



IBS Center for Molecular Spectroscopy and Dynamics

COLLOQUIUM

■ **SPEAKER**

Dr. Sang-Eun Bae (Nuclear Chemistry Research Division, Korea Atomic Energy Research Institute)

■ **TITLE**

Electrochemical behaviors of uranium and lanthanide cations in LiCl-KCl melt investigated by electrochemical and spectroscopic methods

■ **ABSTRACT**

Pyrochemical process has been considered as one of options for a recycling technique of spent nuclear fuels. In the pyrochemical process, there exist a number of chemical elements, especially nuclear materials such as uranium, plutonium, and various fission products. In order to successfully accomplish the research for the pyrochemical process, accurate information on the chemical and electrochemical reactions of the elements in the molten salt should be acquired. A number of works have been performed to investigate the chemical and electrochemical properties of actinide and lanthanide ions in LiCl-KCl melt. It is well-known that spectroscopic tools such as UV-VIS absorption and laser induced luminescence spectroscopies as well as electrochemistry tools such as cyclic voltammetry (CV) and rotating disk electrode (RDE) methods can give useful information for the chemical and electrochemical behaviors of the actinide and lanthanide ions in the solution. In this work, the spectroscopic and electrochemical methods were employed to investigate the behaviors of the elements in the LiCl-KCl melt. The oxidation state shift of the elements during electrochemical reactions of the uranium and lanthanide cations in LiCl-KCl melt was monitored using the spectroscopic methods. Many useful electrochemical properties for the elements were collected in LiCl-KCl melt using electrochemical methods such as CV and RDE. In particular, the RDE measurement could produce very useful parameters such as diffusion coefficients, Tafel slope, exchange current density, electron transfer coefficient, etc. This presentation shows the research progress for actinide and lanthanide chemistry in molten salt at NCRD.

■ **DATE AND VENUE**

July 17, 2018 (Tuesday, 4:00 - 5:00 pm)
Seminar Room 116, KU R&D Center

■ **LANGUAGE**

Korean

■ **INVITED BY**

Prof. Kyungwon Kwak