# VIBRATIONAL SPECTROSCOPY OF PURE AND SODIUM DOPED WATER CLUSTERS

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The measurement of the OH-stretch vibrational mode is a direct probe of the hydrogen bonded network of water. We present results on the IR-spectroscopy of water clusters in the size range from n=6 to n=100 using a tunable OPO system. Small clusters are size-selected by atomic beam deflection and detected by depletion [a]. Larger clusters are doped by Na atoms. In this way the size selection is achieved by a proper ionization scheme which is coupled to the IR absorption by enhancement detection. Very large clusters with known size distributions are detected by fragment spectroscopy. Based on these experimental data, the structure, possible isomers, and phase transitions of the clusters are determined using accompanying model calculations [b]. The relation of these results to the properties of ice and bulk liquid water will be discussed.

[a] U. Buck and F. Huisken, Chem. Rev. 100, 3863 (2000).
[b] J. Sadlej, V. Buch, J.K. Kazimirski, U. Buck, J. Phys. Chem. 103, 4933 (1999).