

The 221<sup>st</sup>

# MANA Special Seminar



**Creation of nanostructures via self-assembly and self-organisation and their application to bio-nano science and technology**

Chair: Dr. Yoshio Bando (MANA COO)

## Prof. Toru Maekawa

*(Director of Bio-Nano Electronics Research Center, Toyo University)*

Gas-liquid coexistence curves terminate at the critical points, where large molecular clusters are formed percolating the fluids' systems. Incident light cannot penetrate the fluids; known as critical opalescence, and the physical properties such as the specific heat and compressibility diverge as the fluids' systems approach their critical points. In terms of nonequilibrium transport phenomena, perturbations in the temperature, pressure or density propagate quickly as acoustic waves; known as the piston effect, due to low thermal diffusivity and high compressibility and strong buoyancy convection is induced due to low thermal diffusivity and high temperature coefficient of volume expansion. In my talk, I focus on the formation of nanostructures via self-assembly in near-critical fluids. I then investigate the secondary structures formed by the above nanostructures in external electric and magnetic fields. I finally explain the application of the nanostructures to the development of bio-nano fusion science and technology.

**Venue: Seminar Room #431, MANA Bldg.**

**Date: September 16<sup>th</sup> (Friday) Time: 14:45-15:30 Site**

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