



中国科学院
固体物理研究所

学术报告(2014.12.16)

Title: Using Neutron Scattering and ab initio DFT Methods Investigation of
Water and Water around Biomolecules

Lecturer: Dr. Jichen Li

Department of Physics and Astronomy, University of Manchester

Time: 9:00a.m., Tuesday, Dec. 16, 2014

Place: Room 520, New Building of Institute of Solid State Physics

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” 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. Our recent ab initio simulations shows some new insight towards our understanding of hydrogen bonding in water.

Introduction to Dr. Li:

Dr. Li is currently a senior lecturer in physics at the Department of Physics of the University of Manchester, and leading a neutron scattering group. He obtained his Ph.D in the University of Sheffield, and since then he has ever worked in the University of Birmingham, the University of Salford Manchester, and the University of Manchester. He was a winner of National Outstanding Youth Foundation Program B (2003-2006).

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