



INTERNATIONAL INSTITUTE FOR CARBON-NEUTRAL ENERGY RESEARCH

**2017 I²CNER ANNUAL SYMPOSIUM:
APPLIED MATH CHALLENGES IN ENERGY & THE NEXT-GENERATION
ELECTRIC GRID**

*I²CNER Hall
Ito Campus
Kyushu University*

WEDNESDAY, FEBRUARY 1, 2017

- 8:50 AM **Opening Remarks**
Mr. Ross Matzkin-Bridger, Energy Attaché, U.S. Embassy Tokyo, and Director, U.S. Department of Energy's Japan Office (10 min)
Dr. Akira Ukawa, WPI Deputy Program Director, Japan Society for the Promotion of Science (10 min)
Prof. Masato Wakayama, Executive Vice President, Kyushu University (10 min)
Prof. Yasuhide Fukumoto, Director, Institute of Mathematics for Industry (IMI), Kyushu University (5 min)
Prof. Petros Sofronis, Director, International Institute for Carbon-Neutral Energy Research (I²CNER) (5 min)
- 9:30 AM **Keynote Lecture:**
"Renewable Resource Integration in the Smart-Grid Environment: the Grand Challenges and the Key Opportunities Towards a Sustainable Energy Future"
Prof. George Gross
Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign
- 10:30 AM "Global Energy Economy Modeling: Welfare Analysis Considering Environment"
Prof. Shunsuke Managi
Faculty of Engineering, Kyushu University

- 11:00 AM **COFFEE BREAK**
- 11:15 AM “Design of Incentive-Based Demand Response Programs Using Inverse Optimization”
Prof. Junichi Murata
Faculty of Information Science and Electrical Engineering, Kyushu University
- 11:45 AM “Mathematical Challenges for the Smart Grid: from Kirchhoff's laws to Electricity Markets”
Prof. Subhonmesh Bose
Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign
- 12:15 PM **LUNCH**
- 1:15 PM “The Role of Optimal Control in the Development of the Smart Grid”
Prof. Monique Chyba
Department of Mathematics, University of Hawaii at Manoa
- 1:45 PM “Persistent Homology and Its Applications”
Prof. Tomoyuki Shirai
IMI, Kyushu University
- 2:15 PM “Using Mathematics to Model Heterogeneous Rock Pores and Its Evolution”
Prof. Takeshi Tsuji
I²CNER, Kyushu University
- 2:45 PM “Anomalous Dispersion in Realistic Pore-scale Simulations of Two-phase Flow for Geologic CO₂ Sequestration”
Dr. Dimetre Triadis
Department of Mathematics and Statistics, La Trobe University
- 3:15 PM “Statistical Analysis of Global Gene Expression Data and Applications to Plant Growth”
Prof. Ryuei Nishii
IMI, Kyushu University
- 3:45 PM **COFFEE BREAK**
- 4:00 PM **Invited Lecture:**
“The Energy Challenge - A UK Perspective”
Prof. Martin Freer
Director of the Birmingham Energy Institute, University of Birmingham

4:30 PM **PANEL DISCUSSION**

TBA

5:30 PM **RECEPTION & POSTER SESSION**

Location: I²CNER Lobby

6:30 PM **TRAVEL TO DINNER**

7:30 PM **DINNER**

Location: Hyakunengura in Hataka-ku, Fukuoka

Plenary Lecture:

“Mathematical and Numerical Modeling Requirements for Large-scale CCS”

Prof. Michael A. Celia

Department of Civil and Environmental Engineering, Princeton University

**by invitation only*