HIGH RESOLUTION INFRARED SPECTROSCOPY OF CHEMICAL SPECIES IN SOLID PARAHYDROGEN

DAVID T. ANDERSON, SHAWN PALMER, and KAZUKI YOSHIOKA, *Department of Chemistry, University of Wyoming, Laramie, WY 82071-3838 (email:danderso@uwyo.edu).*

Our laboratory has recently constructed a rapid vapor deposition cryostat system to synthesize chemically doped parahydrogen solids. We characterize the chemical and physical properties of the doped quantum crystals via high-resolution FTIR spectroscopy. Current investigations are focused on small chemical dopants (diatomics, radical diatomics, linear triatomics, and symmetric tops) to better establish how the rovibrational dynamics of these prototypical species change upon solvation in a quantum crystal. Furthermore, to study how these species induce infrared activity in the quantum host itself. While the number of chemical species that have been studied in parahydrogen at high resolution continues to grow, there are still many open questions. This paper will present a brief overview of the research that is ongoing at the University of Wyoming.