

**Title Plasmonic Nanomaterials and Devices  
for Better Utilization of Light**

**Speaker** Prof. Tetsu Tatsuma  
Institute of Industrial Science,  
The University of Tokyo  
Japan



**Date & Time** Wednesday, July 17, 2019 9:00 a.m.

**Place** I<sup>2</sup>CNER hall, I<sup>2</sup>CNER Bldg.1, Ito Campus, Kyushu University

### Abstract

Plasmonic nanomaterials entrap light efficiently in nanoscale regions. The trapped energy of light may be used for (1) heat emission, (2) re-emission of light, (3) energy transfer to a material in close proximity, or (4) uphill electron transfer to a semiconductor in direct contact. In this talk, applications of the plasmonic materials to "infrared smart windows for energy flow control" based on process 1 and "semi-transparent perovskite solar cells" based on processes 2 and 3 will be introduced. Then, process 4, plasmon-induced charge



separation (PICS), will be highlighted, because Prof. Tatsuma reported PICS for the first time. Advantages of PICS include strong light absorption, good tunability of optical properties, compatibility with polarized light, and nanoscale local reactions. Various applications of PICS including photovoltaics, photocatalysis, sensors, and photoinduced fabrication of chiral nanomaterials will be explained.

### About the Speaker

Prof. Tetsu Tatsuma received his BSc degree in 1988, MSc degree in 1990, and PhD degree in 1993 in electrochemistry from The University of Tokyo. He held the position of Assistant Professor at Tokyo University of Agriculture and Technology before joining Prof. Akira Fujishima's group at The University of Tokyo as Lecturer in 1998. After the promotion to Associate Professor in 2000, he joined Institute of Industrial Science, The University of Tokyo in 2001. He is Full Professor since 2008.

He has published 228 original papers and his h-index is 61. He received Award for Creative Work from the Chemical Society of Japan in 2011, Award for Scientific Achievement from the Electrochemical Society of Japan in 2012 and The Japanese Photochemistry Association Award in 2014.

He is a vice president of The Electrochemical Society of Japan, and a board member of The Japanese Photochemistry Association. He is a Deputy Editor in Chief of Journal of Photochemistry and Photobiology C and an Editorial Board Member of ChemNanoMat.

**Host:** Professor Yukina Takahashi

For registration, please visit our website:

<http://i2cner.kyushu-u.ac.jp/>

Contact: Administrative Office Research Support and Public Relations  
International Institute for Carbon-Neutral Energy Research  
Tel:092-802-6934 Email:wpikenkyu@jimu.kyushu-u.ac.jp

