



香港浸會大學

HONG KONG BAPTIST UNIVERSITY

FACULTY OF SCIENCE

# Department of Physics & Institute of Computational and Theoretical Studies

## *JOINT COLLOQUIUM*

### **Water – Weird or What?**

### Neutron Scattering Investigation of Water and Water around Biomolecules

By

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3:30pm – 4:30pm (Tea will be served)

T909 Science Tower, HK Baptist University

## Abstract

Water and its solutions are subjects of intensive study in past decades. The importance of these studies is not only due to our scientific curiosity to a range of abnormal properties of water, which distinguish it from other liquids and fascinate scientists, but also due to the fact that water plays a most important role in living systems and it is the key to our existence and survival on this planet. The increase of research activity of search water in the solar system has stimulated more research activity for a better understanding of the basic properties of water and water in biological systems.

In the past few years, we have systematically studied the structure and dynamics of water in a large temperature and pressure regions (up to supercritical state) and water in biological systems by using inelastic, quasi-elastic and neutron Compton scattering techniques. Our discovery of the “two kinds of hydrogen bonding” [1,2] would not only provide a possible mechanism for the explanation of the range of water anomalies, but it also indicates that water may have a very active role (like a catalyst) in the formation and stabilization of DNA, proteins and membranes [3]. Our recent *ab initio* simulations [4,5] shows some new insight towards our understanding of hydrogen bonding in water.

1. J.C. Li and D.K. Ross, *Nature*, 365 (1993) 327.
2. J.C. Li, *J. Chem. Phys.* 105 (1996) 6733.
3. R.C. Ford, S.V. Ruffle, I. Michalarias, I. Beta, A. Miller, and J.C Li, *JACS* **126** (2004) 4682.
4. P. Zhang, L. Tian, Z.P. Zhang, G. Shao & J.C. Li *J. Chem. Phys* 137 (2012) 044504.
5. L. Tian, A. Kolesnikov and J.C. Li, *J. Chem. Phys* 137 (2012) 20450.

*All Interested Are Welcome!*