Division of Material Chemistry	Research field	Analytical Chemistry	Lab. ID MC06
Laboratory web site	http://chem.s.kanazawa-u.ac.jp/anal/top.html		

Research subjects

The study covers spectroelectrochemical analysis of charge transfer reactions (ion/electron transfer, adsorption) and intermolecular association/self-assembly, analytical application of functional nanomaterials such as nanoparticles and supramolecules, and development of surface-sensitive spectroelectrochemical technique as well as chiroptical analysis based on surface plasmon.

(a) Spectroelectrochemistry at liquid|liquid interfaces

Charge transfer and adsorption mechanims including self-assembly and aggregation of various charged species at polarized liquid|liquid interfaces are studied by novel modulation-spectroscopies. Our group focus on electrochemical control of liquid|liquid distribution of ionic species through specific association with dendritic polymers for selective separation system and DDS application, mechanistic analysis of transmembrane mechanism of drugs and bioactive substances, photochemical study of stimuli-responsive interfacial activity/ionic partitioning, analytical application of metal nanoparticles and luminescent carbon nanodots to develop high efficient photoreaction and spectrophotometric detection system, etc.

(b) *In-situ* spectroscopic characterization of chemical reactions in solution

Association and dissociation of chemical species in solution such as metal nanoparticle formation and drug release from dendric compounds is studied by time-resolved spectroscopic monitoring of diffusion coefficients. A new spectroscopic technique for measuring circular dichroism is also developed to analyze chemical reactions of chiral molecules.

Master/Doctor course: Education policy, curriculum, typical activity in the laboratory

The course of Material Analysis Chemistry II for physical analytical chemistry deals with solution chemistry of metal ions and complexes as well as thermodynamics of liquid-liquid distribution of metal complexes. The material analysis seminar for the purpose of the commentary of an recent article in English and the thorough discussion is performed a week. Each student makes the study program for the year to get the deep understanding of his/her research theme. A lab-meeting for the discussion of the progressive report of his/her research works is carried out every week. Furthermore, the lab-meeting for presenting his/her research findings is held in July and December.

Daily life in the laboratory, etc.

We have several lab-events in the year; for example, welcome party for new members and undergraduate students, cherry-blossom viewing (Hanami), inter-lab meetings with other universities, and laboratory parties in the middle and the end of the year. Each student is assigned a personal desk and experimental space.

Message or comments by the laboratory faculty staffs

In our research area, careful planning and arrangement for experiments are essential to obtain fruitful results. The research experience in our group will foster your ability to scientific thinking and practical skill required for professional analytical chemists. We highly encourage students to participate in academic conference for research presentation.

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