



RCMS · G-COE Seminar



“Magneto-Optic and Magneto-Electronic Behaviors from Inter-Molecular Excited States in Organic Materials”

Lecturer : Prof. Bin Hu (University of Tennessee)

Date : Thu. 15 SEP 15:00 – 17:00

Place : Chemistry Gallery (Noyori Bldg. 2F)

Abstract: Magneto-optic and magneto-electronic behaviors can be reflected as magnetically controllable optic functions and magnetically controllable electronic functions. Therefore, magneto-optic and magneto-electronic behaviors can form unique mechanisms to realize mutual amplifications between magnetic, electronic, and optic functions towards the development of new multi-functional materials for renewable-energy, sensing, and detection applications. Theoretically, magneto-optic and magneto-electronic behaviors require mutually coupled magnetic, electronic, and optic functions. Experimentally, we observed that inter-molecular excited states can demonstrate magnetic field effects of photoluminescence which is normally difficult to obtain from intra-molecular excited states. Particularly, this experimental observation suggests that inter-molecular excited states have magneto-optic behavior through spin-dependent light emission. Furthermore, our experimental studies have found that inter-molecular excited states can exhibit magneto-capacitance phenomenon. Clearly, this magneto-capacitance phenomenon suggests that inter-molecular excited states also have magneto-electronic behavior through spin-dependent electrical polarization. As a result, inter-molecular excited states can have potential applications in magneto-optic, magneto-electronic, and magneto-optoelectronic devices based on mutually coupled magnetic, electronic, and optic functions. This presentation will discuss fundamental processes involved in magneto-optic, magneto-electronic, and magneto-optoelectronic behaviors in inter-molecular excited states in organic materials.

Contact : Kunio Awaga (ext. 2487)