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 band s 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 f or these systems are discussed in the context of recent theoretical calculations, using pat h integral methods, which show that the helium near the cluster can be thermally excited an d thus contribute to the moment of inertia about the axis of the cluster