

3. Workshops & Meetings

ISSP workshop “Opening Interdisciplinary Fields of Material Science and Life Science”

Date: March 7, 2017

Place: Lecture Room (A632), 6th Floor, ISSP, the University of Tokyo

The Synchrotron Radiation Research Organization (SRRO) at The University of Tokyo has been at the forefront of the leading edge of synchrotron radiation science and technology over the last 10 years. On December 2016, the SRRO was renewed as an international base of excellence for the interdisciplinary field of synchrotron radiation science, aiming at the creation of a new discipline named “Electronic-structure-based life science,” where multiscale/hierarchical complex structures involving the transport/reaction of atoms/ions in biomaterials and bioinspired materials have become a new subject in materials science.

In the 21st century, the development of synchrotron X-ray spectroscopy and diffraction techniques is quite remarkable and has realized “operando electronic structure analyses” for a variety of functional materials. With the forthcoming new synchrotron light source, we could even attain nanoscale focusing and various spectroscopies with a much higher energy resolution, permitting more precise and versatile measurements to probe the physical properties of materials. This workshop was held to effectively and promptly advance “Electronic-structure-based life science” by overviewing the future prospects of synchrotron science, visualizing the achievements and unknowns of protein science, and focusing on the development and analyses of bioinspired materials as one of the goals of the new discipline. Researchers from a broad range of scientific fields at the workshop intensively discussed the interface between materials science and life science, which will continue and contribute to maximize the synergy between materials science and bioscience.

ISSP, The University of Tokyo, Organizing committee of the ISSP workshop
Iwao MATSUDA, Yoshihisa HARADA, Shik SHIN
Fumio KOMORI, Hiroki WADATI

Program

10:20- **Introduction**

Iwao Matsuda (ISSP, the University of Tokyo)

10:25- **Opening Address**

Masashi Takigawa (ISSP, the University of Tokyo)

10:30- **Guest Address**

Masaki Takata (Tohoku University)

10:35- **Building a New Range of the State of the Art in Photon Science by SLiT-J**

Masaki Takata (Tohoku University)

- 11:05- **Large-scale first-principles simulation for functional material research**
Osamu Sugino (ISSP, the University of Tokyo)
- 11:35- **A Prospective of X-ray Phase Imaging**
Atsushi Momose (IMRAM, Tohoku Univ., JST-ERATO)
- 12:05- **Lunch**
- 13:10- **Iron-sulfur cluster biogenesis**
Takashi Fujishiro (Saitama University)
- 13:40- **Molecular Mechanism of NO Reduction in Biological System**
Yoshitsugu Shiro (University of Hyogo/ RIKEN SPring-8 Center)
- 14:10- **Current possibility of quantum chemical calculations for ion pump proteins**
Naoki Tsunekawa (IMCB, Univ. of Tokyo)
- 14:40- **Mechanism of light-induced water-splitting in photosystem II of photosynthesis**
Jian-Ren Shen (Research Institute for Interdisciplinary Research)
- 15:10- **Coffee Break**
- 15:25- **Hierarchical Structures and Functions of Complex, Biological Interfaces**
Motomu Tanaka (Heidelberg University, Kyoto University)
- 15:55- **Characterizing Self-Assembled Nanoparticles in Drug Delivery**
Kazuo Sakurai (University of Kitakyushu)
- 16:25- **Biointerfaces explored by scanning probe microscopy and nanophotonics**
Tomohiro Hayashi (Tokyo Institute of Technology)
- 16:55- **Nanostructured biointerface regulates protein adsorption and cell adhesion**
Madoka Takai (The University of Tokyo)
- 17:25- **Closing Address**
Chikashi Toyoshima (The University of Tokyo)