

THE UNIVERSITY OF HONG KONG
COLLOQUIUM SERIES IN PHYSICS DEPARTMENT

Surface Studies of Ice

Prof. Enge Wang

School of Physics, Peking University, Beijing, China

Time: Monday, December 9, 2013, 4:30 p.m.

Venue: Lecture Theatre P3, Chong Yuet Ming Building, HKU

Abstract:

Ice is a common substance on the Earth. Studies of the physical properties of ice and water are important to both basic physics and environmental and atmospheric sciences. Ice has some interesting properties on its surface, which are very different from the bulk. In this talk, I will introduce the recent simulation and theory for the unusual surface states of ice. The well known proton order-disorder transition observed in bulk is predicted to be absent on the surface at any temperature below surface melting. The surface of crystalline ice exhibits a remarkable variance in vacancy formation energy, which is more characteristic of an amorphous material. This variance in vacancy formation energy may contribute to the pre-melting and quasi-liquid layer formation of ice. Finally, we show that the distribution of local arrangement of dangling atoms, characterized by a surface proton order parameter, is of crucial importance for the adsorption of water monomer on ice surface. These findings shed light to our understanding of ice nucleation and growth as well as the physical chemical reactivity in high altitude clouds.

About the Speaker:

Prof. Wang is President of Peking University, a physicist well known in surface science. He has been Member of Chinese Academy of Sciences since 2007, Member of Academy of Sciences for the Developing World since 2008, Fellow of American Physical Society since 2006. Among many awards he has received include the IBM Faculty Award in 2003, the TWAS Prize in Physics in 2005, and Zhou Pei-Yuan Physics Award in 2005.

Prof. Wang received his Ph.D. in physics from PKU in 1990. He was a postdoctoral fellow and a research scientist in the US and Europe before he joined CAS in 1995. He was Director of Institute of Physics, CAS 1999 - 2007, Director of the Beijing National Laboratory for Condensed Matter Physics 2004 - 2009, and Executive Vice President of the CAS Graduate University and Deputy Secretary-General of CAS from 2008 to 2009. He returned to Peking Univ. in 2009 as a Chair Professor of Physics, and established International Center of Quantum Materials.



Physics colloquium series is organized to introduce cutting edge researches and new development in physics, designed to be suitable to graduate and undergraduate students, and also to scientists working on different fields. Each colloquium will generally start with an extensive introduction of the background of the field, followed by forefront research topics and results. The colloquium will serve as an education forum for students and laymen alike, and also serve as a platform for exchange and update their knowledge of various branches of physics among academic staff members.

Coffee and tea will be served 20 minutes prior to the colloquium

Anyone interested is welcome to attend

Physics Department, HKU Phone: 28592360 Fax: 25599152.