28 Oct. (Day 2)

Oral Session: Thermal energy conversion and storage (1)

13:00-15:00 Room B

Chairs: TBD
TBD

1B11 13:00-13:20
Development of sintered metal oxide pellets with enhanced heat storage kinetics and cycling stability
Soomin CHOI[1], Gahyeon LEE[1], Hye Ri KIM[1], Jinsil LEE[1], Seong Eun KIM[2], Seoyoung JANG[1], Huijeong HWANG[1], Sungkook HONG[2], Jong Hoon JOO[1]
[1]Department of Environment and Energy Engineering/ Gwangju Institute of Science and Technology, [2]Korea Institute of Energy Research, Daejeon 34129, Republic of Korea

1B12 13:20-13:40
Demonstration of Cu-Mn composite oxides honeycomb structure module for medium-high temperature thermochemical energy storage
Xiaoyu CHEN[1, 2], Mitsuhiro KUBOTA[2], Shigehiko FUNAYAMA[1], Hiroki TAKASU[1], Yukitaka KATO[1], Hideki KITA[2]
[1]Laboratory for Zero-Carbon Energy, Institute of Integrated Research, Institute of Science Tokyo, Japan, [2]Department of Chemical Systems Engineering, Graduate School of Engineering, Nagoya University, Japan

1B13 13:40-14:00
Thermochemical reaction system for industrial heat recovery and heat transformation
Aldo COSQUILLO MEJIA[1], Rakesh SHARMA[2], Jana STENGLER[3], Marc LINDER[3]
[1]Institute of Engineering Thermodynamics, German Aerospace Center (DLR), Linder Höhe, 51147 Cologne, Germany,
[2]Department of Mechanical and Industrial Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal 576104, India,
[3]Institute of Engineering Thermodynamics, German Aerospace Center (DLR), Pfaffenwaldring 38-40, Stuttgart, 70569, Germany

1B14 14:00-14:20
Constant power output of salt hydrate based thermochemical reactors: simple design rules
Henk HUININK[1], Stan DE JONG[1], Chris VAN HAM[1], Quinten PEETERS[1], Olaf ADAN[1, 2]
[1]Eindhoven University of Technology, [2]TNO

1B15 14:20-14:40
Entropy generation analysis of calcium oxide hydration in an indirect fixed-bed reactor for thermochemical energy storage
Shigehiko FUNAYAMA, Tsuyoshi IZAKI, Hana SAEKI, Satoshi TOSHIMA, Kanta SATO, Takashi KATO, Hiroki TAKASU, Yukitaka KATO
Institute of Science Tokyo

1B16 14:40-15:00
Evaluation of advanced electrochemical techniques for improved monitoring control in sorption materials for TES systems
Angel G. FERNANDEZ, Jalel LABIDI
Department of Chemical and Environmental Engineering, University of the Basque Country

Oral Session: Thermal energy conversion and storage (2)

15:30-17:50 Room B

Chairs: TBD
TBD

1B17 15:30-15:50
A new general analytical model for microgroove-based absorbers in sorption heat transformers
Mahyar ASHOURI, Salman HASSANABADI, Callum CHHOKAR, Majid BAHRAMI
Laboratory for Alternative Energy Conversion (LAEC), School of Mechatronic Systems Engineering, Simon Fraser University

1B18 15:50-16:10
AI-Assisted High-Throughput Screening of Cement-Based Composites for Sorption Thermal Energy Storage
Alessio MONDELLO[1], Giulio BARLETTA[1], Luca LAVAGNA[2], Matteo FASANO[1], Matteo PAVESE[2], Eliodoro CHIAVAZZO[1, 3]
[1]*Department of Energy, Politecnico di Torino,*
[2]*Department of Applied Science and Technology, Politecnico di Torino,*
[3]*Istituto Nazionale di Ricerca Metrologica*

1B19 16:10-16:30
Experimental screening of zeolites for application in an industrial sorption tumble dryer
Henri SCHMIT, Tobias SCHUBERT, Lävemann EBERHARD, Stefan HIEBLER
ZAE Bayern

1B20 16:30-16:50
Performance of Coated vs. Loose Grain Composite for Chiller Application
Salman HASSANABADI, Ilya S GIRNIK, Majid BAHRAMI
Laboratory for Alternative Energy Conversion (LAEC), School of Mechatronic Systems Engineering, Simon Fraser University, Canada

1B21 16:50-17:10
Enhancement of the structural and thermal properties of Al-Cu-Si phase change materials for efficient thermal energy storage
Joshua Chidiebere MBA, Takahiro NOMURA
Hokkaido University

1B22 17:10-17:30
Experimental Study of a counterflow system bench scale packed-bed latent heat storage unit with Al-Si based PCM pellets
Tomokazu NAKAMURA[1], Yusuke SATO[1], Yuto SHIMIZU[1], Cholila TAMZYSI[1], Lianying SHAN[2], Justin Ningwei CHIU[2], Shoma FUJII[3], Takahiro NOMURA[1]
[1]*Faculty of Engineering, Hokkaido University,*
[2]*Department of Energy Technology, KTH Royal Institute of Technology,*
[3]*Institute for Future Initiatives, The University of Tokyo*

1B23 17:30-17:50
Microencapsulation of high-temperature alloy-based phase change materials utilizing oxide ion conductors for robust shell formation
Koji TAKIZAWA[1], Noritoshi YAGIHASHI[1], Yuki NAKAMA[1], Yuto SHIMIZU[2], Tomokazu NAKAMURA[2], Melbert JEEM[2], Takahiro NOMURA[2]
[1]*Sekisui Chemical Co., Ltd.,*
[2]*Faculty of Engineering, Hokkaido University*

Oral Session: Energy Storage and Transformation/Energy Carriers

13:00-14:40 Room C

Chairs: TBD
TBD

1C11 13:00-13:20
A water-based lithium-ion solid-state battery with an easy direct-recycling system
Shintaro YASUI, Yosuke SHIRATORI
Institute of Science Tokyo

1C12 13:20-13:40
Experiments and calculations of Thermal Energy Storage (TES) with rock bed and evaluation of radiant heater effectiveness
Takashi MAWATARI[1], Masayuki SATO[1], Koichi GOTO[1], Hiroshi SAEKI[1], Masato FUKUTA[1], Chikako IWAKI[1], Hiromutsu MIKI[1], Naoya MATSUDA[2]
[1]Toshiba Energy Systems & Solutions Corporation,
[2]Chubu Electric Power Co., Inc.

1C13 13:40-14:00
Temperature-Programmed and In Situ Spectroscopic Approaches to Correlate Graphitization Degree and Kinetic Behavior of Cs-Promoted Ru Catalysts in Ammonia Synthesis
Li Yu WANG[1], Shih Yuan CHEN[2], Takehisha MOCHIZUKI[2], Chia Min YANG[1]
[1]Department of Chemistry, National Tsing Hua University,
[2]Energy Catalyst Technology Group, National Institute of Advanced Industrial Science and Technology

1C14 14:00-14:20
Kinetics and reactor design of chemical looping hydrogen production process using ilmenite-based oxygen carriers
Zhuang SUN, Junichiro OTOMO
Institute of Science Tokyo

1C15 14:20-14:40
Investigating the role of defect transport in $BaZr_{0.1}Ce_{0.7}Y_{0.1}Yb_{0.1}O_{3-\delta}$ for electrochemical ammonia decomposition
Julian Andres ORTIZ CORRALES, Moe OKAZAKI, Shiho OTOMO, Junichiro OTOMO
Department of Transdisciplinary Science and Engineering, School of Environment and Society, Institute of Science Tokyo

Oral Session: LCA, Technoeconomic analysis, Energy system design and evaluations

15:30-16:50 Room C

Chairs: TBD
TBD

1C17 15:30-15:50
Carbon Independence Vision: Circular Transformation from Hard-to-Abate Industries
Yutaro NIIMI[1], Yoshiko TSUJI[2], Michihisa KOYAMA[3], Yoshihiro MIZUGUCHI[4]
[1]SUMITOMO MITSUI TRUST BANK,
[2]Environmental Science Center, The University of Tokyo,
[3]Institute for Aqua Regeneration, Shinshu University,
[4]JGC Holdings Corporation

1C18 15:50-16:10
Assessing greenhouse gas emissions reduction of amine-based post-combustion: impact of system boundary and energy production
Koki YAGIHARA, Tsai-Wei WU, Gakuto SO, Hajime OHNO, Yasuhiro FUKUSHIMA
Department of Frontier Sciences for Advanced Environment, Tohoku University

1C19 16:10-16:30
Day Ahead Dispatch for CSP Plants via Reinforcement Learning: A Chilean Case Study with Metaheuristic Benchmarks
Cristóbal Andrés PARRADO, Jose Luis MUñOZ
Energy Transformation Center, Andres Bello University

1C20 16:30-16:50
Feasibility study of renewable hydrogen supply chain from India to Japan
Akira NISHIMURA, Hayato NARUSE, Masataka NORO, Sentaro TOMITA
Division of Mechanical Engineering, Graduate School of Engineering, Mie University

Oral Session: Materials for Energy (1)

13:00-15:00 Room D

Chairs: TBD
TBD

1D11 13:00-13:20
Advancing Thermochemical Energy Storage with Novel Salt Hydrates
Candida MILONE, Emanuela MASTRONARDO, Luigi CALABRESE, Emanuele PREVITI, Edoardo PROVERBIO
Engineering Department, University of Messina

1D12 13:20-13:40
Solid Sorbent-Filled Sulfonated Polymer Composites: A Coating Approach for Thermochemical Energy Storage
Davide PALAMARA[1], Mengistu GELAW[1, 2], Emanuela MASTRONARDO[1], Andrea FRAZZICA[3], Edoardo PROVERBIO[1], Candida MILONE[1], Luigi CALABRESE[1, 3]
[1]Department of Engineering, University of Messina, Contrada di Dio Sant'Agata, 98166 Messina, Italy,
[2]Department of Mechanical Engineering, School of Mechanical, Chemical and Materials Engineering, Adama Science and Technology University, Adama, Ethiopia 1888,
[3]CNR ITAE "Nicola Giordano" - Institute of Advanced Technologies for Energy, Via Salita S. Lucia sopra Contesse 5, 98126 Messina, Italy

1D13 13:40-14:00
Comparative Analysis of Impregnation Techniques for $CaCl_2$/Silica Gel Composites in Thermal Energy Storage
Emanuela MASTRONARDO[1], Antonio FOTIA[2], Vincenza BRANCATO[2], Andrea FRAZZICA[2], Luigi CALABRESE[1, 2]
[1]University of Messina, [2]CNR ITAE

1D14 14:00-14:20
Synthesis of Highly Crystalline Graphitic Carbon via Hydrothermal Carbonization of Japanese Cedarwood with Ferric Ion Impregnation
Preethi PERIANAYAGAM[1], Yuta NAKAYASU[1, 2], Futa IMAIZUMI[1], Takashi ITOH[2], Masaru WATANABE[1]
[1]Department of chemical engineering, Tohoku University,
[2]Frontier Research Institute for Interdisciplinary Sciences (FRIS), Tohoku University

1D15 14:20-14:40
Evaluating Molten-Salt Compatibility of Waste-Based Materials for Thermal Energy Storage Applications
Halime Omur PAKSOY[1], Burcu KOCAK[1], Alejandro CALDERóN[2], Camila BARRENECHE[2], Gulfeza KARDAS[1], Ana Ines FERNANDEZ[2]
[1]Cukurova University,
[2]Universitat de Barcelona

1D16 14:40-15:00
Scaling-up Composite Phase Change Materials Manufacturing for Thermal Energy Storage: from Lab to Industrial Production Scale
Maria Elena NAVARRO RIVERO, Abdalqader AHMAD, Yelaman MASKUM, Yulong DING
University of Birmingham

Oral Session: Low carbon technologies (1)

15:30-17:30 Room D

Chairs: TBD
TBD

1D17 15:30-15:50
Analyses on Costs and Potentials of Carbon Dioxide Removal (CDR) Technologies
Keigo AKIMOTO, Fuminori SANO, Hiroshi HARADA, Noritaka MOCHIZUKI, Takahiro NAGATA
Systems Analysis Group, Research Institute of Innovative Technology for the Earth (RITE)

1D18 15:50-16:10
Distributed energy systems based on ammonia and hydrogen utilization
Ryo YOSHIIE[1], Nobusuke KOBAYASHI[1], Shinji KAMBARA[2]
[1]Gifu Renewable Energy System Research Center, Gifu University,
[2]Faculty of Engineering, Gifu University

1D19 16:10-16:30
CO2 capture performance of calcium oxide-based composite over repeated carbonation and decarbonation cycles
Kenta TOMITA, Tsuyoshi IZAKI, Yue GUO, Shigehiko FUNAYAMA, Hiroki TAKASU, Kato YUKITAKA
Institute of Science Tokyo

1D20 16:30-16:50
Multi-stage structured catalyst system with powerfully converting GHG: Innovative CO_2 recycling system for carbon neutralization
Choji FUKUHARA, Yuki YAMADA, Yu NAKAZAWA, Hiroto NAIKI, Hiroshi AKAMA, Ryo WATANABE
College of Engineering, Academic Institute, Shizuoka University

1D21 16:50-17:10
Carbon-free hydrogen production test project with high temperature heat from high temperature gas-cooled reactor
Masato ONO[1], Katsunori ISHII[1], Hiroki NOGUCHI[1], Hiroyuki SATO[2], Nariaki SAKABA[2]
[1]HTGR hydrogen utilization group, HTGR project management office, Japan Atomic Energy Agency,
[2]HTGR project management office, Japan Atomic Energy Agency

1D22
17:10-17:30

Exploring the Potential of Molten Chloride Fast Reactor as a Versatile Zero-Carbon Energy System

Andika Putra DWIJAYANTO[1], Tomohiro OKAMURA[1, 2], Kenji NISHIHARA[3], Masahiko NAKASE[1, 2]

[1]*Graduate Major in Nuclear Engineering, Department of Transdisciplinary Science and Engineering, School of Environment and Society, Institute of Science Tokyo,*
[2]*Laboratory for Zero Carbon Energy, Institute of Integrated Research, Institute of Science Tokyo,*
[3]*Research Group for Nuclear Transmutation System, Japan Atomic Energy Agency*

29 Oct. (Day 3)

Oral Session: Thermal energy conversion and storage (3)

9:00-10:20 Room B

Chairs: TBD
TBD

2B01 9:00-9:20

Synthesis of macro-mesoporous salt-silica composite tablets for salt heat batteries

Dasol CHOI[1, 2], Heiner FRIEDRICH[2], Olaf ADAN[1, 3], Henk HUININK[1]

[1]Department of Applied Physics and Science Education, Eindhoven University of Technology,
[2]Department of Chemical Engineering & Chemistry, Eindhoven University of Technology, The Netherlands,
[3]TNO Materials Solution, The Netherlands

2B02 9:20-9:40

EXPERIMENTAL PROOF OF A THERMAL SYSTEM FOR COOLING AND STORAGE APPLICATIONS EMPLOYING CaCl2/SILICA GEL COMPOSITE ADSORBENT

Valeria PALOMBA[1], Andrea FRAZZICA[1], Vincenza BRANCATO[1], Antonino BONANNO[1], Yannan ZHANG[2], Matteo CALò[3, 4], Gabriele PENELLO[4], Walter MITTELBACH[4], Gabriel YARCE[4]

[1]National Research Council of Italy – Institute for Advanced Energy Technologies (CNR-ITAE), Salita S.Lucia sopra Contesse 5, 98126 Messina, Italy,
[2]School of Materials and Energy, Guangdong University of Technology, Guangzhou, 510006, China,
[3]Politecnico di Torino, Department of Energy. Turin, 10129, Italy,
[4]Sorption Technologies GmbH. Freiburg, 79098, Germany

2B03 9:40-10:00

Integration of ionic liquid in electrospun tissues for energy applications

Angela MALARA, Paolo BRUZZANITI, Patrizia FRONTERA, Chiara NUNNARI, Lucio BONACCORSI

Mediterranea University of Reggio Calabria, Dept. DICEAM

2B04 10:00-10:20

Tailored halide salt mixtures for thermochemical reactions

Jake A LOCKE, Robert E CRITOPH, George S F SHIRE, Steven J METCALF

University of Warwick

Oral Session: Thermal energy conversion and storage (4)

10:40-12:00 Room B

Chairs: TBD
TBD

2B05 10:40-11:00

Stability and adsorption performance of adsorbent composites for low temperature cooling and air conditioning applications

Angelo FRENI[1], Emanuela PITZALIS[1], Francesca NARDELLI[2], Roberto SPINIELLO[1], Giorgio TOMAINO[3], Silvia PIZZANELLI[1], Davide PALAMARA[4], Antonio FOTIA[5], Luigi CALABRESE[1, 4], Vincenza BRANCATO[5], Matteo CALò[6], Stefano DE ANTONELLIS[1, 3], Claudio EVANGELISTI[1], Walter MITTELBACH[6]

[1]CNR ICCOM – Institute of Chemistry of Organo Metallic Compounds, Pisa, Italy,
[2]Department of Chemistry and Industrial Chemistry, University of Pisa,
[3]Department of Energy, Politecnico di Milano, Italy,
[4]Department of Engineering, University of Messina, Italy,
[5]CNR ITAE– Institute of Advanced Technologies for Energy "Nicola Giordano", Messina, Italy,
[6]Sorption Technologies GmbH, Freiburg, Germany

2B06 11:00-11:20

Numerical model of the sand-based thermal energy storage system for an industrial process

Toshiaki FUKADA

Energy Transformation Research Laboratory, Central Research Institute of Electric Power Industry

2B07 11:20-11:40

Demonstrations conducted at a waste treatment plant of an off-grid organic Rankine cycle power generation system contributing to a decarbonised society

Satoshi ENDO[1], Tadanobu AIZAWA[1], Toshimitsu ONO[1], Isao HAYASE[2], Toshihiko FUKUSHIMA[2], Hirokatsu KOSOKABE[2], Naoki SHIKAZONO[2], Hiroshi SONE[3], Keisuke URA[3], Tomoko HIRAYAMA[4], Iwa OU[5], Tomoya HASEGAWA[5], Yuichiro TOKUNAGA[5], Katsuhiro OYAMA[6]

[1]Mabuchi Engineering Co.,Ltd.,
[2]Institute of Industrial Science, The University of Tokyo,
[3]Industrial Technology Institute, Miyagi Prefectural Government,
[4]Kyoto University,
[5]Eagle Industry Co., LTD.,
[6]Japan Sustainable Free Powered Energy System Exploit & Promotion Association

2B08 11:40-12:00

Performance Comparison of a Heat Exchanger with Various Composite Materials in Low-Grade Sorption Desalination

Antonio FOTIA, Valeria PALOMBA, Vincenza BRANCATO, Andrea FRAZZICA

National Research Council of Italy, Institute for Advanced Energy Technologies "N.Giordano" (CNR-ITAE)

Oral Session: Electric energy conversion and storage (1)

9:00-10:20 Room C

Chairs: TBD
TBD

2C01 9:00-9:20
Mitigating Mechanical Degradation in Silicon-Based Electrodes: A Discrete Element Method Study
Magnus SO, Takeru YANO, Shusaku ASANO, Koki SATO, Gen INOUE
Department of Chemical Engineering, Faculty of Engineering, Kyushu University

2C02 9:20-9:40
High-Performance Electrolyte Membrane Exhibiting Low Ohmic Resistance for Redox Flow Batteries
Hirokazu ISHITOBI[1], Ryusuke OBATA[2], Naruya SUGIURA[3], Hidenori OHASHI[4], Nobuyoshi NAKAGAWA[5]
[1]Department of Applied Chemistry, Meiji University,
[2]Department of Environmental Engineering Science, Gunma University,
[3]Department of Chemical Engineering, Tokyo University of Agriculture and Technology,
[4]Department of Applied Physics and Chemical Engineering , Tokyo University of Agriculture and Technology,
[5]Program of Chemical Engineering, Gunma University

2C03 9:40-10:00
Utilisting magnetic materials and their magnetic entropy change for energy harvesting systems
Hikaru KIYOMOTO[1], Yuka SAKAI[2], Yasuki KANSHA[2]
[1]Department of Multidisciplinary Sciences, Graduate School of Arts and Sciences, The University of Tokyo,
[2]Organization for Programs on Environmental Sciences Graduate School of Arts and Sciences, The University of Tokyo

2C04 10:00-10:20
Metamaterial Adhesives-Based Triboelectric Nanogenerator for Enhanced Electricity Generation and Adhesion
Hoon E. JEONG[1], Hee Jin LEE[1], Dong Kwan KANG[1], Moon Kyu KWAK[2], Hosup JUNG[3], Yeonghwan SON[3]
[1]Department of Mechanical Engineering, UNIST,
[2]Department of Mechanical Engineering, Kyungpook National University,
[3]Department of Rural Systems Engineering, Seoul National University

Oral Session: Electric energy conversion and storage (2)

10:40-12:00 Room C

Chairs: TBD
TBD

2C05 10:40-11:00
Support-Free Connected Nanoparticle Electrocatalysts with Enhanced Oxygen Reduction Performance in Polymer Electrolyte Fuel Cells
Hidenori KUROKI, Takeo YAMAGUCHI
Laboratory for Chemistry and Life Science, Institute of Science Tokyo

2C06 11:00-11:20
Controlling of the mass transport in the direct formic acid fuel cell using a catalyst ink with different particle distributions
Takuya TSUJIGUCHI[1], Madihah Binti MISKAN[1], Kakeru FUJIWARA[2], Yugo OSAKA[1], Akio KODAMA[2], Mototake FURUHASHI[3]
[1]*Faculty of Mechanical Engineering, Institute of Science and Engineering, Kanazawa University,*
[2]*Institute for Frontier Science Initiative, Kanazawa University,*
[3]*Sustainable System Research Dept. Environment & Energy lab., JTEKT*

2C07 11:20-11:40
Ruthenium and Copper-Doped Advanced Binary Hydroxide OER Electrocatalysts for Efficient Alkaline Water Electrolysis
Gulfeza KARDAS[1], Goncagül AKSARAY[1], Yakubu Sawadogo ADAM[1], Ender FAKı[1], Murat FARSAK[2]
[1]*Cukurova University,*
[2]*Osmaniye Korkut Ata University*

2C08 11:40-12:00
Suppression Technique of Sputtering Damage for High-Efficient Perovskite/ CIGSe Tandem Solar Cells
Takahito NISHIMURA[1], Chihiro MIZUSHIMA[2], Ryousuke ISHIKAWA[2], Akira YAMADA[1]
[1]*Department of Electrical and Electronic Engineering, Institute of Science Tokyo,*
[2]*Department of Electrical, Electronic and Communication Engineering, Tokyo City University*

Oral Session: Low carbon technologies (2)

9:00-10:20 Room D

Chairs: TBD
TBD

2D01 9:00-9:20
Conversion of CO2, water and power to CO and O2 by the SPE electrolysis with Co-P4VPy/KB(673K) cathode
Ichiro YAMANAKA, Takahiro HASEGAWA, Jessica SAEKI, Shogo SASAKI, Ryuhei KOJIMA, Masanori YAMAMOTO
Department of Chemical Science and Technology, Institute of Science Tokyo

2D02 9:20-9:40
Urea Production by Pulsed-DBD Plasma
Muhammad Miftahur RAHMAN, Shinji KAMBARA, Ryou YOSHIIE
Gifu University

2D03 9:40-10:00
Green Hydrogen Production using Photovoltaic-Electrolysis
Ryo Samuel AMANO, Hamza ALNAWAFAH
University of Wisconsin

2D04 10:00-10:20
Study on the introduction scenario of innovative fast chloride molten salt reactors for the realization of a zero-carbon society
Masahiko NAKASE, Andika Putra DWIJAYANTO, Tomohiro OKAMURA, Kenji NISHIHARA
Zero-carbon Energy Laboratory, Insitute of Science Tokyo

Oral Session: Low carbon technologies (3)

10:40-12:00 Room D

Chairs: TBD
TBD

2D05 10:40-11:00
Co-generation of electricity and water: adsorptive water harvesting analyzed by a modified Mollier diagram
Yuri I. ARISTOV, Larisa G. GORDEEVA
Boreskov Institute of Catalysis

2D06 11:00-11:20
Machine Learning Aided Prediction of CO Adsorption on Multi-elemental Nanoparticle
Susan Menez ASPERA, Gerardo VALADEZ HUERTA, Yusuke NANBA, Kaoru HISAMA, Michihisa KOYAMA
Research Initiative for Supra-Material (RISM), Shinshu University

2D07 11:20-11:40
Phase transition–induced CO_2 capture behavior in lithium-sodium borate melts
Shiyi ZANG, Takuya HARADA
Division of Chemical Science and Engineering, Department of Chemical Science and Engineering, Institute of Science Tokyo

2D08 11:40-12:00
Acceleration of Gas Absorption Rate by Continuously Formed Liquid Film on Spinning Cylindrical Column
Hiroshi NOGAMI[1], Naoya IZUCHI[2], XiangYu GAO[2], Kenji ISHIHARA[2], Akihisa ITO[1]
[1]Institute of Multidisciplinary Research for Advanced Materials, Tohoku University,
[2]Graduate School of Engineering, Tohoku University

30 Oct. (Day 4)

Oral Session: Energy processes and material properties (1)

9:00-10:20 Room B

Chairs: TBD
TBD

3B01 9:00-9:20
Evaluation of high entropy alloys as structural material in Gen 3 of CSP plants using high-stability molten salt storage materials
Angel G. FERNANDEZ, Teresa GURAYA
Department of Chemical and Environmental Engineering, University of the Basque Country

3B02 9:20-9:40
Microstructural change in Fe-Cr-Ni alloys by high-temperature hydrogen exposure
Satoru KOBAYASHI, Yuki TSUDA
School of Materials and Chemical Technology, Institute of Science Tokyo

3B03 9:40-10:00
Kinetics of smelting reduction process of iron oxide by CO gas
Yoshinao KOBAYASHI, Kentaro URATA
Laboratory for Zero Carbon Energy, Institute of Integrated Research, Institute of Science Tokyo

3B04 10:00-10:20
Experimental and numerical analysis of calcium hydroxide dehydration under microwave heating in a single-mode resonant cavity
Massimiliano ZAMENGO, Junko MORIKAWA
Department of Materials Science and Engineering, Institute of Science Tokyo

Oral Session: Energy processes and material properties (2)

10:40-12:20 Room B

Chairs: TBD
TBD

3B05 10:40-11:00
Experimental determination of melting enthalpies of semicongruent salt hydrates for latent heat thermal energy storage
Henri SCHMIT, Stefanie TAFELMEIER, Christoph RATHGEBER, Stefan HIEBLER
ZAE Bayern

3B06 11:00-11:20
Effect of liquid subcooling on bubble formation in low–pressure pool boiling of water on a single tube
Dominika KACZMAREK, Tomasz HALON, Bartosz ZAJACZKOWSKI
Wroclaw University of Science and Technology, Department of Thermal Sciences

3B07 11:20-11:40

Insight into selective permeability of polymeric hollow fibres for lightweight heat exchangers

Frantisek MIKSIK[1], Yoshiaki KAWAJIRI[1], Kyaw THU[2], Takahiko MIYAZAKI[2], Erik BARTULI[3], Katerina MAYEROVA[3], Jaroslav LONGAUER[4]

[1]*Institute of Innovation for Future Society, Nagoya University,*
[2]*Interdisciplinary Graduate School of Engineering Sciences, Kyushu University,*
[3]*Faculty of Mechanical Engineering, Brno University of Technology,*
[4]*Institute of Materials and Machine Mechanics, Slovak Academy of Sciences*

3B08 11:40-12:00

Numerical Analysis of the Denitration Reaction under Microwave Heating in a Single Mode Resonant Cavity

Massimiliano ZAMENGO[1], Hidetoshi KAWABATA[2], Makoto DOI[2], Takashi NAKAYAMA[3], Yuji WADA[1], Junko MORIKAWA[1]

[1]*Department of Materials Science and Engineering, Institute of Science Tokyo ,*
[2]*JFE Engineering,*
[3]*General Incorporated Association ZeroC*

3B09 12:00-12:20

A Combined GRRM/MC/MD Simulation Study on Bond Exchange in Epoxy Vitrimers

Kaiwen LI[1], Yingxiao XI[3], Naoki KISHIMOTO[3], Gota KIKUGAWA[2]

[1]*Department of Finemechanics, Graduate School of Engineering, Tohoku University,*
[2]*Institute of Fluid Science, Tohoku University,*
[3]*Department of Chemistry, Tohoku University*

Oral Session: Materials DX (digital transformation), Data-driven approach, Materials informatics (1)

9:00-10:20 Room C

Chairs: TBD
TBD

3C01 9:00-9:20

Mapping Thermoelectric Materials Using Machine Learning on Integrated Computational and Experimental Datasets

Yusuke HASHIMOTO, Xue JIA, Hao LI, Takaaki TOMAI

Tohoku University

3C02 9:20-9:40

Theoretical study of amine–CO_2 system with kinetics simulations utilizing DFT calculations

Toru YAMAGUCHI[1], Hidetaka YAMADA[2], Syohei SANADA[1], Kenji HORI[1, 3, 4]

[1]*Division of Computational Chemistry, Transition State Technology Co. Ltd.,*
[2]*Frontier Science and Social Co-creation Initiative, Kanazawa University,*
[3]*Interdisciplinary Research Center for Catalytic Chemistry, National Institute of Advanced Industrial Science and Technology,*
[4]*Faculty of Engineering, Yamaguchi University*

3C03 9:40-10:00

CO Adsorption on Supported Monometallic Nanoparticles: Influence of the Support Effect

Gerardo VALADEZ HUERTA, Susan Meñez ASPERA, Yusuke NANBA, Kaoru HISAMA, Michihisa KOYAMA

Shinshu University

3C04 10:00-10:20

Estimation of Kinematic Viscosity for Multicomponent Mixtures using Neural Network with Gradient Constraints

Yuya MURAKAMI, Atsushi HATOYAMA
Department of Applied Chemistry and Biochemical Engineering, Faculty of Engineering, Shizuoka University

Oral Session: Materials DX (digital transformation), Data-driven approach, Materials informatics (2)/Environment and Biomass energy technologies

10:40-12:20 Room C

Chairs: TBD
TBD

3C05 10:40-11:00

A Data-Driven Model for Forecasting Thermal Load in District Energy Networks

Naghme KHEYRIKOOCHAKSARAYEE[1], Mina ROUHANI[2], Majid BAHRAMI[1]
[1]*School of Mechatronic Systems Engineering, Simon Fraser University, Surrey, BC, Canada,*
[2]*City of Surrey, Surrey, BC, Canada*

3C06 11:00-11:20

High-Throughput Computational Discovery of Stable Multi-Component Ni-Rich Cathodes Enabled by Universal Neural Network Potentials

Tien Quang NGUYEN[1], Nobuyuki ZETTSU[1,2], Michihisa KOYAMA[1]
[1]*Institute for Aqua Regeneration, Shinshu University,*
[2]*Department of Materials Chemistry, Faculty of Engineering, Shinshu University*

3C07 11:20-11:40

Practical Application of Gold Extraction Solvents with High Extractability and Low Water Solubility by Machine Learning

Takuto TSUNEMI[1], Tatsuya OSHIMA[2], Hiromasa KANEKO[1]
[1]*Department of Applied Chemistry, Graduate School of Science and Technology, Meiji University,*
[2]*Department of Applied Chemistry, Faculty of Engineering, University of Miyazaki*

3C08 11:40-12:00

Investigation of Descriptors for the Development of a High-Precision Cocrystal Prediction Model

Manato TAKEUCHI, Hiromasa KANEKO
Graduate School of Science and Technology, Meiji University

3C09 12:00-12:20

Development of an Energy-Positive Electrolysis System for Recycling Waste from Vegetable Oil Refining

Kousuke HIROMORI, Atsushi TAKAHASHI, Naomi SHIBASAKI-KITAKAWA
Department of Chemical Engineering, Tohoku University,

Oral Session: Materials for Energy (2)

9:00-10:20 Room D

Chairs: TBD
TBD

3D01 9:00-9:20
Learnings and shortcomings of nano-enhanced PCM and solid-solid PCM. Case studies
Ana Ines FERNANDEZ, Rebeca SALGADO-PIZARRO, Camila BARRENECHE, Adela SVOBODOVA-SEDLAKOVA
Department of Materials Science and Physical Chemistry, Universitat de Barcelona

3D02 9:20-9:40
Material-Based Design of Thermal Energy Storage: A Database of Sustainable Solid Particles
Adela SVOBODOVA, Marc MAJó, Alejandro CALDERóN, Mercè SEGARRA, A. Inés FERNáNDEZ, Camila BARRENECHE
Department of Material Science and Physical Chemistry, Chemistry Faculty, Barcelona University

3D03 9:40-10:00
Screening hydroxide/oxide reactive pairs for thermochemical energy storage at medium temperatures
Aleksandr SHKATULOV[1], Ionut TRANCA[2], Marc LINDER[3]
[1]*Iberian Center for Research in Energy Storage,*
[2]*Vrije Universiteit Brussel,*
[3]*German Aerospace Center, Institute of Engineering Thermodynamics*

3D04 10:00-10:20
Highly efficient atmospheric water harvesting enabled by hygroscopic zwitterionic hydrogel sponge
Xinge YANG, He SHAN, Zhihui CHEN, Ruzhu WANG
Institute of Refrigeration and Cryogenics, MOE Engineering Research Center of Solar Power and Refrigeration, Shanghai Jiao Tong University

Oral Session: Materials for Energy (3)

10:40-12:00 Room D

Chairs: TBD
TBD

3D05 10:40-11:00
The quest for power and stability – salt hydrates and thermochemical energy storage
Henk HUININK[1], Hartmut FISCHER[2], Olaf ADAN[1, 2]
[1]*Eindhoven University of Technology,*
[2]*TNO*

3D06 11:00-11:20
Calculating the matrix flood point to avoid salt leakage in sorption composites
Ilya S. GIRNIK, Claire MCCAGUE, Majid BAHRAMI
Simon Fraser University

3D08
11:20-11:40

Electrochemically prepared efficient and durable oxygen evolution reaction catalyst for anion exchange membrane water electrolysis

Sreekanth NARAYANARU[1], Hidenori KUROKI[1], Takanori TAMAKI[1], Anilkumar M GOPINATHAN[1, 2], Takeo YAMAGUCHI[1]

[1]*Institute of Science Tokyo,*
[2]*Noritake*

3D09
11:40-12:00

Production of LiFePO4 from Steelmaking Slag

Takayuki IWAMA[1], Junyi DENG[1], Huafang YU[2], Yasushi SASAKI[1], Ryo INOUE[1], Shigeru UEDA[1]

[1]*Tohoku University, Japan,*
[2] *University of Science and Technology Beijing, China*