

Tentative program (26 Jan 2004)

# **Dynamics of Disordered Materials on the Nanometer Scale**

**February 22-27, 2004**

**Hanoi, Vietnam**

## **Conference Co-Chairs**

**David L. Price**  
CNRS-CRMHT, France

**Rajiv Kalia**  
University of Southern California, USA

**Masatoshi Arai**  
KEK, Japan

**Chun-Keung Loong**  
Argonne National Laboratory, USA

# **ECI**

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## **Sunday, February 22, 2004**

6:00 pm – 8:00 pm Registration  
8:00 pm – 8:30 pm Welcome mixer

### **Introductory Remarks**

Jules Routbort, ECI  
David Price, CNRS

8:30 pm Buffet Dinner

## **Monday, February 23, 2004**

8:00 am – 9:00 am Breakfast

9:00 am – 9:45 am

### **Ceremonial Session**

Chair: David Price, CRMHT-CNRS, France

**H. E. Antoine Poullieute**, Ambassador of France to Vietnam

**Professor Dang Vu Minh**, Director-General, National Center for Natural Science and Technology of Vietnam

9:45 am

### **Session I: Organization of Biological Systems**

Chair: Rajiv Kalia, University of Southern California, USA

9:45 am – 10:45 am

#### **Keynote Lecture**

*Organization of memory objects in the brain*

Pierre-Gilles de Gennes, Institut Curie, Paris, France

10:45 am – 11:10 am

*The critical role fibronectin and its cellular integrin receptor play in macrophage differentiation*

Eliezer Huberman, Argonne National Laboratory, USA

11:10 am – 11:40 am

Coffee Break

11:40 am – 12:30 pm

#### **Invited Talk**

*Dense phases of DNA and nucleosomes*

Francoise Livolant, Laboratoire de Physique des Solides, France

12:30 pm – 12:55 pm

*Protein folds in a pre-sculpted free energy landscape*

Trinh Xuan Hoang, Institute of Physics, Vietnam

1:00 pm – 2:00 pm

Buffet Lunch

2:00 pm – 4:30 pm

*ad hoc* discussions / Free time

- 4:30 pm **Session II: Dynamics of Nanoconfined Fluids**  
Chair: A. Viet Nguyen, Institute of Physics, Vietnam
- 4:30 pm – 5:20 pm **Invited Talk**  
*Quasielastic neutron scattering investigation of the translational and rotational dynamics of supercooled water confined in nanoporous silica matrices*  
Sow-Hsin Chen, Massachusetts Institute of Technology, USA
- 5:20 – 5:45 pm *Anomalously soft dynamics in nanotube-water: Relevancy to water/proton transport across biological membranes*  
A.I. Kolesnikov, C.-K. Loong Argonne National Laboratory, USA
- 5:45 pm – 6:15 pm Coffee Break
- 6:15 pm – 7:05 pm **Invited Talk**  
*Excitations, bose-einstein condensation and superfluidity in quantum liquids in disorder*  
Henry R. Glyde, University of Delaware, USA
- 7:05 pm – 7:30 pm *Dynamics of disordered materials studied by inelastic x-ray scattering*  
E. E. Alp, Argonne National Laboratory, USA
- 8:00 pm Buffet Dinner

**Tuesday, February 24**

- 8:00 am – 9:00 am Breakfast
- 9:00 am **Session III: Confinement Effects in Electrolytes**  
Chair: Masatoshi Arai, KEK, Japan
- 9:00 am – 9:50 am **Invited Talk**  
*The dual challenge: Inducing and understanding ion motion in solids*  
M. Armand, Laboratoire International CNRS, Canada
- 9:50 am – 10:15 am *Ionic conduction in nanostructured materials*  
Simon W. de Leeuw, Delft ChemTech, Delft University of Technology, Netherlands
- 10:15 am – 10:40 am *Effect of nanoscopic confinement on the dynamics of glass-forming liquids and polymers*  
Reiner Zorn, Forschungszentrum Juelich, Germany
- 10:40 am – 11:10 am Coffee Break
- 11:10 am – 12:00 pm **Invited Talk**  
*Ion Transport in polymer and plastic materials*  
Douglas R. MacFarlane, Monash University, Australia

12:00 pm – 12:25 pm	<i>Do nanoparticles reduce ion-pairing in polymer-electrolytes?</i> G. J. Kearley, IRI, TU-Delf, Netherlands
12:25 pm – 12:50 pm	<i>Dynamics in ionomer membranes for fuel cells</i> Dr. Sandrine Lyonard, CEA Grenoble, France
1:00 pm – 2:00 pm	Lunch
2:30 pm – 4:30 pm	<b><u>Poster Session</u></b>
4:30 pm	<b><u>Session IV: Biomolecular Dynamics</u></b> Chair: C.-K. Loong Argonne National Laboratory, USA
4:30 pm – 5:30 pm	<b>Keynote Lecture</b> <i>Simulation of hybrid physical-biological systems</i> Priya Vashishta, University of Southern California, USA
5:30 pm – 5:55 pm	<i>Temperature- and pressure-dependences of a bending modulus of surfactant monolayers in a ternary microemulsion composed of aot / d<sub>2</sub>o / decane</i> Hideki Seto, Kyoto University, Japan
5:55 pm – 6:25 pm	Coffee Break
6:25 pm – 7:15 pm	<b>Invited Talk</b> <i>Biomolecular dynamics: water-macromolecule interactions</i> Antonio Deriu, Universite di Parma, Italy
7:15 pm – 7:40 pm	TBA
8:00 pm	Cultural Dinner with Cruise, Ho Tay Lake

### **Wednesday, February 25**

8:00 am – 9:00 am	Breakfast
9:00 am	<b><u>Session V: Nanoclusters and Granular Materials</u></b> Chair: P.E. Levitz, CNRS-Ecole Polytechnique, France
9:00 am – 10:00 am	<b>Keynote Lecture</b> <i>Numerical computations of granularity: a school for theory and theorists</i> Leo P. Kadanoff, University of Chicago, USA
10:00 am – 10:25 am	<i>Toward first principles prediction on the nanoscale</i> JW Halley, University of Minnesota, USA
10:25 am – 10:50 am	<i>Structuring carbon forms by energetic species: Amorphous, nanotubes and crystalline</i> Yeshayahu Lifshitz, City University Hong Kong
10:50 am – 11:20 am	Coffee Break

11:20 am – 12:10 pm	<b>Invited Talk</b> <i>Confinement of narrow-gap semiconductors</i> M.-L. Saboungi, CRMD, CNRS, France
12:10 pm – 12:35 pm	<i>Direct observation and computer simulation of spatio-temporal nanostructural fluctuations in amorphized intermetallic compounds</i> Seiichi Watanabe, Hokkaido University, Japan
12:35 pm – 1:00 pm	<i>Synthesis, characterization and application of disorder and nano-structured molecular sieves</i> Vu Anh Tuan, Institute of Chemistry, NCST, Vietnam
1:00 pm – 1:45 pm	Lunch
2:00 pm	Hanoi City Excursion
8:00 pm	Traditional Dinner, Dinh Lang Restaurant

### **Thursday, February 26**

8:00 am – 9:00 am	Breakfast
9:00 am	<b><u>Session VI: Nanostructured Materials</u></b> Chair: Michel Rosso, PMC, Ecole Polytechnique, France
9:00 am – 10:00 am	<b>Keynote Lecture</b> <i>Fabrication of metal nanoparticles by relaxative auto dispersion (RAD) process</i> Shigehito Deki, Kobe University, Japan
10:00 am – 10:25 am	<i>Semiconducting nanowires - From synthesis to applications</i> Shuit-Tong Lee, COSDAF, City University of Hong Kong
10:25 am – 10:50 am	<i>Dipole-exchange theories of spin waves in ferromagnetic nanostructures</i> M.G. Cottam, University of Western Ontario, Canada
10:50 am – 11:20 am	Coffee Break
11:20 am – 12:10 pm	<b>Invited Talk</b> <i>Nanostructured polymeric glasses</i> Luigi Cristofolini, University of Parma, Italy
12:10 pm – 12:35 pm	<i>Kinetic 'crushing' mechanism for enhancing two-dimensional ordering of nanocrystal superlattices</i> T. T. Nguyen, The James Frank Institute, University of Chicago, USA
12:35 pm – 1:00 pm	<i>Dynamics of monolayers on metal nanoparticles</i> R. Mukhopadhyay, Bhabha Atomic Research Centre, India
1:00 pm – 2:00 pm	Lunch

- 2:00 pm – 4:30 pm *ad hoc* discussions / Free time
- 4:30 pm **Session VII: Dynamical Scaling in Disordered Systems**  
Chair: Shuit-Tong Lee, COSDAF, City University of Hong Kong
- 4:30 pm – 5:20 pm **Invited Talk**  
*Glass transition dynamics and viscoelastic properties of polymer thin films and polymers confined in nanopores: theories and experiments*  
K.L. Ngai, Naval Research Laboratory, USA
- 5:20 pm – 5:45 pm *Prediction of the short-range order of liquid and supercooled metals by Ab Initio Molecular Dynamics*  
Alain Pasturel, Laboratoire de Physique et Modélisation des Milieux Condensés, France
- 5:45 pm – 6:15 pm Coffee Break
- 6:15 pm – 7:05 pm **Invited Talk**  
*Temporal and spatial inhomogeneity in metallic glass forming systems*  
Mo Li, Georgia Institute of Technology, USA
- 7:05 pm – 7:30 pm *Structure-determined dynamics in supercooled liquids*  
Peter Harrowell, University of Sydney, Australia
- 8:00 pm Conference Banquet hosted by the Institute of Physics, Hanoi

**Friday, February 27**

- 8:00 am – 9:00 am Breakfast
- 9:00 am **Session VIII: Properties and Nanostructures of Glassy Materials**  
Chair: Nghi Q. Lam, Applied Physics Letters, USA
- 9:00 am – 9:50 am **Invited Talk**  
*Nanoscale damage and crack propagation in glassy materials*  
Elisabeth Bouchaud, CEA-SACLAY, France
- 9:50 am – 10:15 am *Radiation-induced, order-disorder transformations in pyrochlore*  
Rodney C. Ewing, University of Michigan, USA
- 10:15 am – 10:45 am Coffee Break

10:45 am – 11:35 am

**Invited Talk**

*Crystal-to-amorphous solid state structure transitions in metallic alloys*

Kenji Suzuki, Advanced Institute of Materials Science, Japan

11:35 am – 12:00 pm

*Atomic configurations in the structure of metallic glasses*

Daniel B. Miracle, Materials and Manufacturing Directorate, USA

Conference close

2:30 pm

**US-Vietnam Seminar, Session I**

Chair: Rajiv Kalia, University of Southern California, USA

**Saturday, February 28 - Sunday, February 29**

Ha Long Bay Excursion (optional)

**Monday, March 1**

9:00 am

**US-Vietnam Seminar, Session II**

Chair: A. Viet Nguyen, Institute of Physics, Vietnam