



The 2nd International Forum on Applied Chemistry

Date: Monday, March 7, 2016

*Venue: Conference Room of International House,
Tokyo Metropolitan University*

Program

13:30; Opening Remarks Professor Shinsuke Takagi

Chair; Yuji Kubo

13:35 – 14:05; Dr. Toshiaki Kondo (Tokyo Metropolitan University)

Fabrication of Nanostructure Array Using Anodic Porous Alumina and its Application to Functional Devices

Fabrication process of nanostructure arrays has attracted attention due to the applicability of unique characteristics of nanostructure arrays that are large surface area and quantum size effect. And various types of functional devices based on the nanostructure array have been proposed such as sensing devices, photovoltaic devices and so on. The performances of the devices depend on the geometrical structures of the nanostructures. However, the efficient fabrication process of the geometrically controlled nanostructures has not been established yet. In the presentation, the efficient fabrication of the nanostructure arrays using anodic porous alumina will be presented. In addition, the application of the nanostructure arrays to functional devices will be presented.

14:05 – 14:35; Assoc. Professor Yan Mulyana (Tokyo Metropolitan University)

Light-powered hydrogen production from water

There has been a growing interest in developing new energy materials capable of converting water into hydrogen fuel by the use of sunlight energy as one promising way to overcome the coming shortfall of fossil fuel reserves. Supramolecular ruthenium complexes can be engineered with appropriate metal oxide semiconductors to produce practical photo-electrochemical (PEC) devices capable of harvesting light to drive the production of hydrogen from water. The state of the art synthesis of organic/inorganic supramolecular hybrids, their assembly into PEC devices, photo-electrochemical characterisations and hydrogen and oxygen analysis will be presented.

14:35 – 14:45; Break

14:45 – 15:15; Assoc. Professor Wataru Setaka (Tokyo Metropolitan University)

Phenylene-bridged Macrocages as Crystalline Molecular Gyrotops

Controlling of molecular motion inside molecular aggregate, e.g. single crystal, could be novel guiding principles of new molecule-based materials. In this study, phenylene-bridged macrocages were synthesized as crystalline molecular gyrotops, and rotation of the rotor inside a crystal were investigated. Molecular rotors with dipolar rotor has also been paid much attention, because study of the orientation in crystalline three dimensional arrays of dipolar rotors is of interest in terms of the dielectric materials. Thermal order-disorder transition of the dipolar rotors inside a crystal were observed in a molecular gyrotophaving a thiophene rotor.

15:15 – 16:00; Professor Kazuyuki Ishii

(Institute of Industrial Science, The University of Tokyo)

Photofunctional Chemistry based on Porphyrins

Functionalization of molecules is one of important subjects for not only developing technological applications but also pioneering novel scientific fields, because of recent explosive increases of chemicals. Thus, we have developed various molecule-based functions, such as phthalocyanine-based fluorescence probes, microbial fuel cells including cyt C, and radioactive Cs decontamination cloth consisting of Prussian blue complexes, as well as novel scientific observations of porphyrin-based magneto-chiral dichroism. I'll present recent topics especially from the viewpoint of photofunctional chemistry.

Sponsored by
Department of Applied Chemistry,
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