Terahertz wave probes reorientational dynamics of liquid water

Gun-Sik Park

Department of Physics and Astronomy

Seoul National University

Water has always received a very large amount of scientific attention for its biochemical reactions with biomolecules such as DNA, protein, and membrane to keep their structures and functions. From a purely physical and chemical point of view, water is a special liquid. The relatively high boiling point and unique solvating abilities are largely due to extensive hydrogen bonding between water molecules. Since Debye introduced the rotational diffusion model of the liquid in 1929, many researchers have studied the dielectric response of the water. Special attention to so-called, fast relaxation water at the time scale of sub-picosecond has been made after an invention of a THz spectroscopy. The molecular-level mechanisms controlling this fast relaxation behavior remains essentially unknown. This talk will include the review of the recent works on the reorientational dynamics of the liquid water.