



10th December 2020 - 10 h

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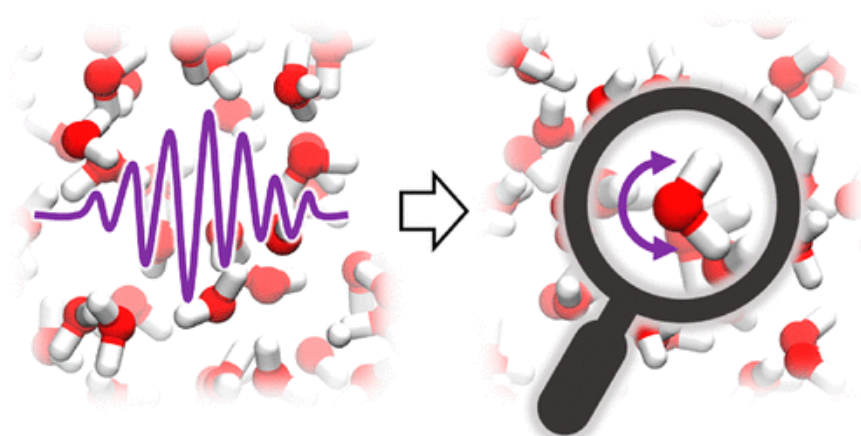
Uni Bochum

Transient Anisotropy of Liquid Water

The solvation of molecules in water is pivotal for a myriad of molecular phenomena and is of crucial importance to understand diverse issues such as chemical reactivity and bio-molecular function. It has been shown that laser techniques in the infrared (IR) and Terahertz (THz) frequency ranges offer fundamental insights into hydration from small solutes to proteins.

In bulk liquid, motions of water molecules lead to ultrafast fluctuations at femto- to pico-second time scales. Underlying molecular processes range from diffusional motions spanning nanoseconds, rattling modes of anions and cations within their solvation shells on a ps time scale, the breaking and reformation of hydrogen bonds, and includes sub-100 fs librational motions.

Here we report non-linear THz experiments on water molecules in the liquid phase. These findings indicate that inducing anisotropy in bulk liquids is feasible.



References:

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