HIGH RESOLUTION INFRARED SPECTROSCOPY OF NO RADICAL ISOLATED IN SOLID PARAHYDROGEN

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The infrared spectoscopy of solid parahydrogen doped with NO radicals was investigated using high-resolution FTIR spectroscopic methods. These NO doped quantum solids were synthesized using the rapid vapor deposition method developed by Fajardo. The fundamental band of the diatomic radical was measured and analyzed in order to study how the rovibrational dynamics of a $^2\Pi_{1/2}$ radical change when frozen in a quantum solid. From the spectrum, it is clear that the diatomic radical almost freely rotates in the parahydrogen solid, implying it occupies a single substitution site. In this talk we present the data and discuss our current understanding of this spectrum.