

# **Kyoto - UCSB Workshop**

## **Prospects in New Materials Science**

**April 24 - 27, 2005**

**Kyoto University**

**Reception, Sunday Evening**

**18:30 April 24, 2004**

**at Sanjo Karasuma Hotel Kyoto**

**Monday, April 25, 2005**

**Katsura Hall**

08:00 **Pick-up at Hotel**  
08:40 **Katsura Hall**

08:45-08:50 **Anthony K. Cheetham and Zempachi Ogumi**  
**Opening Address**

**Discussion Leader: Yasuhiro Awakura**

08:50-09:35 **Akira Fujishima** Kanagawa Academy of Science and Technology  
**TiO<sub>2</sub> Photocatalysis - from Water photolysis to Actual Applications**

09:35-10:20 **Daniel E. Morse** UCSB, Director, Institute for Collaborative Biotechnologies  
Molecular Genetics and Biochemistry and Biomolecular Science and Engineering  
**New Biologically Inspired Low-Temperature Synthesis Yields Metal Oxide Semiconductors for Photovoltaic and Other Applications**

**10:20-10:40 Coffee Break**

**Discussion Leader: Craig J. Hawker**

10:40-11:10 **Koichi Eguchi** Kyoto University, Department of Energy and Hydrocarbon Chemistry  
**Strong Chemical Interaction in Precious Metal-Oxide Systems and Their Application to Fuel Cells**

11:10-11:55 **Warren E. Pickett** UC Davis, Department of Physics  
**Advances in the Theory of Charge Disproportionation And Applications to Na<sub>x</sub>CoO<sub>2</sub>**

11:55-12:25 **Zempachi Ogumi** Kyoto University, Department of Energy and Hydrocarbon Chemistry  
**Alkaline Fuel Cells Using Anion-Exchange-Membrane**

**12:25-14:00 Lunch**

**Discussion Leader: Takenao Yoshizaki**

14:00-14:45 **Philip Pincus** UCSB, Material Research Laboratory  
**Some Thoughts on the Hydrophobic Interaction**

14:45-15:15 **Fumihiko Tanaka** Kyoto University, Department of Polymer Chemistry  
**Cooperative Hydration, Phase Separation and Thermoreversible Gelation in Associating Polymer Solutions**

**15:15-15:35 Coffee Break**

**Discussion Leader: Kenneth R. Carter**

15:35-16:20 **Nitash P. Balsara** UC Berkeley, Department of Chemical Engineering  
**Electrochemically-Driven Self-Assembly of Organometallic Block Copolymers**

16:20-16:50 **Takashi Kakiuchi** Kyoto University, Department of Energy and Hydrocarbon Chemistry  
**Phase Behavior and Nanometer-Scale Engineering of Multi-Component Self-Assembled Monolayers on Au(111)**

16:50-17:35 **Ram Seshadri** UCSB, Materials Department  
**Lone Pairs in the Solid State**

17:35-18:05 **Tamejiro Hiyama** Kyoto University, Department of Material Chemistry  
**A Polysila Cage Motif: Electronic and Steric Control Element for Organic Materials**

**18:30 Buffet Dinner, Katsura Lounge**

**Tuesday, April 26, 2005**

**Katsura Hall**

08:00 Pick-up at Hotel  
08:40 Katsura Hall

**Discussion Leader: Masanori Murakami**

08:50-09:35 **Harold Kroto** Florida State University, Department of Chemistry  
**Some New Insights into the Mechanisms of Nanostructure Assembly**

09:35-10:05 **Toru Maekawa** Toyo University  
**Self-Organisation in Nano/Micro Systems**

**10:05-10:25 Coffee Break**

**Discussion Leader: Guillermo C. Bazan**

10:25-11:10 **Thuc-Quyen Nguyen** UCSB, Department of Chemistry and Biochemistry  
**Tuning Intermolecular Interactions to Create One-Dimensional Organic Semiconducting Nanostructures**

11:10-11:40 **Koichi Komatsu** Kyoto University, Institute for Chemical Research  
**Organic Synthesis and Properties of an Endohedral Fullerene Encapsulating Molecular Hydrogen, H<sub>2</sub>@C<sub>60</sub>**

11:40-12:25 **Paul K. Hansma** UCSB, Department of Physics  
**Bioinspiration for Strengthening Nanocomposite Materials**

**12:25-14:00 Lunch**

**Discussion Leader: Hiroyuki Sugimura**

14:00-14:30 **Yoshio Bando** National Institute for Materials Science  
**New Properties and Impurity-Free Synthesis of Boron Nitride Nanotubes**

14:30-15:15 **Nar S. Dalal** Florida State University, Department of Chemistry and Biochemistry  
**Single-Crystal <sup>55</sup>Mn NMR Spectra of Two Mn<sub>12</sub> Single-Molecule Magnets**

**15:15-15:35 Coffee Break**

**Discussion Leader: Ram Seshadri**

15:35-16:05 **Koji Fujita** Kyoto University, Department of Material Chemistry  
**Photon Localization and Novel Optical Properties in Random Photonic Structures**

16:05-16:35 **Isao Tanaka** Kyoto University, Department of Materials Science and Engineering  
**Application of First Principles Lattice Dynamics to Ceramic Science**

16:35-17:20 **Anthony K. Cheetham** UCSB, Director, International Center for Materials Research, Material Research Laboratory  
**Phosphors for Solid State Lighting**

**19:00 Dinner, Memorial Hall of Kyoto University (Yoshida)**

**Wednesday, April 27, 2005**

**Katsura Hall**

08:00 Pick-up at Hotel  
08:40 Katsura Hall

**Discussion Leader: Tamejiro Hiyama**

08:50-09:35 **Peter F. Green** University of Texas, Department of Chemical Engineering  
**Polymers at the Nanoscale**

09:35-10:05 **Hiroyuki Sugimura** Kyoto University, Department of Materials Science and Engineering  
**Vacuum Ultraviolet Micropatterning of Organic Material Surfaces**

**10:05-10:25 Coffee Break**

**Discussion Leader: Peter F. Green**

10:25-11:10 **Kenneth R. Carter** UMass, Polymer Science and Engineering Department  
**New Polymer Resist Systems for Nano-Imprint Lithography**

11:10-11:40 **Jun Kawai** Kyoto University, Department of Materials Science and Engineering  
**Many-Electron Effects in X-ray Spectra for Chemical State Analysis of Atmospheric Aerosol Particles**

11:40-12:25 **Jeffrey R. Long** UC Berkeley, Department of Chemistry  
**Cyanide-Bridged Materials for Separations, Sensing and Gas Storage**

**12:25-14:00 Lunch**

**Discussion Leader: Kensuke Naka**

14:00-14:30 **Koji Otsuka** Kyoto University, Department of Material Chemistry  
**High Performance Separation by Micro/Nano Scale Techniques for Material Analysis**

14:30-15:15 **Karen L. Wooley** Washington University, Department of Chemistry  
**The Synthesis and Study of Complex Nanostructured Materials**

15:15-15:45 **Mitsuo Sawamoto** Kyoto University, Department of Polymer Chemistry  
**Advances in Precision Radical Polymerization: Transition Metal-Catalyzed Living Radical Polymerization and Precision Polymer Synthesis thereby**

**15:45-16:05 Coffee Break**

**Discussion Leader: Jeffrey R. Long**

16:05-16:50 **Guillermo C. Bazan** UCSB, Department of Chemistry and Biochemistry  
**Water Soluble Conjugated Polymers: Applications in Biosensors and Optoelectronic Devices**

16:50-17:20 **Toshio Masuda** Kyoto University, Department of Polymer Chemistry  
**Synthesis and Gas Permeation Properties of Substituted Polyacetylenes**

17:20-18:05 **Craig J. Hawker** UCSB, Material Research Laboratory  
**Facile Chemistry for the Generation of Nanostructures**

18:05-18:10 **Zempachi Ogumi**  
**Closing Address**