



IBS Center for Molecular Spectroscopy and Dynamics

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## COLLOQUIUM

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- **SPEAKER**

Dr. Koji Osawa (IBS Center for Molecular Spectroscopy and Dynamics)

- **TITLE**

Solvation and reaction dynamics in supercritical water and ionic liquids

- **ABSTRACT**

Supercritical fluids and ionic liquids are called "designer fluids" because we can tune their properties by changing temperature and pressure or molecular structure. Despite studies for application of these fluids has been actively carried out, their detailed solvation and reaction mechanism at microscopic scale are still not fully understood. To provide fundamental guidance for better condition and structure design of these fluids for application, I have investigated the solute-solvent interaction and its effect on the chemical reaction dynamics in these fluids by spectroscopic methods. As for supercritical fluids, I will introduce two studies. One is Raman spectroscopic study on microscopic solute-solvent interaction in supercritical water. By monitoring peak shift of solute vibrational mode by temperature and pressure, microscopic interactions in supercritical water such as hydrogen bonding were investigated. Another study is on intramolecular charge transfer dynamics in supercritical water by transient absorption spectroscopy. Solvent effect on back electron transfer reaction and vibrational relaxation has been discussed. Next, I will introduce the studies on ionic liquids such as the transient absorption and flash photolysis study on photodissociation and recombination dynamics, and the pulse radiolysis study on intermolecular electron transfer reaction. Effect of characteristic solvent structure of ionic liquids on these reactions has been investigated.

- **DATE AND VENUE**

May 2, 2018 (Wednesday, 5:00 - 6:00 pm)  
Seminar Room 116, KU R&D Center

- **LANGUAGE**

English