

**Title of the Invited Talk at I2CNER:**

Semiconductor, Molecular and Hybrid Systems for Photocatalytic H<sub>2</sub> Evolution

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**Abstract:**

Finding long-term solutions to meet the growing energy demands of human society is one of the greatest challenges we face today. The widespread use of the free and sustainable solar energy is unavoidable in the long run. However, only an insignificant percentage of current world energy use is derived from sunlight mainly by solar photovoltaic and solar heat. Due to the intermittent nature of solar energy, a mix of solutions will be required to compensate the output variability and limitation of the individual technologies. The research in our group focuses on the development of nano-engineered particulate semiconductor photocatalysts, molecular systems and hybrid systems for conversion of solar energy to chemical energy via photocatalytic water splitting for hydrogen production and carbon dioxide reduction to hydrocarbons and oxygenates. In particular, we design efficient inorganic cocatalysts and metal complex catalysts with appropriate interface with the photoabsorber to achieve efficient charge separation and utilization. Further, hybrid systems incorporating semiconductor and organic photosensitizers are employed to achieve usable light extension to longer wavelengths.

**Brief Biography:**

Dr Rong Xu obtained her B.S. and Ph.D. in Chemical Engineering from National University of Singapore (NUS) in 1998 and 2004. Then, she joined School of Chemical & Biomedical Engineering, Nanyang Technological University (NTU) in 2004. In 2010, she became an Associate Professor. In 2011, she was appointed as the Associate Chair (Research) of the School. Currently, she serves as the Associate Editor for Beilstein Journal of Nanotechnology and she is also a member of Editor Board for Energy Focus and ISRN nanotechnology. Her scientific interest is focused on the development of nanomaterials, semiconductor and molecular photocatalysts for hydrogen production, CO<sub>2</sub>-reduction and water treatment as well as fabrication of nanostructured materials for biomedical applications. She has published 90 papers in peer-reviewed journals, including JACS, ACS Nano, Adv Funct Mater, Chem Mater and Chem.Commun., etc.