



Seminar

A microscopic picture of water and wetting at metal interfaces

Prof. Andrew Hodgson

Department of Chemistry at Liverpool

Time: 4:00pm, Jan. 6, 2014 (Monday)

时间: 2014年1月6日 (周一) 下午4:00

Venue: Room 607, Conference Room A ,

Science Building 5

地点: 理科五号楼607会议室

Abstract

Water structure at interfaces, particularly metal surfaces, has been the focus of enormous experimental and theoretical interest recently due to its importance in scientific fields as diverse as environmental science, corrosion, heterogeneous catalysis, photocatalysis and electrocatalysis. Extended water structures are extremely delicate, held together by weak water-solid and water-water hydrogen bonds, with minor changes in binding energy causing dramatic changes in the macroscopic properties, such as transport, wetting etc. As a result, only recently has it become clear that the traditional model for water, (that it forms an icelike structure at solid surfaces), does not explain wetting. Here I will describe how new experiments and electronic structure calculations can resolve the detailed hydrogen bonding structure of water and mixed water/hydroxyl layers at metal interfaces. These experiments reveal a much richer, more complex picture of adsorption than originally anticipated, but some simple ideas provide new models for the structure of water and hydroxyl at metal surfaces, allowing us to predict and tailor the behaviour of interface water in an unprecedented

About the speaker

Andrew Hodgson took his first degree in Natural Sciences at Cambridge University before doing his PhD on gas phase kinetics and laser spectroscopy at London University. He won an EPSRC Research Fellowship to study molecular photo-dissociation dynamics at the University of Nottingham, before setting up a group to study gas-surface reaction dynamics at Liverpool. His current research interests centre on understanding the structure and reactivity of solid-water interfaces, particularly the wetting of ordered 2D metal surfaces, the structure of hydrogen-bonded films containing water and hydroxyl, and reactivity at ice surfaces. He is currently Head of the Department of Chemistry at Liverpool.