LASER INDUCED FLUORESCENCE SPECTRUM OF PERYLENE IN LARGE HELIUM CLUSTERS

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Helium Cluster Isolation Spectroscopy as a method of investigating molecular aggregates offers the advantages of extremely low temperatures (0.37 K), control of aggregation, and very weak solvent perturbation effects. Perylene, a molecule comprised of five benzene rings, is a model compound to study the effect of molecular aggregation (*e.g.*, excitation transfer and proximity effects) in a class of molecules which have been frequently investigated in the solid state and in thin films. So far we have measured the monomer spectrum, resolving its vibronic structure up to 1500 cm^{-1} in the S_1 electronic state. The average shift of the bands is approximately +47 cm^{-1} while their zero phonon lines vary in both width and structure, the former reaching values as low as several GHz. We are presently searching for the dimer spectrum.