

## Understanding the anomalous phase behaviors of water

Water is one of the most abundant materials in the universe and affects every aspect of our life. The phase behavior of water is important for the understanding of some basic questions related to its anomalous behaviors such as density anomaly and unusual behavior of solubility. In this talk, I will present some of our studies on phase transitions associated with the anomalous behaviors in bulk and confined water-like systems. Our results based on the studies of the thermodynamic, dynamic, and structural properties of model systems are consistent with the experimental observations in water and provide a possible way for experiment to locate the liquid-liquid critical point buried in the deep supercooled region.

Reference: Proc. Natl. Acad. Sci. 102, 16558(2005); Nature Physics 5, 655(2009), Proc. Natl. Acad. Sci. 109, 13177(2012).