculations, using path integral methods, which show that the helium near the cluster can be thermally excited and thus contribute to the moment of inertia about the axis of the cluster