

Theoretical Studies on the Effect of Strong Magnetic Fields on the Interaction Energies of Water

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Magnetic effects on water still remains a highly controversial topic due to low reproducibility and little consistence of the reported experiment results. Uncontrollable factors such as magnetic impurities, quantity of dissolved oxygen etc. might be the possible source for these discrepancy. A theoretical investigation is performed by studying the effects of strong magnetic-field on a simple water cluster, $(\text{H}_2\text{O})_2$, and on an aqueous solution to outline the role played by the dissolved oxygen. For the later, we considered a simple oxygen-water mixture with 1:2 ratio, $(\text{H}_2\text{O})_2 - \text{O}_2$, and is much larger than 1:200,000 present in natural liquid water. The effect of oxygen molecules are unlikely to explain the results of the experiments reporting changes of liquid water properties in strong magnetic fields.