PYRIDINE AGGREGATION IN HELIUM NANODROPLETS

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Pyridine crystals show the unusual property of isotopic polymorphism. Experimentally it has been observed that deuterated pyridine crystals exist in two phases while pyridine does not show a phase transition[a]. Therefore, although isotopic substitution is the smallest possible modification of a molecule it greatly affects the stability of pyridine crystals. A possible experimental approach in order to understand this striking effect might be the study of pyridine aggregation for small clusters. By embedding the clusters in helium nanodroplets the aggregates can be stabilized and studied by means of Infrared Depletion Spectroscopy. Pyridine small clusters were identified in the C-H asymmetric vibration region (3000-3200 cm^{-1}) using this method.

[a] S. Crawford *et al.*, Angew. Chem. Int. Ed., 48, 755 (2009).