VAPOR-PHASE RAMAN SPECTRA OF 3-METHYLINDOLE AND OTHER MOLECULES AT ELEVATED TEMPERATURES

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Many larger organic molecules boil at temperatures above 200°C and hence have negligible vapor pressure at room temperature, making it nearly impossible to collect their vapor-phase Raman spectra. We have designed a simple cell which allows spectra of samples to be recorded up to 350°C. No decomposition of the samples of interest has been detected. The spectra of 3-methylindole, a model compound for the amino acid tryptophan, and several cyclic and bicyclic molecules will be presented and discussed. Calculated spectra from ab initio calculations correlate nicely with the observed spectra. In the vapor-phase the 3-methylindole shows no hydrogen bonding, which is extensive in condensed phases. Similarly, the cyclic and bicyclic molecules in the vapor-phase possess large amplitude motions which are not perturbed by intermolecular interactions.