INFRARED CAVITY RINGDOWN SPECTROSCOPY OF JET-COOLED PAHS: A COMPARISON WITH MATRIX SPECTRA

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Infrared absorption spectra of the CH stretching region were observed for naphthalene, anthracene, phenanthrene, pyrene, and perylene using a heated supersonic slit source and cavity ringdown spectroscopy. Results are compared closely with 10 K Ar matrix spectra to determine general matrix perturbation effects for this class of molecules. Fundamental transitions in the matrix spectra were subject to spectral shifts of up to 3.0 cm^{-1} and band widths were generally broader than the jet-cooled spectra by up to 80%. Weak features not predicted by theory were observed in both Ar matrix and gas-phase spectra with similar relative intensities which suggest assignment to overtones and combination bands.