INFRARED SPECTRA AND INTENSITIES OF WATER COMPLEXES WITH NITROGEN, OXYGEN AND ARGON IN HELIUM DROPLETS

SUSUMU KUMA, *Division of Chemistry, Graduate School of Science, Kyoto University, Kyoto 606-8502, Japan*; MIKHAIL N. SLIPCHENKO[a], KIRILL E. KUYANOV, *Department of Chemistry, University of Southern California, Los Angeles, CA 90080, USA*; TAKAMASA MOMOSE, *Department of Chemistry, University of British Columbia, Vancouver, BC V6T 1Z1, Canada*; and ANDREY F. VILESOV, *Department of Chemistry, University of Southern California, Los Angeles, CA 90080, USA*.

The infrared spectra of N_2-H_2O, O_2-H_2O and Ar-H_2O complexes in superfluid He droplets were measured in the range of the stretching vibrational bands of water molecules. The infrared intensity of the anti-symmetric stretching bands in these complexes were found to be very similar to that in single H_2O molecules. The spectra show that H_2O in O_2-H_2O and Ar-H_2O rotates nearly freely, whereas no indication of H_2O internal rotation was observed in N_2-H_2O spectra. The conformation of the N_2-H_2O complexes was estimated from the rotational constants.

[a]present address:*1605 Gilman Hall, Iowa State University, Ames, IA 50011-3111, USA*