

# International Institute for Carbon-Neutral Energy Research



## Powering the Future Internationalizing Research – PART I of V

**P. Sofronis**

*Kyushu University*

*University of Illinois at Urbana-Champaign*

**November 7, 2013**

**New Value Chains and the Rise of Open Innovation in Asia**  
**Stanford University**



**KYUSHU UNIVERSITY**



World Premier International  
Research Center Initiative



**ILLINOIS**  
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

- **Japan Ministry of Education, Culture, Sports, Science and Technology (MEXT)**
- **Japan Society for the Promotion of Science**
- **Objectives**
  - **Establish an international research environment within Japan**
    - Invite the best from around the world within a host institution
    - \$16 M/year for 10 to 15 years
  - **Advance cutting-edge interdisciplinary research (Fusion)**
  - **Reform the Japanese university system**
    - Change university culture
      - New criteria for faculty hiring, promotion, and compensation
    - Independent management of institute
    - English is the official institute language



ITbM, Nagoya U **new!**

iCeMS, Kyoto U

IFReC, Osaka U

I<sup>2</sup>CNER, Kyushu U

AIMR, Tohoku U

MANA, NIMS

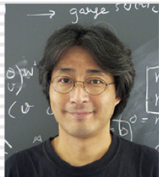
IIIS, U of Tsukuba **new!**

Kavli IPMU, U of Tokyo

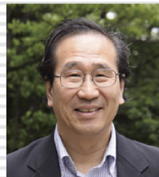
ELSI, Tokyo Tech **new!**



M. Kotani  
AIMR Director  
Materials



H. Murayama  
Kavli IPMU Director  
Universe



S. Kitagawa  
iCeMS Director  
Cells & Materials



S. Akira  
IFReC Director  
Immunology



M. Aono  
MANA Director  
Nanotechnology



P. Sofronis  
I<sup>2</sup>CNER Director  
Energy



M. Yanagisawa  
IIIS Director  
Sleep



K. Hirose  
ELSI Director  
Earth-Life



K. Itami  
ITbM Director  
Bio-Molecules

- **International Institute for Carbon-Neutral Energy Research**
  - Kyushu University
- **Advanced Institute for Materials Research**
  - Tohoku University
- **Institute for the Physics and Mathematics of the Universe**
  - University of Tokyo
- **Institute for Integrated Cell-Material Science**
  - Kyoto University
- **Immunology Frontier Research Center**
  - Osaka University
- **National Institute for Materials Nanoarchitectronics**
  - NIMS

# New WPI Institutes (2012)

- **Tsukuba University**

- Research on sleep

- **Tokyo Institute of Technology**

- Geo-life sciences

- **Nagoya University**

- Transformative research on organic molecules, Plant chemistry

- **Long and ongoing collaborative research efforts between Kyushu University and University of Illinois**
  - HYDROGENIUS (Institute for Hydrogen Industrial Use and Storage)
- **MEXT issued call for white papers in February 2010**
- **Kyushu/Illinois submitted proposal in April 2010**
- **Proposal document review in June 2010**
  - 4 proposals selected for reverse site visit at MEXT
- **Reverse site visit at MEXT on July 13, 2010**
  - High-power review committee
    - Former US NSF Director, Physics Nobel Laureate (2008), Chemistry Nobel Laureate (2001)

**Winner: Kyushu/Illinois proposal for an International Institute on Carbon-Neutral Energy Research**



# I²CNER in January 2013

## New I²CNER Building & Research Center for Next Generation Solid Oxide Fuel Cells

Under one roof  
I²CNER mindset



Large open space on 1<sup>st</sup> floor for seminars, symposia,  
communication, **I²CNER CO<sup>2</sup>** (**CO**ffee and **CO**llaboration)



# I²CNER in 2013





# New Building Completion Ceremony

## 29 January 2013



Congratulatory Address  
**Dr. Hiroo Imura**

Chairperson of WPI Program Committee



Congratulatory Address  
**Dr. Monterey Gardiner**

U.S. Department of Energy



Congratulatory Address  
**Prof. Peter Schiffer**

University of Illinois at Urbana-  
Champaign

More than 200 national/international scholars along with local and state government representatives

# I²CNER Annual Symposium

## 29 January 2013



**Dr. Eiichi Harada**  
Kawasaki Heavy Industries, LTD

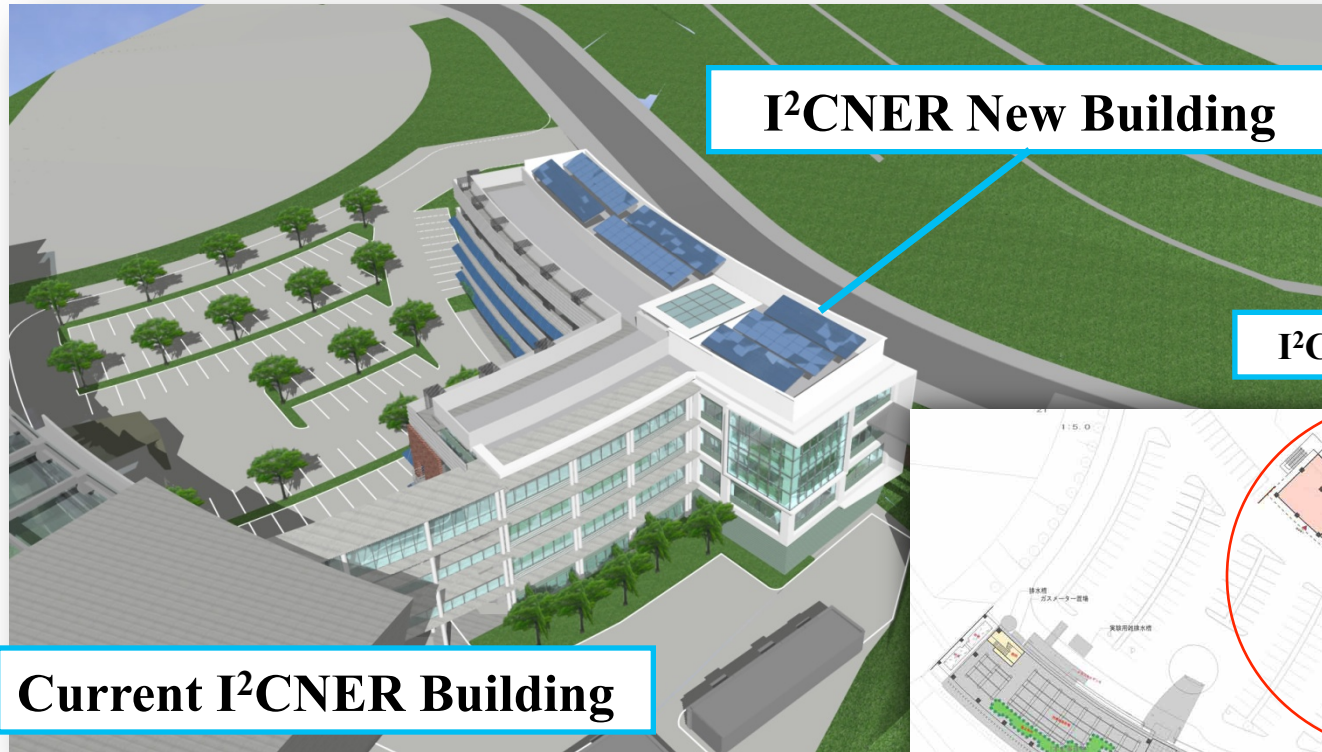


**Dr. George Crabtree**  
Argonne National Laboratory



**Kenneth Christensen**  
Satellite Associate Director

More than 200 national/international scholars along with local and state government representatives



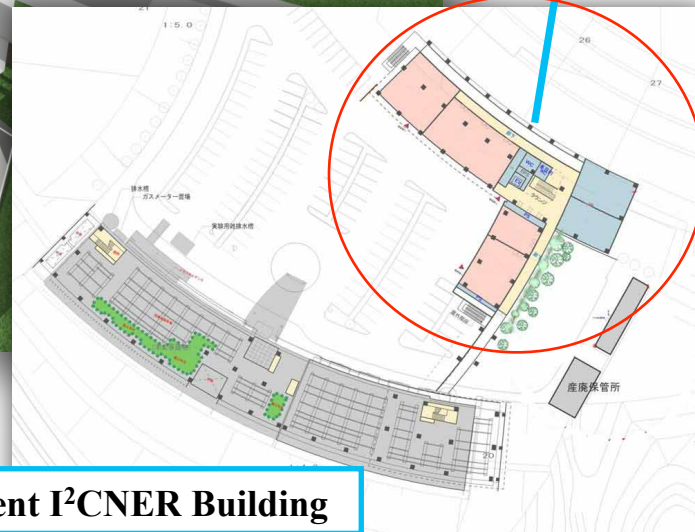
**I²CNER New Building**

Area: 5,000m<sup>2</sup>  
Start Construction: 2013/12  
Completion: 2015/01

**I²CNER New Building**

**Current I²CNER Building**

Cost: \$20 m  
New Equipment: \$5 m



**Current I²CNER Building**

- Energy Conservation Concept
- Open Offices and Open Labs to enhance collaborations
- Refreshing Green Deck

**Policy paper for the 4<sup>th</sup> Science and Technology Basic Plan (Dec. 24, 2010)**  
**(Revised on August 19 to account for the effects from the Fukushima Disaster)**

■ **Reconstruction and Revival from the Disaster**

- Rebuilding and revival of industry
- Restoration and renewal of social infrastructure
- Realization of safe living environments in affected areas

■ **Grand Innovations**

- **Green innovation and sustainability** ←
  - Green energy supply, low carbon society
  - Efficient and smart energy use
  - Greening social infrastructure
  - Take on the issue of “Climate Change”
- Life innovation
- Establishing new systems for innovation
  - Open innovation centers
  - Intellectual property and international standardization

■ **Address nation's grand challenges**

- Promote **issue-driven** S&T and innovation
  - Foster next generation of human expertise and resources
  - Improve R&D environment in universities and research institutes
  - Industry-university-government partnership as a new model for growth
    - New industries and business
- R&D issues common in Asia
- Reinforce S&T diplomacy
  - Support developing countries



## Electricity supply policy (predating the Fukushima accident)

