

# 61st GREEN Open Seminar

2017/10/20(Fri) 15:00~16:00

Venue : Auditorium, 1F, WPI-MANA Bldg., Namiki Site

## Designer Interfaces for Energy Catalysis

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### Abstract

The widespread utilization of renewable energy will require energy dense and cost-effective methods for storage. This challenge could be met by coupling renewable electricity to the reduction of carbon dioxide and/or protons to fuels and the oxidation of water to  $O_2$ , providing, in net, a viable scheme for artificial photosynthesis. Likewise, the resulting fuels could be recombined in a fuel cell to comprise a net carbon-neutral cycle for energy storage and recovery. Realizing these goals requires the development of new electrocatalysts with enhanced selectivity, efficiency, and durability. We have developed bottom-up approaches to the design and discovery of new electrocatalysts that emphasizes controlling structure at the molecular, nano, and meso scales. The approach has led to the discovery of a new class of molecular precise graphite-conjugated catalysts and the elucidation of new design principles for the efficient reduction of carbon dioxide to fuels. Our latest findings in these areas will be discussed.