

International Conference and Expo on

# Water Microbiology & Novel Technologies

July 18-19, 2016 Chicago, USA

## Anomalous behavior of water

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As the source and central part of all lives, water is most abundant yet least known. This talk shares the recent progress: Correlation of the length scale, structure order and mass density of molecular packing in water ice, potential paths for O:H-O bond at relaxation and anomalies of water ice under compression, molecular under-coordination and thermal excitation. Hydrogen bond (O:H-O) possesses memory and extreme deformation recoverability, which resolves mysteries of density of ice, slipperiness of ice, Mpemba paradox: Hot water freezes faster, Hofmeister effect: Aqueous ions modulate solution's surface tension and its ability of dissolving proteins and Regelation: Ice melts under compression and freezes again when the pressure is relieved. Understanding may extend to fields such as water-biomolecular interaction, water purification, energy management, etc.

## Biography

Chang Qing Sun has received his PhD degree at Murdoch University in 1997 in Surface Physics and then joined Nanyang Technological University. He has been working on the "Relaxation of the Chemical Bond" involved in skin chemisorption, quantum size effect, multifield solid mechanics and water myths. He has published over 330 journal articles, including a number of themed reports in *Chem Rev*, *Prog Mater Sci*, *Surf Sci Rep*, etc.

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