

Final Programme

Polish – Japanese Symposium

Hydrogen Energy Technologies and Advanced Energy Systems

2nd July (Wednesday)

time	event	venue
9:00 – 11:00	registration	
11:00 – 11:30	opening ceremony Prof. Dr. Jun Yamada , President, SIT Paweł Milewski , Polish Ambassador to Japan Akio Miyajima , Former Ambassador to Poland, Distinguished visiting Professor SIT Dr. Wojciech Karczewski , Director, Polish National Agency for Academic Exchange (NAWA) Ms. Marta Zielinska , letter from Jacek Tomczak, Commissioner General of Poland, the World Expo 2025 Osaka, Kansai Mirosław Marczewski , Director General, Foundation for the Development of the Education (FRSE) Prof. Janusz S. Szmyd – Symposium Chairman (AGH University of Krakow)	
11:30 – 12:15	session 1 chairperson: prof. Szmyd <u>plenary lecture</u> : prof. Shozo Kaneko <i>HyGreen Project: A New Coordination of Renewable Energy and Coal</i>	
12:15 – 13:00	lunch break	
13:00 – 14:30	session 2 chairperson: prof. Szmyd <u>keynote lecture 1</u> : prof. Yasuyuki Takata <i>Thermal Engineering Challenges in High-Pressure Hydrogen Systems</i> <u>keynote lecture 2</u> : prof. Kazuhiko Suga <i>Characteristics of Turbulent Flows Over Porous Materials</i> <u>keynote lecture 3</u> : prof. Naoki Shikazono <i>Operando Observations of Solid Oxide Cell Fuel Electrodes</i>	
14:30 – 15:00	coffee break	
15:00 – 16:30	session 3: AGH – SIT Double Doctorate Graduates chairperson: prof. Takasaki 15:00 – 15:15 Szymon Buchaniec <i>Design of Experiments for Optimizing the Microstructure of Solid Oxide Fuel Cell Electrodes</i> 15:15 – 15:30 Alicja Klimkowicz <i>Oxygen Production Using Temperature Swing Absorption</i> 15:30 – 15:45 Yosuke Komatsu <i>Synthesizing Method of Solid Oxide Cell Electrode</i>	

15:45 – 16:00	<i>Microstructure by Deep Generative Model</i> Marcin Moździerz <i>Generation of Porous Microstructures for Solid Oxide Fuel Cell Simulation</i>
16:00 – 16:15	Tomasz Aleksander Prokop <i>Assessing the Accuracy of Finite Element Method in Modeling Solid Oxide Fuel Cell Microscale Transport Phenomenon</i>
16:15 – 16:30	Anna Sciazko <i>Degradation Mechanisms in Ni-GDC Electrodes of Solid Oxide Fuel Cells</i>

3rd July (Thursday)

10:00 – 11:30	session 4
	chairperson: prof. Brus
10:00 – 10:30	<u>keynote lecture 4:</u> prof. Hiroshi Iwai <i>Heterogeneous Microstructure of Porous Electrodes and Its Effect on Transport Phenomena in Solid Oxide Fuel Cells</i>
10:30 – 11:00	<u>keynote lecture 5:</u> prof. Wojciech Lipiński <i>Solar Fuel Production via High-Temperature Thermochemical Redox Cycling</i>
11:00 – 11:30	<u>keynote lecture 6:</u> prof. Kazuya Tatsumi <i>Thermal and Electrical Transport Pathways in Network-Structured Materials for Electronic and Energy Devices</i>
11:30 – 12:30	session 5: technical session
	chairperson: prof. Nomura
11:30 – 11:50	prof. Katarzyna Styszko <i>Tracking Priority and Emerging Micropollutants in Atmospheric Aerosols: Environmental Risks and Energy Crisis Implications</i>
11:50 – 12:10	prof. Masashi Kishimoto <i>Numerical Assessment of Mesoscale Interface Designing in Anode-Supported Solid Oxide Fuel Cells</i>
12:10 – 12:30	prof. Marek Jaszczur <i>Performance Analysis of a Gas-Powered Trigeneration Unit</i>
12:30 – 13:15	lunch break
13:15 – 14:45	session 6:
	chairperson: prof. Rzeznicka
13:15 – 13:45	<u>keynote lecture 7:</u> prof. Jacek Leszczyński <i>Experimental and Theoretical Analysis of Operating Parameters for Air Expansion in Micro-CAES Applications</i>
13:45 – 14:15	<u>keynote lecture 8:</u> prof. Akito Takasaki <i>Production of Ti_{22.5}V_{22.5}Zr₁₉Nb₁₉Ni₁₇ High Entropy Alloy and Its Hydrogen Storage</i>

14:15 – 14:45	<u>keynote lecture 9: prof. Grzegorz Brus</u> <i>Computational Topology in Energy Engineering: A New Lens on Microstructural Complexity</i>
14:45 – 15:15	coffee break
15:15 – 16:55	session 7: Energy and Environmental Engineering Students Session 1 chairperson: dr Alicja Klimkowicz / dr. Marcin Moździerz
15:15 – 15:25	Tomasz Drag <i>Improving Steam Methane Reforming with the Use of Fins</i>
15:25 – 15:35	Towa Horiguchi <i>Hydrophobic Ceramic Hybrid Membranes for Membrane Distillation</i>
15:35 – 15:45	Kazuma Ishida <i>Pulsed Laser Deposition of WO₃/ZrO₂ Bilayer Thin Films for Photoelectrochemical Hydrogen Production</i>
15:45 – 15:55	Itsuki Ito <i>CO₂ Adsorption on Novel Layered Material</i>
15:55 – 16:05	Michał Mytkowski <i>An Analysis of Microstructure-Scale Transport Phenomena in a Solid Oxide Fuel Cell</i>
16:05 – 16:15	Kajetan Nowak <i>Machine Learning in Methane Detection from Satellite Data</i>
16:15 – 16:25	Zofia Pizon <i>A Data-Augmented Random Forest Approach to Unified Equilibrium and Kinetic Modeling of Methane Steam Reforming</i>
16:25 – 16:35	Magdalena Prajsner <i>Simulation of Sintering Process of Sm_{0.5}Ba_{0.25}Sr_{0.25}Co_{0.5}Cu_{0.5}O_{3-δ} (SBSCCO) Nanofibers Using Monte Carlo Method</i>
16:35 – 16:45	Haruki Sato <i>Gas Permeation Through Boron Nitride Based Membranes</i>
16:45 – 16:55	Dawid Szemraj <i>Numerical Analysis of Detonation Space Shape Influence on Shock Waves Propagation</i>
17:30 – 19:30	Banquet for symposium participants RISTORANTE Ginza Sicilia, Toyosu

4th July (Friday)

10:00 – 11:40	session 8: Energy and Environmental Engineering Students Session 2 chairperson: dr. Alicja Klimkowicz / dr. Marcin Moździerz
10:00 – 10:10	Oskar Śledź <i>Modelling and Analysis of the Grid Connected Photovoltaic System</i>

10:10 – 10:20	Paweł Wiącek <i>Application of Convolutional Neural Network for Gas Leak Detection Using Thermal Imaging</i>
10:20 – 10:30	Aleksander Woźniak <i>From Traditional Methods to Intelligent Control – A Comparison of Algae Cultivation Strategies With a Focus on Reinforcement Learning</i>
10:30 – 10:40	Patryk Wyszynski <i>Creasing Influence on the Microstructure Morphology of SBS and FBB Paperboards</i>
10:40 – 10:50	Michał Zańczak <i>Numerical Analysis of Air-Water Flow in Horizontal Duct</i>
10:50 – 11:00	Reina Akiya <i>Ethanol Decomposition Through MFI Zeolite Membranes</i>
11:10 – 11:20	Kyogo Koyama <i>Silica Titania Hybrid Membranes for Hydrogen Separation</i>
11:20 – 11:30	Yuta Nakai <i>Water Permeation From IPA Solution Containing Sodium Chloride Through MOR Zeolite Membranes</i>
11:30 – 11:40	Yuka Shimizu <i>Temperature Control of CO₂ Methanation by Using Distributor Type Membrane Reactor</i>
11:40 – 12:00	coffee break
12:00 – 13:00	session 9 chairperson: prof. Kogawa keynote lecture 10: prof. Carlos Ariel Cardona <i>Integration of Hydrogen Production to Biorefineries. From Steam Biomethane Reforming to Dark Fermentation</i>
12:30 – 13:00	keynote lecture 11: prof. Mikihiro Nomura <i>Hydrogen Production From an Organic Hydride by Using Zeolite Membrane Reactor</i>
13:00 – 13:45	lunch break
13:45 – 15:45	session 10: poster session chairperson: dr. Alicja Klimkowicz / dr. Marcin Moździerz
16:00 – 16:30	closing ceremony

poster session

E301	Reina Akiya, Mikihiro Nomura	Ethanol Decomposition Through MFI Zeolite Membranes
E302	Tomasz Drag, Shinji Kimijima, Marcin Moździerz	Improving Steam Methane Reforming with the Use of Fins
E303	Towa Horiguchi, Narito Ishii, Marcin Moździerz, Mikihiro Nomura	Hydrophobic Ceramic Hybrid Membranes for Membrane Distillation
E304	Kazuma Ishida, Paolo Mele, Esmail Doustkah,	Pulsed Laser Deposition of WO ₃ /ZrO ₂ Bilayer Thin Films for Photoelectrochemical Hydrogen Production

	Fatih Uçar, Sarp Kaya, Alicja Klimkowicz, Łukasz Gondek	
E305	Itsuki Ito, Shoma Tanaka, Jakub Szczurowski, Mikihiro Nomura	CO2 Adsorption on Novel Layered Materials
E306	Kyogo Koyama, Kousei Nakaya, Fuka Hoshino, Mai Itabashi, Mikihiro Nomura	Silica Titania Hybrid Membranes for Hydrogen Separation
E307	Michał Mytkowski, Takashi Tsuchimochi, Tomasz Aleksander Prokop	An Analysis of Microstructure-Scale Transport Phenomena in a Solid Oxide Fuel Cell
E308	Yuta Nakai, Mikihiro Nomura, Izabela Rzeznicka, Alvin Rahmad Widyanto	Water Permeation From IPA Solution Containing Sodium Chloride Through MOR Zeolite Membranes
E309	Kajetan Nowak, Jacek Leszczynski, Toshiya Hirose	Machine Learning in Methane Detection from Satellite Data
E310	Zofia Pizon, Shinji Kimijima, Grzegorz Brus	A Data-Augmented Random Forest Approach to Unified Equilibrium and Kinetic Modeling of Methane Steam Reforming
E311	Magdalena Prajsner, Izabela Rzeznicka, Marcin Moździerz	Simulation of Sintering Process of Sm _{0.5} Ba _{0.25} Sr _{0.25} Co _{0.5} Cu _{0.5} O _{3-δ} (SBSCCO) Nanofibers Using Monte Carlo Method
E312	Haruki Sato, Grzegorz Brus, Mikihiro Nomura	Gas Permeation Through Boron Nitride Based Membranes
E313	Yuka Shimizu, Marcin Moździerz, Grzegorz Brus, Shinichi Ookawara, Mikihiro Nomura	Temperature Control of CO ₂ Methanation by Using Distributor Type Membrane Reactor
E314	Dawid Szemraj, Elżbieta Fornalik-Wajs, Hiroyasu Saitoh	Numerical Analysis of Detonation Space Shape Influence on Shock Waves Propagation
E315	Oskar Śledź, Szymon Buchaniec, Hiroshi Hasegawa	Modelling and Analysis of the Grid Connected Photovoltaic System
E316	Paweł Wiącek, Hiroyasu Saitoh, Grzegorz Brus	Application of Convolutional Neural Network for Gas Leak Detection Using Thermal Imaging
E317	Aleksander Woźniak, Katarzyna Szramowiat- Sala, Toshiya Hirose	From Traditional Methods to Intelligent Control – A Comparison of Algae Cultivation Strategies With a Focus on Reinforcement Learning
E318	Patryk Wyszynski, Elżbieta Fornalik-Wajs, Izabela Rzeznicka	Creasing Influence on the Microstructure Morphology of SBS and FBB Paperboards
E319	Michał Zańczak, Manabu Tange, Marek Jaszczur	Numerical Analysis of Air-Water Flow in Horizontal Duct

P01	Greg Bond III, Marek Jaszczur, Manabu Tange	An Analysis of the Hydro-Kinetic Turbine for Free Flow Conditions
P02	Yuting Guo, Ryosuke Tomie, Taiyo Taniuchi, Masashi Kishimoto, Hiroshi Iwai	Development of Machine Learning Force Fields for Ni-YSZ Anode Based on Ab Initio Molecular Dynamics
P03	Narito Ishii, Towa Horiguchi, Mikihiro Nomura	Novel Hydrophobic Ceramic Membranes for Water Vapor Permeation
P04	Mai Itabashi	Hydrogen Permeation Through Silica Membranes Prepared by Using 2 Steps Deposition Method
P05	Hiroshi Iwai, Masashi Kishimoto	Three-Dimensional Numerical Analysis of Cross-Electrode Interaction in Solid Oxide Fuel Cells With Thin Electrolytes
P06	Marek Jaszczur, Julia Onochin	Thermal Analysis of a Borehole Heat Exchanger with Non-Concentric Pipe Configurations
P07	Roi Matsuo, Natkrit Kongphichphan, Mikihiro Nomura	MTO Reaction Using MFI Zeolite
P08	Izabela Rzeznicka, Mariusz Grabda, Hideyuki Horino	Properties of Lignin-Derived Carbons for Electrochemical Energy Conversion and Storage
P09	Shoma Tanaka, Mikihiro Nomura	Preparation of MgO for High Temperature CO ₂ Adsorption
P10	Junyi Tao, Takaaki Shimura, Zhufeng Ouyang, Gao Yao, Yosuke Komatsu, Anna Sciazko, Takao Okabe, Katsuhiko Nishimura, Naoki Shikazono	Prediction of Local Oxygen Partial Pressure in Patterned Ni-YSZ Fuel Electrodes of Solid Oxide Fuel Cells
P11	Taichi Tomizuka, Tokuto Tatsujima, Mikihiro Nomura	Hydrogen Production by Using Hybrid Sulfur System
P12	Myu Yamauchi, Haruki Kurata, Mikihiro Nomura, Irmaliza Shafitri Caralin	Ethanol Permeation Through MFI Zeolite Membranes
P13	Gao Yao, Yosuke Komatsu, Anna Sciazko, Takao Okabe, Katsuhiko Nishimura, Junyi Tao, Naoki Shikazono	Effect of Ni Dissolution on Ni-YSZ Electrodes in Solid Oxide Cells Under Electrolysis Mode