RIMS International Conference:
“Mathematical Challenge to a New Phase of Materials Science”
as a part of RIMS International Project Research 2014
Toward a New Fusion Research of Mathematics and Materials Science

Date: August 4th (Mon) – 8th (Fri), 2014
Venue: Masukawa Hall, North Comprehensive Education and Research Building,
Kyoto University
Kitashirakawa Oiwake-cho, Sakyo-ku, Kyoto, Japan

This is a satellite conference of SEOUL ICM 2014

Schedule: August 4th, 2014
12:00- Registration
13:00-13:15 Opening
13:15-14:00 1: Konstantin Mischaikow (Rutgers, The State University of New Jersey)
Topological Analysis of Time Series of Scalar Functions
14:00-14:45 2: Yasuaki Hiraoka (Kyushu University)
New Geometric Characterizations of Silica Glasses by Persistent Homology
14:45-15:30 3: Shinji Kohara (Japan Synchrotron Radiation Research Institute)
Atomic and electronic structure of functional oxide glasses revealed by a combination of synchrotron x-ray/neutron measurements and large-scale computer simulation
15:30-15:45 Coffee break
15:45-16:30 4: Hajime Tanaka (The University of Tokyo)
Transient structural ordering of supercooled liquids and its roles in glass transition and crystallization
16:30-17:15 5: Nobuhisa Fujita (Tohoku University)
Cluster-packing geometry for icosahedral alloys

Schedule: August 5th, 2014
09:00-09:45 6: Tetsuo Mohri (Tohoku University)
Multiscale Materials phenomena
09:45-10:30 7: Masanori Kohyama
(National Institute of Advanced Industrial Science and Technology)
Local Energy and Local Stress in Density-Functional Theory Calculations of Materials
10:30-10:45 Coffee break
10:45-11:30  8 : Munekazu Ohno (Hokkaido University)
Phase-Field Modeling of Solidification Microstructure in Alloys

11:30-12:15  9 : Tomotsugu Shimokawa (Kanazawa University)
Atomic Simulation of Lattice Defect Interactions in Nanostructured Materials

12:15-13:45  Lunch

13:45-14:30  10 : Theodore Kolokolnikov (Dalhousie University)
Predator-swarm interactions

14:30-15:15  11 : Arash Yavari (Georgia Institute of Technology)
Non-Riemannian Geometries and the Nonlinear Mechanics of Distributed Defects

15:15-15:30  Coffee break

15:30-16:15  12 : Weiqing Ren (National University of Singapore)
Modeling and simulation of moving contact lines and wetting transitions on patterned solid surfaces

16:15-17:00  13 : Masato Kimura (Kanazawa University)
A fracture model on spring-block system with energy gradient structure

Schedule:    August 6th, 2014
09:30-10:15  14 : Konrad Polthier (Freie Universität Berlin)
Construction of discrete minimal surfaces

10:15-11:00  15 : Hisashi Naito (Nagoya University)
Negatively curved carbon crystal

11:00-11:15  Coffee break

11:15-12:00  16 : Yoshihito Oshita (Okayama University)
Motion of droplets driven by curvature and potential

12:00-13:30  Lunch

13:30-14:15  17 : Arjen Doelman (Leiden University)
Meander and pearling of functionalized polymer bilayer interfaces

14:15-15:00  18 : Christian Ratsch (University of California, Los Angeles)
A Computational Method for the Design of New Heterostructures

15:00-17:00  Poster session

18:00-20:00  Banquet

Schedule:    August 7th 2014
09:30-10:15  19 : Stephen Hyde (Australian National University)
Toroidal tangles of polyhedral graphs are chiral. A route to chiral synthetic materials?

10:15-11:00  20 : Yoshimi Tanaka (Yokohama National University)
Solvent effects on fracture of gels

As of July 15, 2014
11:00-11:15  Coffee break

11:15-12:00  **21 : Carlos J. Garcia-Cervera (University of California, Santa Barbara)**
Numerical advances in Self-Consistent Field Theory simulations of block copolymers: Applications to polymer lithography and evaporation-driven pattern selection

12:00-13:30 Lunch

13:30-14:15  **22 : Daniel Miles Packwood (Tohoku University)**
Charge transport inside of organic crystals: The crucial role of correlated fluctuations

14:15-15:00  **23 : Ryokichi Tanaka (Tohoku University)**
Random walks on groups as random dynamical systems

15:00-15:15  Coffee break

15:15-16:00  **24 : Natsuhiko Yoshinaga (Tohoku University)**
Mechanics of active gels and spontaneous motion of droplets as biologically-motivated systems

16:00-16:45 TBA

**Schedule:** August 8th 2014

09:30-10:15  **25 : Thomas Wanner (George Mason University)**
Multistability and Long-Term Dynamics of the Diblock Copolymer Model

10:15-11:00  **26 : Takeshi Fujita (Tohoku University)**
Nanoporous metal catalysts for exhaust-gas transformation

11:00-11:15  Coffee break

11:15-12:00  **27 : Edgar Knobloch (University of California, Berkeley)**
Solidification fronts in supercooled liquids: how rapid fronts can lead to disordered glassy solids

12:00-12:15 Closing

**Organizing Committee:**
Yasumasa Nishiura (Tohoku University), Chair
Motoko Kotani (Tohoku University), Co-Chair
Hisashi Okamoto (Kyoto University)
Nobuaki Obata (Tohoku University)
Ken Nakajima (Tohoku University)
Carlos J. Garcia-Cervera (University of California, Santa Barbara)
Thomas P. Russell (University of Massachusetts)

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