

Abstract:

Electrical, convective and thermal activity in cooling, freezing and melting water.

In this talk I will discuss my research results from over 20 years studying the physics of cooling, freezing and melting confined water. I find that: Electrical activity depends on the water's mineral and chemical content and how the water is confined. Convection activity depends on a small present of water clusters in a column of water having a higher concentration of a solute and the distribution of these clusters in the water column. Thermal activity is determined by how low the water supercools before latent heat is released. The Mpemba effect in bulk water is an artifact of the cooling environment and not a fundamental property of water. The object of this research is to help us better understand nature.