

The zurich PHYSiCS COLLOQUIUM

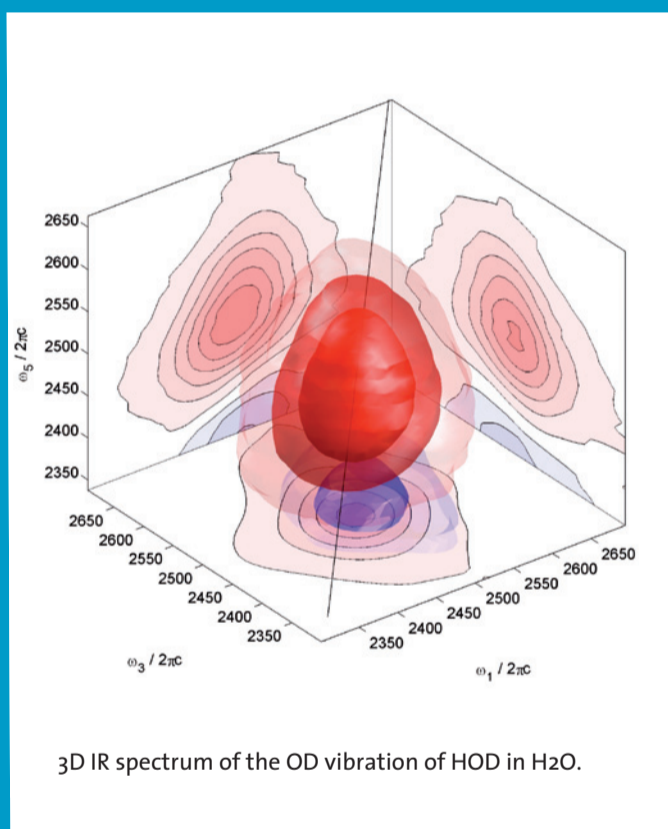
ORGANIZED BY ETH ZURICH AND UNIVERSITY OF ZURICH

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THE QUEST OF THE STRUCTURE OF WATER



A Multidimensional IR Spectroscopy Study

Water is a so-called complex liquid with many abnormalities in its macroscopic properties that are attributed to the directionality of the hydrogen bonds that to large extent determine the local structure in water. The vibrational spectrum of water reports on these hydrogen bonds as well as their dynamics, since the frequency of the OH stretch vibrations responds relatively sensitively onto the strength of hydrogen bonding. However, the simple IR absorption spectrum is essentially featureless, so more sophisticated, higher-order multidimensional spectroscopies are needed. I will discuss 2D-IR and 3D-IR spectroscopy of water, which gives unprecedented insight into the dynamics of the hydrogen bond network of water. The experiments are supplemented by molecular dynamics simulations together with complex network analysis tools that allow one to assess the ruggedness of the water free energy surface.

TEA AND COFFEE AT 16:15H



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