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Infrared spectra and intensities of H₂O-N₂, H₂O-O₂ and H₂O-Ar complexes in superfluid He droplets. SUSUMU KUMA, Kyoto University, MIKHAIL N. SLIPCHENKO, University of Southern California, KIRILL KUYANOV, University of Southern California, TAKAMASA MOMOSE, University of British Columbia, ANDREY F. VILESOV, University of Southern California — The infrared spectra of H₂O-N₂, H₂O-O₂ and H₂O-Ar complexes in superfluid He droplets were measured in the range of the stretching vibrational bands of water molecules. The infrared intensities of anti-symmetric stretching band of these complexes showed no significant increase with respect to that of a single H₂O molecule as opposed to the predicted intensities in previous theoretical calculations. From the analysis of the observed spectra, it was found that H₂O in H₂O-O₂ and H₂O-Ar rotates nearly freely inside the complexes, while that in H₂O-N₂ does not. The conformation of these complexes were estimated from the rotational constants obtained from the analysis.

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