INFRARED INTENSITIES AND SPECTRA OF WATER CLUSTERS

KIRILL E. KUYANOV, *Department of Chemistry, University of Southern California, Los Angeles, CA 90089*; MIKHAIL N. SLIPCHENKO, *Department of Chemistry, Iowa State University, Ames, IA 50011*; BORIS G. SARTAKOV, *General Physics Institute, Russian Academy of Sciences, Moscow, 119991, Russia*; ANDREY F. VILESOV, *Department of Chemistry, University of Southern California, Los Angeles, CA 90089*.

Water clusters $(H_2O)_n$ in the range $n = 1 - 30$ have been studied in helium droplets. Spectral bands of clusters with $n = 1 - 6$ are observed and infrared intensities of water dimers, trimers and tetramers relative to that of ν_3 band of H_2O molecule have been determined. We found non-additive enhancement of the IR intensity in water clusters, which can be used as a probe for cooperative effects. Gradual transformation of the spectrum from a relatively narrow band of small clusters to a broad spectrum, characteristic for a bulk ice, is observed.