

The 254th MANA Special Seminar



Biopolymer stabilized nanoparticles as catalysts for photocatalytic water oxidations

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Photocatalytic splitting of water into its constituent H₂ and O₂ provides an elegant means of supplying future renewable fuels. While production of H₂ has been quite effectively accomplished, O₂ production remains a continuing challenge as it is based on a four-electron redox process. The relative efficiencies of biopolymer stabilised Co and Fe oxides nanoparticles for catalytic water oxidation is shown. We also show the rapid and straightforward preparation and photocatalytic application of supported metal oxides of Co, Fe and Mn composed of commercial dextran 'Sephadex' beads decorated with bound metal oxide nanoparticles. These organic-supported samples have the advantage that the coated beads can readily recovered and re-employed. Photocatalyzed gas evolution using these materials was also compared to one of the best commercially-available, uncoated and nanosized Co₃O₄ particles. More recently we have prepared analogues of the plant chloroplast PSII 'Oxygen Evolving Centre' (OEC) with its bio-inorganic catalyst centre which has been utilized for visible light driven biomimetic water oxidations.

Venue: Seminar Room #431, 4F, MANA Bldg.,

Date: April 10th, Tuesday Time: 11:00am-11:45am

Contact: International Center for Materials Nanoarchitectonics (MANA), Nakata (ex. 8806)

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