A ROVIBRATIONAL ANALYSIS OF THE WATER BENDING VIBRATION IN OC-H_2O AND A MORPHED POTENTIAL OF THE COMPLEX

LUIS A. RIVERA-RIVERA, SEAN D. SPRINGER, BLAKE A. McELMURRY, *Department of Chemistry, Texas A & M University, College Station, TX, USA*; IGOR I LEONOV, *Microwave Spectroscopy, Institute of Applied Physics, Nizhny Novgorod, Russia*; ROBERT R. LUCCHESE, JOHN W. BEVAN, *Department of Chemistry, Texas A & M University, College Station, TX, USA*; L. H. COUDERT, *LISA, CNRS, Universités Paris Est Créteil et Paris Diderot, Créteil, France*.

Rovibrational transitions associated with tunneling states in the water bending vibration in OC-H_2O complex have been recorded using a supersonic jet quantum cascade laser spectrometer at 6.2 μm. Analysis of the resulting spectra is facilitated by incorporating fits of previously recorded microwave and submillimeter data accounting for Coriolis coupling to obtain the levels of the ground vibrational state. The results were then used to confirm assignment of the vibration and explore the nature of tunneling dynamics in associated vibrationally excited states of the complex. A seven-dimension *ab initio* interaction potential is constructed for the complex. The available spectroscopic data is used to generated a morphed potential. Previous prediction of the D_0 of the complex will be incorporated in the analysis.