Abstract Submitted
for the MAS16 Meeting of
The American Physical Society

Theoretical Studies on the Effect of Strong Magnetic Fields on Water[1] HEMANADHAN MYNENI, Department of Physics and Astronomy, University of Delaware, Newark, Delaware 19716, USA, DARIUSZ KEDZIERA, Department of Organic Chemistry, Faculty of Chemistry, Nicolaus Copernicus University in Torun, 7 Gagarin Street, 87-100 Torun, Poland, KRZYSZTOF SZALEWICZ, Department of Physics and Astronomy, University of Delaware, Newark, Delaware 19716, USA, JAN W. ANDZELM, U.S. Army Research Laboratory, RDRL-WMM-G, Aberdeen Proving Ground, MD 21005-5069, USA, ERIK I. TELLGREN, TRYGVE HELGAKER, Centre for Theoretical and Computational Chemistry, Department of Chemistry, University of Oslo, P.O. Box 1033 Blindern, N-0315 Oslo, Norway — 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, $(H_2O)_2$, 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, $(H_2O)_2 \cdot O_2$, 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.

[1]The work at the University of Delaware was supported by the U. S. Army Research Laboratory (ARL).

Hemanadhan Myneni
Department of Physics and Astronomy, University of Delaware, Newark, Delaware 19716, USA

Date submitted: 16 Sep 2016 Electronic form version 1.4