



INTERNATIONAL INSTITUTE FOR CARBON-NEUTRAL ENERGY RESEARCH

## I<sup>2</sup>CNER THRUST WORKSHOP: TOWARD CARBON NEUTRALITY

ADVANCED ENERGY MATERIALS THRUST (AEM)

AND MULTISCALE SCIENCE AND ENGINEERING FOR ENERGY AND THE ENVIRONMENT THRUST (MS3E)

DATE: JANUARY 27TH, 2026, TUESDAY

TIME: 9:25AM – 6:00PM(JST)

VENUE: I<sup>2</sup>CNER HALL C/ITO CAMPUS, KYUSHU UNIVERSITY \*ONSITE ONLY

Time	Speaker	Affiliation	Title
9:25 a.m.	Shigenori Fujikawa	I <sup>2</sup> CNER, Kyushu University	Opening Remarks
<b>Session 1: Multiscale Science and Engineering for Energy and the Environment Thrust (MS3E)</b>			
9:30 a.m.	Tomohide Yabuki	Kyushu Institute of Technology	Exploring the Fundamental Mechanisms of Boiling Heat Transfer
10:00 a.m.	Masumi Misaka	Department of Aeronautics and Astronautics, Kyushu University	Experimental Study of Wetting on Nanoscale Rough Surfaces
10:30 a.m.	Islam Md Amirul	I <sup>2</sup> CNER, Kyushu University	Carbon Materials for a Low-Carbon Future: Enhanced CO <sub>2</sub> Capture and Energy-Efficient Cooling
11:00 a.m.	Tomoyasu Hirai	Osaka Institute of Technology	Preparation of Novel Organic-Inorganic Hybrid Materials Based on Precise Synthesis and Evaluation of Its Functional Properties for Gas Separation
11:30 a.m.	Baloh Pavlo	I <sup>2</sup> CNER, Kyushu University	Vapor-Deposited Molecular Modification of PDMS Nanomembranes for Efficient CO <sub>2</sub> Capture
12:00 p.m.	Le Zhang	School of Engineering, The University of Tokyo	Impure CO <sub>2</sub> in Geological Storage: Insights for DAC and SO <sub>2</sub> /NO <sub>x</sub> -Containing Industrial Exhaust Gases
<b><i>Lunch Break</i></b>			

Time	Speaker	Affiliation	Title
<b>Session 2: Advanced Energy Materials Thrust (AEM)</b>			
<b>1:00 p.m. Invited lecture</b>	Robert O. Ritchie	University of California, Berkeley	Damage Tolerance in High Entropy Alloys
<b>1:40 p.m. Invited lecture</b>	Shuji Nakanishi	Research Center for Solar Energy Chemistry, The University of Osaka	Biomanufacturing Based on Synthesized Non-Natural Sugars
<b>2:20 p.m. Invited lecture</b>	Yasuyoshi Sakai	Graduate School of Advanced Integrated Studies in Human Survivability (GSAIS), Kyoto University	Microbial Utilization of Methane and Methanol for Bioproduction
<b>3:00 p.m.</b>	<b><i>Coffee Break</i></b>		
<b>3:10 p.m.</b>	Jiahao Liu	I <sup>2</sup> CNER, Kyushu University	Synthesis and Electrocatalytic CO <sub>2</sub> Reduction Reaction Properties of Novel Shape-Controlled Cu-Based Nanocubes
<b>3:30 p.m. Invited lecture</b>	Petros Sofronis	University of Illinois at Urbana Champaign	From the Fundamentals of Hydrogen/Materials Interactions at High Temperatures to Engineering Materials Solutions for Safe and Reliable Operations
<b>4:10 p.m. Invited lecture</b>	Punit Kumar	Nanyang Technological University	Damage-Tolerant Structural Materials for Energy Transition Through Additive Manufacturing
<b>4:50 p.m.</b>	Mo Yan	MCI-CNRC, Kyushu University	Mixed-Potential-Driven Catalysis: An Electrochemical Framework for Understanding Thermochemistry
<b>5:10 p.m.</b>	<b><i>Coffee Break</i></b>		
<b>5:20 p.m. Invited lecture</b>	Kazuyuki Yagi	Department of Mechanical Engineering, Kyushu University	Influence of Hydrogen Gas Environment on the Tribological Performance of Lubricant Additives
<b>6:00 p.m.</b>	Masanobu Kubota	I <sup>2</sup> CNER, Kyushu University	Closing Remarks