MATERIALS CHALLENGES IN ALTERNATIVE AND RENEWABLE ENERGY (MCARE 2018)

CONFERENCE PROGRAM

August 20 – 23, 2018

Sheraton Vancouver Wall Centre Hotel | Vancouver, BC, Canada

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www.ceramics.org/mcare2018

Hosted and organized by:

The American Ceramic Society
www.ceramics.org

Also organized by:

KIChE
The Korean Institute of Chemical Engineers

WELCOME

Dear Colleagues and Friends,

Welcome to the Materials Challenges in Alternative & Renewable Energy Conference (MCARE 2018), organized by The American Ceramic Society (ACerS) and the Korean Institute of Chemical Engineers (KIChE). MCARE 2018, celebrating its 10th year, is a premier forum to address opportunities of emerging material technologies that support sustainability of a global society. MCARE 2018 brings together leading global experts from universities, industry, research and development laboratories, and government agencies to interact collaboratively and communicate materials technologies that address development of affordable, sustainable, environmentally friendly, and renewable energy conversion technologies.

There will be four plenary sessions, one to begin each day. Details of about each plenary lecture can be found on page iii. In addition, the conference includes technical sessions that address challenges and solutions in the areas of direct thermal-to-electric energy conversion and thermal energy harnessing; advanced electrochemical materials including batteries; spectral conversion materials; solar fuel production; next generation solar cell technology; solid oxide fuel cells and high temperature electrolysis; materials and processes for sustainable nuclear energy; lifecycle considerations of materials; and, super ultra-low energy and emission vehicles.

We are happy that you are here, appreciate your participation, and hope you enjoy the meeting.

ORGANIZING CO-CHAIRS


Tidrow

Steven Tidrow
Alfred University, USA


Hahn

Yoon-Bong Hahn
Chonbuk National University, Korea


Mathur

Sanjay Mathur
University of Cologne, Germany


Ohtaki

Michitaka Ohtaki
Kyushu University, Japan


Gaustad

Gabrielle Gaustad
Rochester Institute of Technology, USA

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Final Program

Welcome from The American Ceramic Society (ACerS)

The ACerS community is open to all, and we're happy to have you with us. ACerS values diverse and inclusive participation within the field of ceramic science and engineering. We strive to promote involvement and access to leadership opportunity regardless of race, ethnicity, gender, religion, age, sexual orientation, nationality, disability, appearance, geographic location, career path or academic level.

If you are a new member or joining us for the first time, please see the events available in this program, or visit the ACerS registration desk to learn more.

For all guests, if you need access to a nursing mother's room or other special needs, please ask us at the ACerS registration desk. For childcare services, please check with the hotel concierge for a listing of licensed and bonded caregivers.

We hope you enjoy the conference and want you to know that all individuals are welcome at ACerS conferences and events.

SCHEDULE-AT-A GLANCE

SUNDAY, AUGUST 19, 2018

Registration	4:00 p.m. – 7:00 p.m.	Grand Ballroom Foyer

MONDAY, AUGUST 20, 2018

Registration	7:00 a.m. – 5:30 p.m.	Grand Ballroom Foyer
Welcome and Plenary Session	8:15 a.m. – 9:10 a.m.	Grand Ballroom A, B
Concurrent Sessions	9:30 a.m. – 5:10 p.m.	Grand Ballroom A, B, C, D
Networking Lunch	12:10 p.m. – 1:30 p.m.	Junior Ballroom C, D
Welcome Reception	6:00 p.m. – 7:30 p.m.	Constellation Room (34th Fl)

TUESDAY, AUGUST, 21 2018

Registration	8:00 a.m. – 1:00 p.m.	Grand Ballroom Foyer
Plenary Session	8:30 a.m. – 9:10 a.m.	Grand Ballroom A, B
Concurrent Sessions	9:30 a.m. – 12:10 p.m.	Grand Ballroom A, B, C, D
Free Time	after 12:10 p.m.	

WEDNESDAY, AUGUST 22, 2018

Registration	8:00 a.m. – 5:30 p.m.	Grand Ballroom Foyer
Plenary Session	8:30 a.m. – 9:10 a.m.	Grand Ballroom A, B
Concurrent Sessions	9:30 a.m. – 5:00 p.m.	Grand Ballroom A, B, C, D
Poster Set-up	12:00 p.m. – 4:00 p.m.	Grand Ballroom Foyer
Networking Lunch	12:10 p.m. – 1:30 p.m.	Junior Ballroom D
KIChE/Korean Appreciation Luncheon	12:10 p.m. – 1:30 p.m.	Junior Ballroom C
Poster Session	5:30 p.m. – 7:30 p.m.	Grand Ballroom & Foyer

THURSDAY, AUGUST 23, 2018

Registration	8:00 a.m. – 12:10 p.m.	Grand Ballroom Foyer
Plenary Session	8:30 a.m. – 9:10 a.m.	Grand Ballroom A, B
Concurrent Sessions	9:30 a.m. – 12:10 p.m.	Grand Ballroom A, B, C, D

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KU SULEEV Korea University Super Ultra Low Energy and Emission Vehicle Center

THORLABS

PLENARY SPEAKERS

OPENING REMARKS | 8:15 a.m. Monday Only

MONDAY, AUGUST 20

8:30 a.m. | Grand Ballroom A/B

Subhash C. Singhal
Battelle Fellow and Director, Pacific Northwest National Laboratory, USA

Title: ***High temperature solid oxide fuel cells for clean and efficient power generation***

TUESDAY, AUGUST 21

8:30 a.m. | Grand Ballroom A/B

Tsutomu Miyasaka
Professor, Faculty of Biomedical Engineering, Toin University of Yokohama, Japan; Fellow, Research Center for Advanced Science and Technology, University of Tokyo, Japan

Title: ***Metal oxide-based high efficiency and durable perovskite solar cells: Current progress and perspectives***

WEDNESDAY, AUGUST 22

8:30 a.m. | Grand Ballroom A/B

Yang-Kook Sun
Professor, Energy Engineering, Hanyang University, Korea

Title: ***High-energy Ni-rich $Li[Ni_xCo_yMn_z]O_2$ cathodes via compositional partitioning for next-generation electric vehicles***

THURSDAY, AUGUST 23

8:30 a.m. | Grand Ballroom A/B

Hideo Hosono
Professor, Laboratory for Materials and Structures, Institute of Innovative Research, Institute of Technology, JAPAN

Title: ***Creation of active functionality utilizing abundant elements***

MEETING REGULATIONS

No photography/recording

Cell phones silent

During oral sessions conducted during Society meetings, unauthorized photography, videotaping, and audio recording is strictly prohibited for two reasons: (1) conference presentations are the intellectual property of the presenting authors as such are protected, and (2) engaging in photography, videotaping, or audio recording is disruptive to the presenter and the audience. Failure to comply may result in the removal of the offender from the session or from the remainder of the meeting.

Note: The Society may engage photographers to photograph sessions for marketing and promotional purposes.

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Diversity Statement: The American Ceramic Society values diverse and inclusive participation within the field of ceramic science and engineering. ACerS strives to promote involvement and access to leadership opportunity regardless of race, ethnicity, gender, religion, age, sexual orientation, nationality, disability, appearance, geographic location, career path or academic level. Visit the registration desk if you need access to a nursing mother's room or need further assistance. For childcare services, please check with the concierge at individual hotels for a listing of licensed and bonded caregivers.

The American Ceramic Society plans to take photographs and video at the conference and reproduce them in educational, news or promotional materials, whether in print, electronic or other media, including The American Ceramic Society's website. By participating in the conference, you grant The American Ceramic Society the right to use your name and photograph for such purposes. All postings become the property of The American Ceramic Society.

During oral sessions conducted during Society meetings, **unauthorized photography, videotaping and audio recording is prohibited.** Failure to comply may result in the removal of the offender from the session or from the remainder of the meeting.

Registration Requirements: Attendance at any meeting of the Society shall be limited to duly registered persons.

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SYMPOSIA ORGANIZERS

S1: MATERIALS FOR SOLAR FUEL PRODUCTION AND APPLICATIONS

Organizers: **Kijung Yong**, POSTECH, Korea; **Sanjay Mathur**, University of Cologne, Germany; **Yuanbing Mao**, The University of Texas Rio Grande Valley, USA

S2: ADVANCED ELECTROCHEMICAL MATERIALS FOR ENERGY STORAGE

Organizers: **Dave Mitlin**, Clarkson University, USA; **Palani Balaya**, National University of Singapore, Singapore; **Yu Zhong**, Worcester Polytechnic Institute, USA; **Randriamhazaka Hyacinthe**, Université Paris Diderot, Centre National de la Recherche Scientifique, France

S3: MATERIALS CHALLENGES IN PEROVSKITE AND NEXT GENERATION SOLAR CELLS

Organizers: **Sang Hyuk Im**, Korea University, Korea; **Hyun Suk Jung**, Sungkyunkwan University, Korea

S4: FERROELECTRICS AND MULTIFERROICS FOR ENERGY GENERATION, CONVERSION AND STORAGE

Organizers: **Ram Katiyar**, University of Puerto Rico, USA; **Amar Bhalla**, The University of Texas – San Antonio, USA; **Menka Jain**, University of Connecticut, USA

S5: MATERIALS CHALLENGES IN DIRECT THERMAL-TO-ELECTRICAL ENERGY CONVERSION AND THERMAL ENERGY HARNESSING FOR EFFICIENT INNOVATIVE APPLICATIONS

Organizers: **Michitaka Ohtaki**, Kyushu University, Japan; **Terry M. Tritt**, Clemson University, USA; **Min-Wook Oh**, Hanbat National University, Korea

S6: MATERIALS FOR SPECTRAL ENERGY CONVERSION

Organizers: **Eva Hemmer**, University of Ottawa, Canada; **Timur Sh. Atabaev**, Seoul National University, Korea; **Stefan Fischer**, Lawrence Berkeley National Laboratory, University of California Berkeley, USA; **Jose Marques Hueso**, Hariot Watt-University, UK; **Jorge Méndez Ramos**, Universidad de La Laguna, Spain; **Marta Quintanilla Morales**, CICbiomagune, Spain; **Kang Taek Lee**, Gwangju Institute of Science and Technology (GIST), Korea

S7: ADVANCED MATERIALS FOR SOLID OXIDE FUEL CELLS AND HIGH TEMPERATURE ELECTROLYSIS

Organizers: **Tatsumi Ishihara**, Kyushu University, Japan; **Teruhisa Horita**, AIST, Japan; **Bilge Yildiz**, Massachusetts Institute of Technology, USA; **Hiroshige Matsumoto**, Kyushu University, Japan

S8: LIFECYCLE CONSIDERATIONS FOR ENERGY MATERIALS

Organizer: **Gabrielle Gaustad**, Rochester Institute of Technology, USA

S9: CRITICAL MATERIALS FOR ENERGY

Organizers: **Taek-Soo Kim**, Korea Institute of Industrial Technology, Korea; **Gabrielle Gaustad**, Rochester Institute of Technology, USA

S10: MATERIALS AND PROCESS CHALLENGES FOR SUSTAINABLE NUCLEAR ENERGY

Organizers: **S. K. Sundaram**, Alfred University, USA; **Jake Amoroso**, Savannah River National Laboratory, USA; **Hua-Tay Lin**, Guangdong University of Technology, China; **Josef Matyas**, Pacific Northwest National Laboratory, USA

S11: SUSTAINABLE, ECO-FRIENDLY ADVANCED MATERIALS & NANODEVICES

Organizers: **Yeonho Im**, Chonbuk National University, Korea; **Yoon Bong Hahn**, Chonbuk National University, Korea

S12: YOUNG SCIENTISTS FORUM ON FUTURE ENERGY MATERIALS AND DEVICES

Organizers: **Dorina Chipara**, The University of Texas Rio Grande Valley, USA; **Geoff Brennecka**, Colorado School of Mines, USA

S13: SYMPOSIUM ON MATERIALS FOR SUPER ULTRA LOW ENERGY AND EMISSION VEHICLE

Organizers: **Kwan-Young Lee**, Korea University, Korea; **Do Heui Kim**, Seoul National University, Korea; **Sung June Cho**, Chonnam National University, Korea

SESSION SCHEDULE

TITLE	DATE	TIME
SYMPOSIUM 1 | Grand Ballroom A		
Materials for Solar Fuel Production and Applications I	Monday, August 20	9:30 – 11:50 a.m.
Materials for Solar Fuel Production and Applications II	Monday, August 20	1:30 – 3:30 p.m.
Materials for Solar Fuel Production and Applications III	Monday, August 20	3:20 – 4:50 p.m
Materials for Solar Fuel Production and Applications IV	Tuesday, August 21	9:30 – 11:40 a.m.
Materials for Solar Fuel Production and Applications V	Wednesday, August 22	9:30 – 11:40 a.m.
SYMPOSIUM 2 | Grand Ballroom B		
Advanced Electrochemical Materials for Energy Storage I	Wednesday, August 22	1:30 – 5:00 p.m.
Advanced Electrochemical Materials for Energy Storage II	Thursday, August 23	9:30 – 10:50 a.m.
SYMPOSIUM 3 | Grand Ballroom C		
Materials Challenges in Perovskite and Next Generation Solar Cells	Monday, August 20	9:30 – 11:55 a.m.
JOINT SESSION OF SYMPOSIUM 4 AND SYMPOSIUM 12 | Grand Ballroom A		
Ferroelectrics and Multiferroics for Energy Generation, Conversion and Storage / Young Scientist Forum	Wednesday, August 22	1:30 – 4:50 p.m.
SYMPOSIUM 5 | Grand Ballroom D		
New Strategies for Advanced Materials in Direct Thermal-to-electrical Energy Conversion	Tuesday, August 21	9:30 – 11:20 a.m.
High-efficiency Bulk Thermoelectric Materials	Wednesday, August 22	9:30 – 10:40 a.m.

TITLE	DATE	TIME
SYMPOSIUM 6 | Grand Ballroom B		
Materials for Upconversion, Quantum Cutting and Downshifting I	Monday, August 20	9:30 – 11:50 a.m.
Materials for Upconversion, Quantum Cutting and Downshifting II	Monday, August 20	1:30 – 2:50 p.m.
Materials for Upconversion, Quantum Cutting and Downshifting III	Monday, August 20	3:20 – 4:20 p.m.
Application-oriented Approaches in Spectral Conversion	Tuesday, August 21	9:30 a.m. – 12:10 p.m.
Development of Novel Optical Materials	Wednesday, August 22	9:30 – 10:20 a.m.
Plasmonics	Wednesday, August 22	10:20 –11:50 a.m.
SYMPOSIUM 7 | Grand Ballroom C		
Advanced Materials for SOFC I	Wednesday, August 22	9:30 a.m. – 12:10 p.m.
Advanced Materials for SOFC II	Wednesday, August 22	1:30 – 3:00 p.m.
Advanced Materials for SOFC III	Wednesday, August 22	3:20 – 4:50 p.m.
Advanced Materials for SOFC IV	Thursday, August 23	9:30 a.m. – 12:10 p.m.
SYMPOSIUM 9 | Grand Ballroom D		
Materials for Energy I	Monday, August 20	9:30 – 11:30 a.m.
JOINT SESSION OF SYMPOSIUM 8 AND SYMPOSIUM 9 | Grand Ballroom D		
Materials for Energy II	Monday, August 20	1:30 – 5:10 p.m.
SYMPOSIUM 10 | Grand Ballroom C		
Challenges for Sustainable Nuclear Energy	Tuesday, August 21	9:30 – 11:30 a.m.
SYMPOSIUM 11 | Grand Ballroom D		
Metal Oxides: Fundamental Studies and Applications	Wednesday, August 22	1:30 – 4:00 p.m
Novel Materials, Organic and Hybrid Materials, Fundamental Studies	Thursday, August 23	9:30 a.m. –12:10 p.m.
SYMPOSIUM 13 | Grand Ballroom C		
Symposium on Materials for Super Ultra Low Energy and Emission Vehicle	Monday, August 20	1:30 – 4:50 p.m

Korea University
KU SULEEV Super Ultra Low Energy and Emission Vehicle Center

Super Ultra Low Energy and Emission Vehicle Center (SULEEV)

Director's Greetings

SULEEV (Super Ultra Low Energy and Emission Vehicle) Center, funded by Ministry of Science and ICT, was launched on June, 2016. The center is focused on convergence research with a purpose of realizing commercialization of high-efficiency vehicles and gas exhaust purification systems. We look forward to continued support and encouragement for our ongoing research projects.

Ph.D. Kwan-Young Lee
Professor of Korea University
Department of Chem. Biol. Eng.

Center Introduction

Research efforts at SULEEV Center are devoted to developing new emission purification system capable of high performance at lower temperatures. To achieve this, the center will be conducting research for the next seven years until 2022 (1st stage for the first four years, 2nd stage for the remaining three years) with funding from the Korean government and participating companies.

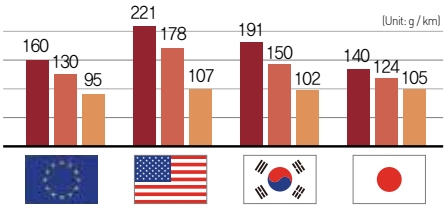
Beside Professor Kwan-Young Lee, the Director, total of 10 professors, including four professors from the Department of Chemical and Biological Engineering at Korea University, and six professors from Kangwon National University, Seoul National University, Chonnam National University, POSTECH, and KAIST, will lead and constitute research efforts at the SULEEV center.

During the development of new emission purification system, the SULLEV center will also collaborate with seven companies (Hyundai Motor Company, Heesung Catalysts Co., Blueplanet Co., Ceracomb, CBB Co., EnD Solutions, and ClueLife) to test reliability and successfully push for commercialization of new emission purification system.

Background

① New Regulation on Automobile CO_2 Emission

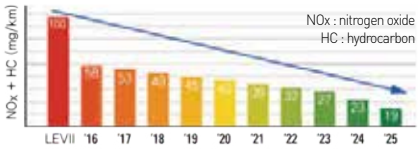
- Reduction of CO_2 emission is critical for efforts to minimize global warming.
- To achieve this, many nations plan to impose harsher restriction policies on automobile fuel efficiency and CO_2 emission rate.



▶Improvements in fuel efficiency and decrease in CO_2 emission rate is essential.

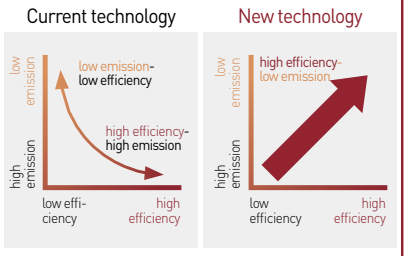
② More Stringent Regulation on Automobile Exhaust Gas and Pollutants

- Pollutants, such as nitrogen oxide (NOx), particulate matter (PM), carbon monoxide (CO), and hydrocarbons (HC) are produced as parts of automobile exhaust gas.
- Restriction policy against such pollutant is also expected harsher around many different nations.



▶There is now great need for much improved exhaust gas purification system.

Development of New System with High Energy Efficiency-Low Emission

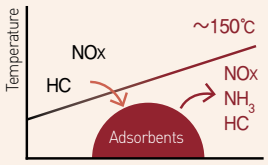


※Benefit of High-efficiency combustion engines: reduction of exhaust gas temperature

▶Catalyst purification system capable of being active at 150℃ is required!

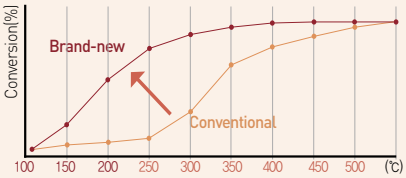
Objective

① Solution for Cold-Start Problem



Development of temperature-dependent adsorbent designed to only adsorb pollutants at low temperature and desorb at high temperature where catalyst is active

② Development of Catalyst Capable of Low-temperature Oxidation/Reduction and PM Combustion

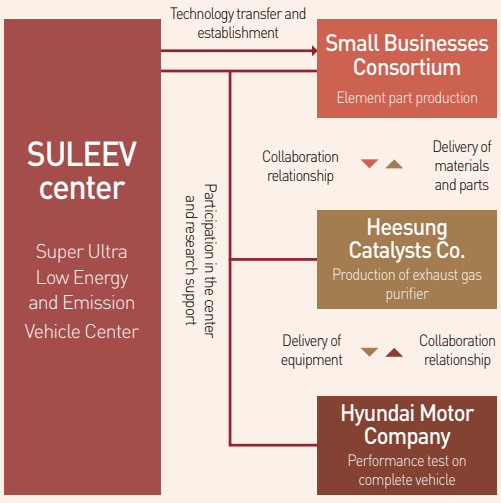


Development of catalyst capable of oxidation/reduction around 150℃ and PM combustion below 400℃ using computational tools and nano technology

③ Development of Novel Aftertreatment System

· Analysis of catalysts deactivation mechanism and development of methods to improve catalyst durability
· Development of slurry-coating technology to effectively coat catalysts/absorbents along the filters
· Derivation of integrated control and diagnosis algorithm

Industry-University Cooperation and Commercialization Plan



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Oxide multilayer thermoelectric generators

Sintering behavior of garnet-type Li6.4La3Zr1.4Ta0.6O12 in Li2CO3 atmosphere and its electrochemical property

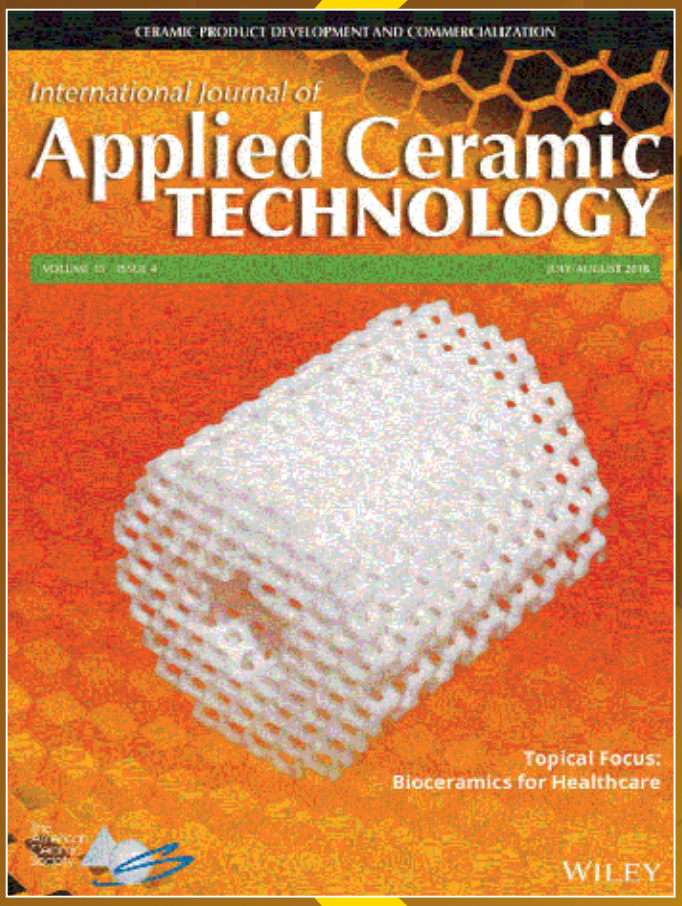
Self-adaptive piezoelectric ceramic vibration system based on asymmetric piezoelectric cantilever for energy harvesting

Fabrication, characterization, and performance of YbDSB ternary compounds for IT-SOFC applications

Microemulsion synthesis, optical and photocatalytic properties of vanadium-doped nano ZnO

Techno-economic optimization model for "sustainable" insulation material developed for energy efficiency

A Ba-free sealing glass with a high coefficient of thermal expansion and excellent interface stability optimized for SOFC/SOEC stack applications



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Kim, T.	20-Aug	3:20PM	Grand Ballroom C	8
Knauth, P.	22-Aug	1:30PM	Grand Ballroom B	10
Koo, J.	22-Aug	2:20PM	Grand Ballroom C	12
Kwon, Y.	23-Aug	9:30AM	Grand Ballroom D	16
		L		
Leader, A.	20-Aug	2:00PM	Grand Ballroom D	7
Lee, B.	20-Aug	2:40PM	Grand Ballroom C	8
Lee, C.	20-Aug	10:50AM	Grand Ballroom D	7
Lee, D.C.	22-Aug	10:30AM	Grand Ballroom A	9
Lee, H.	20-Aug	10:30AM	Grand Ballroom D	7
Lee, H.	20-Aug	3:50PM	Grand Ballroom C	8
Lee, H.	22-Aug	2:20PM	Grand Ballroom B	10
Lee, J.	20-Aug	2:00PM	Grand Ballroom A	5
Lee, J.	20-Aug	4:30PM	Grand Ballroom C	8
Lee, J.	21-Aug	10:30AM	Grand Ballroom A	8
Lee, K.	23-Aug	10:50AM	Grand Ballroom C	16
Lee, S.	23-Aug	9:30AM	Grand Ballroom B	15
Leonard, K.	22-Aug	10:00AM	Grand Ballroom C	11
Lin, Y.	21-Aug	11:20AM	Grand Ballroom A	8
Lin, Y.	22-Aug	11:00AM	Grand Ballroom A	10
Liu, R.	22-Aug	2:40PM	Grand Ballroom B	10
Lu, G.	20-Aug	10:30AM	Grand Ballroom A	5
		M		
Ma, D.	22-Aug	11:20AM	Grand Ballroom B	11
Manzhos, S.	22-Aug	4:10PM	Grand Ballroom B	10
Manzhos, S.	22-Aug	4:40PM	Grand Ballroom B	10
Mao, Y.	21-Aug	9:30AM	Grand Ballroom A	8
Mao, Y.	21-Aug	10:50AM	Grand Ballroom C	9
Mao, Y.	21-Aug	11:10AM	Grand Ballroom C	9
Marin, R.	20-Aug	2:30PM	Grand Ballroom B	6
Marques-Hueso, J.	20-Aug	3:50PM	Grand Ballroom B	6
Martorell, J.	21-Aug	9:30AM	Grand Ballroom B	9
Masini, A.	23-Aug	11:10AM	Grand Ballroom C	16
Matsumoto, H.	22-Aug	10:20AM	Grand Ballroom C	11
Matsuzaki, Y.	23-Aug	10:20AM	Grand Ballroom C	16
Menéndez-Velázquez, A.	21-Aug	10:50AM	Grand Ballroom B	9
Mitic, V.	20-Aug	10:45AM	Grand Ballroom C	6
Miyasaka, T.	21-Aug	8:30AM	Grand Ballroom A & B	8
		N		
Naim Katea, S.	21-Aug	10:30AM	Grand Ballroom C	9
Naim Katea, S.	22-Aug	10:00AM	Grand Ballroom B	11
Nam, S.	20-Aug	11:10AM	Grand Ballroom D	7
Navarro Pardo, F.	20-Aug	4:30PM	Grand Ballroom A	5
Noh, K.	23-Aug	11:50AM	Grand Ballroom D	16
		O		
Ohtaki, M.	21-Aug	10:40AM	Grand Ballroom D	8
Ott, R.T.	20-Aug	1:30PM	Grand Ballroom D	7
Oyeleke, O.	21-Aug	11:50AM	Grand Ballroom B	9

Oral Presenters

Name	Date	Time	Room	Page Number
P				
Padmanathan, K.	23-Aug	10:30AM	Grand Ballroom D	16
Pandey, R.	23-Aug	11:30AM	Grand Ballroom C	16
Peden, C.H.	20-Aug	1:30PM	Grand Ballroom C	7
Poon, J.	22-Aug	9:30AM	Grand Ballroom D	11
R				
Rai, R.C.	22-Aug	3:30PM	Grand Ballroom A	10
Ratzker, B.	20-Aug	11:00AM	Grand Ballroom B	6
Resch-Genger, U.	20-Aug	11:20AM	Grand Ballroom B	6
S				
Santato, C.	21-Aug	10:00AM	Grand Ballroom B	9
Schweizer, S.	21-Aug	11:20AM	Grand Ballroom B	9
Scoones, J.	22-Aug	4:30PM	Grand Ballroom A	11
Shin, H.	20-Aug	9:55AM	Grand Ballroom C	6
Shin, H.	21-Aug	10:00AM	Grand Ballroom A	8
Shin, T.	23-Aug	9:30AM	Grand Ballroom C	16
Singhal, S.C.	20-Aug	8:30AM	Grand Ballroom A & B	5
Skaggs, S.	21-Aug	11:00AM	Grand Ballroom D	8
Sun, Y.	22-Aug	8:30AM	Grand Ballroom A & B	9
Sundaram, S.K.	21-Aug	10:10AM	Grand Ballroom C	9
T				
Tamayo, A.	23-Aug	10:10AM	Grand Ballroom B	15
Thanganathan, U.	23-Aug	11:50AM	Grand Ballroom C	16
U				
Uddin, M.	22-Aug	4:10PM	Grand Ballroom A	11
V				
van der Kolk, E.	20-Aug	2:00PM	Grand Ballroom B	6
van Veggel, F.C.	20-Aug	9:30AM	Grand Ballroom B	6
Vela, J.	22-Aug	9:30AM	Grand Ballroom A	9
W				
Wang, F.	20-Aug	10:00AM	Grand Ballroom B	6
Wang, Y.	20-Aug	11:35AM	Grand Ballroom C	6
Westin, G.	20-Aug	2:30PM	Grand Ballroom A	5
Westin, G.	22-Aug	9:30AM	Grand Ballroom B	11
Wu, J.	20-Aug	11:00AM	Grand Ballroom A	5
Wu, W.	22-Aug	1:30PM	Grand Ballroom D	12
Y				
Yang, J.	20-Aug	4:10PM	Grand Ballroom D	7
Yim, H.	22-Aug	2:40PM	Grand Ballroom D	12
Yoon, S.	22-Aug	3:40PM	Grand Ballroom D	12
Yu, J.	20-Aug	2:20PM	Grand Ballroom D	7
Z				
Zhang, J.Z.	22-Aug	10:00AM	Grand Ballroom A	9
Zhou, X.	22-Aug	2:40PM	Grand Ballroom C	12

Poster Presenters

Name	Date	Time	Room	Page Number
A				
Agbenyeke, R.E.	22-Aug	5:30PM	Grand Ballroom Foyer	13
B				
Byun, M.	22-Aug	5:30PM	Grand Ballroom Foyer	14
C				
Cho, A.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Choi, H.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Choi, S.	22-Aug	5:30PM	Grand Ballroom Foyer	13, 14
Choi, Y.	22-Aug	5:30PM	Grand Ballroom Foyer	15
Chun, S.	22-Aug	5:30PM	Grand Ballroom Foyer	14
E				
Espiritu, R.	22-Aug	5:30PM	Grand Ballroom Foyer	14
F				
Fujihara, S.	22-Aug	5:30PM	Grand Ballroom Foyer	14
H				
Han, G.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Hayun, H.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Huang, R.	22-Aug	5:30PM	Grand Ballroom Foyer	15
J				
Jang, M.	22-Aug	5:30PM	Grand Ballroom Foyer	15
Jarka, P.	22-Aug	5:30PM	Grand Ballroom Foyer	13
Jeong, E.	22-Aug	5:30PM	Grand Ballroom Foyer	15
Jeong, H.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Ji, G.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Jung, H.	22-Aug	5:30PM	Grand Ballroom Foyer	13, 15
K				
Kim, D.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Kim, H.	22-Aug	5:30PM	Grand Ballroom Foyer	13, 15
Kim, J.	22-Aug	5:30PM	Grand Ballroom Foyer	13, 14
Kim, K.	22-Aug	5:30PM	Grand Ballroom Foyer	15
Kim, M.	22-Aug	5:30PM	Grand Ballroom Foyer	13
Kim, S.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Kim, Y.	22-Aug	5:30PM	Grand Ballroom Foyer	13
L				
Lee, B.	22-Aug	5:30PM	Grand Ballroom Foyer	15
Lee, H.	22-Aug	5:30PM	Grand Ballroom Foyer	13
Lee, M.	22-Aug	5:30PM	Grand Ballroom Foyer	15
Lee, S.	22-Aug	5:30PM	Grand Ballroom Foyer	13
Lee, W.	22-Aug	5:30PM	Grand Ballroom Foyer	13, 14
Lim, J.	22-Aug	5:30PM	Grand Ballroom Foyer	15
Lu, Y.	22-Aug	5:30PM	Grand Ballroom Foyer	14
M				
Matysiak, W.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Mitic, V.	22-Aug	5:30PM	Grand Ballroom Foyer	13
O				
Ojelere, O.	22-Aug	5:30PM	Grand Ballroom Foyer	13
P				
Paik, J.	22-Aug	5:30PM	Grand Ballroom Foyer	13
Papac, M.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Park, D.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Park, K.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Pyo, S.G.	22-Aug	5:30PM	Grand Ballroom Foyer	14

Presenting Author List

Poster Presenters

Name	Date	Time	Room	Page Number
R				
Rosas, B.Y.	22-Aug	5:30PM	Grand Ballroom Foyer	13
S				
Scoones, J.	22-Aug	5:30PM	Grand Ballroom Foyer	15
Seo, S.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Shimonishi, R.	22-Aug	5:30PM	Grand Ballroom Foyer	14
Shiojiri, D.	22-Aug	5:30PM	Grand Ballroom Foyer	13, 14
T				
Tanski, T.	22-Aug	5:30PM	Grand Ballroom Foyer	13
W				
Wang, Y.	22-Aug	5:30PM	Grand Ballroom Foyer	13
Y				
Yang, H.	22-Aug	5:30PM	Grand Ballroom Foyer	13
Yang, T.	22-Aug	5:30PM	Grand Ballroom Foyer	12

Monday, August 20, 2018

Plenary I

Room: Grand Ballroom A & B

Session Chairs: Steven Tidrow, Alfred University; Yoon-Bong Hahn, Chonbuk National University

8:15 AM

Opening Remarks

8:30 AM

(MCARE-PLEN-001-2018) High Temperature Solid Oxide Fuel Cells for Clean and Efficient Power Generation

S. C. Singhal*[1]

1. Pacific Northwest National Laboratory, USA

9:10 AM

Break

SYMPOSIUM 1

Materials for Solar Fuel Production and Applications I

Room: Grand Ballroom A

Session Chair: Kijung Yong, Pohang University of Science and Technology(POSTECH)

9:30 AM

(MCARE-S1-001-2018) Semiconductor Nanoheterostructures for Photoconversion Applications (Invited)

Y. Hsu*[1]

1. National Chiao Tung University, MSE Department, Taiwan

10:00 AM

(MCARE-S1-002-2018) Enhancing Long-Term Photostability of $BiVO_4$ Photoanodes for Solar Water Splitting (Keynote)

D. Lee[1]; D. Lee[1]; K. Choi*[1]

1. University of Wisconsin-Madison, Chemistry, USA

10:30 AM

(MCARE-S1-003-2018) NIR and visible light driven overall water splitting for hydrogen production over CdS/$NaYF_4$:Yb^{3+}-Er^{3+} photocatalysts (Invited)

G. Lu*[1]

1. Lanzhou Institute of Chemical Physics, China

11:00 AM

(MCARE-S1-004-2018) Construction of three-dimensional nanostructured arrays for efficient solar energy conversion (Invited)

J. Wu*[1]; J. Yang[1]

1. National Cheng Kung University, Department of Chemical Engineering, Taiwan

11:30 AM

(MCARE-S1-005-2018) Highly adaptive artificial leaf applicable in various nature environments with floatability and planar design

S. Kim*[1]; K. Han[1]; M. Lee[1]; D. Kim[1]; K. Yong[1]

1. Pohang University of Science and Technology(POSTECH), Chemical Engineering, Republic of Korea

Materials for Solar Fuel Production and Applications II

Room: Grand Ballroom A

Session Chairs: Yung-Jung Hsu, National Chiao Tung University; Jih-Jen Wu, National Cheng Kung University

1:30 PM

(MCARE-S1-006-2018) Strongly Facet-Dependent Photocatalytic Properties of Semiconductor Crystals (Invited)

M. H. Huang*[1]

1. National Tsing Hua University, Department of Chemistry, Taiwan

2:00 PM

(MCARE-S1-007-2018) Electrodeposition of copper-cobalt based spinel as highly efficient oxygen evolution catalyst (Invited)

N. Nath[1]; H. Park[2]; J. Lee*[1]

1. Dongguk University, Department of Energy & Materials Engineering, Republic of Korea
2. Kyungpook National University, Environmental, and Energy Engineering, Republic of Korea

2:30 PM

(MCARE-S1-008-2018) Complex semi-conductor films, sponges and nano-particles for solar catalysts and solar cells through solution synthesis (Invited)

G. Westin*[1]

1. Uppsala University, Sweden

3:00 PM

Break

Materials for Solar Fuel Production and Applications III

Room: Grand Ballroom A

Session Chairs: Yuanbing Mao, University of Texas Rio Grande Valley; Michael Huang, National Tsing Hua University

3:20 PM

(MCARE-S1-009-2018) Photocatalytic H_2 Evolution Activity of Dumbbell-shaped Nanocrystals Composed of ZnS-$AgInS_2$ Solid Solution (Invited)

T. Kameyama*[1]; S. Koyama[1]; T. Yamamoto[1]; S. Kuwabata[2]; T. Torimoto[1]

1. Nagoya University, Graduate School of Engineering, Japan
2. Osaka University, Graduate School of Engineering, Japan

3:50 PM

(MCARE-S1-010-2018) Z-Scheme Heterostructure Nanowires for Solar Hydrogen Generation

Y. Chiu*[1]; W. Lin[1]; Y. Hsu[1]

1. National Chiao Tung University, Taiwan

4:10 PM

(MCARE-S1-011-2018) Enhancement of Hydrogenation and Thiocyanate Treatments on Ag-Loaded TiO_2 Nanoparticles for Hydrogen Evolution

Y. Lin[1]; M. Lin[2]; L. Hsu*[1]

1. National Synchrotron Radiation Research Center, Taiwan
2. National Chiao Tung University, Taiwan

4:30 PM

(MCARE-S1-012-2018) Graphene Oxide/Cobalt-based Nanohybrids as Alternative Electrodes for Hydrogen Generation

F. Navarro Pardo*[1]; H. Zhao[2]; Z. M. Wang[1]; F. Rosei[3]

1. University of Electronic Science and Technology of China, Institute of Fundamental and Frontier Sciences, China
2. Qingdao University, College of Physics and The Cultivation Base for State Key Laboratory, China
3. Institut National de la Recherche Scientifique, Centre for Energy, Materials and Telecommunications, Canada

SYMPOSIUM 3

Materials Challenges in Perovskite and Next Generation Solar Cells

Room: Grand Ballroom C

Session Chairs: Sang Hyuk Im, Korea University; Vojislav Mitic, Serbian Academy of Sciences

9:30 AM

(MCARE-S3-001-2018) Comparative Study of the Output of Amorphous Silicon Photovoltaic Solar Cells when Receiving Direct and Diffused Radiations (Invited)

O. H. David*[1]

1. Federal Polytechnic Offa, Science Technology, Nigeria

9:55 AM

(MCARE-S3-002-2018) Unique Semiconducting Organic – Inorganic Halide Perovskite Materials and Their Long-Term Stability in Solar Cell Application (Invited)

H. Shin*[1]

1. SungKyunKwan University, Department of Energy Science, Republic of Korea

10:20 AM

(MCARE-S3-003-2018) Firing up perovskite solar modules (Invited)

B. Conings*[1]; A. Babayigit[1]; H. Boyen[1]

1. Hasselt University, Institute for Materials Research, Belgium

10:45 AM

(MCARE-S3-004-2018) Solar Energy Fractal Nature and Electronic Ceramics Science (Invited)

V. Mitic*[1]; G. Lazovic[3]; V. Paunovic[2]; S. Shaikh[5]; S. Veljkovic[1]; B. Vlahovic[4]

1. Serbian Academy of Sciences, Institute of Technical Sciences, Serbia
2. University of Nis, Faculty of Electronic Engineering, Serbia
3. University of Belgrade, Faculty of Mechanical Engineering, Serbia
4. North Carolina Central University, USA
5. Pune University, India

11:10 AM

(MCARE-S3-005-2018) Organic-inorganic hybrid perovskite solar cells (Invited)

S. Im*[1]; J. Heo[1]

1. Korea University, Republic of Korea

11:35 AM

(MCARE-S3-006-2018) Ambient-air Processed Perovskite Solar Cells with Effective Perovskite-NiO Nanoparticles Composite and Interface Engineering

Y. Wang*[1]; T. Mahmoudi[1]; H. Yang[1]; K. S. Bhat[1]; Y. Hahn[1]

1. Chonbuk National University, Chemical Engineering, Republic of Korea

SYMPOSIUM 6

Materials for Upconversion, Quantum Cutting and Downshifting I

Room: Grand Ballroom B

Session Chair: Stefan Fischer, Lawrence Berkeley National Laboratory

9:30 AM

(MCARE-S6-001-2018) On the upconversion properties of Ln^{3+} doped nanoparticles (Invited)

F. C. van Veggel*[1]

1. University of Victoria, Department of Chemistry, Canada

10:00 AM

(MCARE-S6-002-2018) Tuning lanthanide luminescence in core-shell nanoparticles (Invited)

F. Wang*[1]

1. City University of Hong Kong, Department of Materials Science and Materials, Hong Kong

10:30 AM

(MCARE-S6-003-2018) Controlling Lanthanide-Doped Nanoparticles for Brighter Luminescence (Invited)

G. Chen*[1]

1. Harbin Institute of Technology, School of Chemistry and Chemical Engineering, China

11:00 AM

(MCARE-S6-004-2018) Multi-Doped (Cr:Ce:Yb:Nd) YAG Ceramics for Thermally Enhanced Photoluminescence Applications

B. Ratzker*[1]; M. Sokol[2]; A. Wagner[1]; S. Kalabukhov[1]; N. Kruger[3]; N. Revivo[4]; C. Rotschild[4]; N. Frage[1]

1. Ben-Gurion University of the Negev, Materials Engineering, Israel
2. Drexel University, Materials Science & Engineering, USA
3. The Nancy and Stephen Grand Technion Energy Progam (GTEP), Technion-Israel Institute of Technology, Israel
4. Technion - Israel Institute of Technology, Mechanical Engineering, Israel

11:20 AM

(MCARE-S6-005-2018) Quantification of Parameters Affecting the Upconversion Luminescence of Lanthanide-Based Upconversion Nanocrystals (Invited)

U. Resch-Genger*[1]

1. BAM Federal Institute for Materials Research and Testing, Germany

Materials for Upconversion, Quantum Cutting and Downshifting II

Room: Grand Ballroom B

Session Chair: Eva Hemmer, University of Ottawa

1:30 PM

(MCARE-S6-006-2018) Perspective on Core/Shell Nanocrystals as Spectral Converters for Solar Energy Applications (Invited)

S. Fischer*[1]

1. Stanford University, Material Sciences and Engineering, USA

2:00 PM

(MCARE-S6-007-2018) Combinatorial reactive sputtering of lanthanide doped SiAlON and halide luminescent films for photovoltaic windows based on the LSC principle (Invited)

E. van der Kolk*[1]

1. Delft University of Technology, Radiation Science and Technology, Netherlands

2:30 PM

(MCARE-S6-008-2018) A self-assembled Förster resonance energy transfer system based on upconverting nanoparticles and lanthanide ion complexes

R. Marin*[1]; D. Errulat[1]; I. Halimi[1]; G. Lucchini[2]; A. Speghini[2]; M. Murugesu[1]; E. Hemmer[1]

1. University of Ottawa, Chemistry and Biomolecular Sciences, Canada
2. Università di Verona, Biotecnologie, Italy

2:50 PM

Break

Materials for Upconversion, Quantum Cutting and Downshifting III

Room: Grand Ballroom B

Session Chair: Stefan Fischer, Lawrence Berkeley National Laboratory

3:20 PM

(MCARE-S6-009-2018) Up-conversion for Solar Cells in Materials Doped with Er/Yb and Tb/Yb by Sol-gel and Ion Implantation (Invited)

R. M. Almeida*[1]

1. Instituto Superior Técnico, Universidade de Lisboa, CQE, Departamento Engenharia Química, Portugal

3:50 PM

(MCARE-S6-010-2018) Scattering effects in PLQY measurements and design of luminescent devices (Invited)

J. Marques-Hueso*[1]

1. Heriot-Watt University, Institute of Sensors, Signals and Systems, United Kingdom

SYMPOSIUM 9

Materials for Energy I

Room: Grand Ballroom D

Session Chairs: Taek-Soo Kim, KITECH; Ryan Ott, Ames Laboratory (USDOE)

9:30 AM

(MCARE-S9-001-2018) Alternative & Renewable Energy Technologies Depend on Critical Material Supply Chains (Invited)

I. M. London[1]; G. Andrews*[2]

1. Canadian Rare Earth Elements Network, Canada
2. Search Minerals Inc., Canada

10:10 AM

(MCARE-S9-002-2018) Secondary and byproduct sources of rare earth metals

G. Gaustad*[1]; E. Williams[1]; A. Leader[1]

1. Rochester Institute of Technology, USA

10:30 AM

(MCARE-S9-003-2018) Electrorefining of In from In-Sn metal in the eutectic molten salt systems

H. Lee*[1]; K. Park[1]; S. Choi[1]; K. Seo[1]; T. Kim[1]; S. Hyun[2]

1. Korea Institute of Industrial Technology, KIRAM, Republic of Korea
2. INHA University, Advanced Materials, Republic of Korea

10:50 AM

(MCARE-S9-004-2018) Recovery and purification of lithium carbonate from sulphate solutions by hydrogenation and ion-exchange

W. Chen[1]; C. Lee*[1]; H. Ho[1]

1. National Cheng Kung University, Resource Engineering, Taiwan

11:10 AM

(MCARE-S9-005-2018) Extraction mechanism of rare earth elements contained in permanent magnet using molten Magnesium

S. Nam*[1]; T. Kim[1]; S. Park[1]; B. Kim[1]; D. Kim[2]

1. Korea Institute of Industrial Technology, Korea Institute for Rare Metals, Republic of Korea
2. Yonsei University, Department of Materials Science & Engineering, Republic of Korea

JOINT SESSION OF SYMPOSIUM 8 and SYMPOSIUM 9

Materials for Energy II

Room: Grand Ballroom D

Session Chairs: Gabrielle Gaustad, Rochester Institute of Technology; Soon-Jik Hong, Kongju National University; Kyoung-Tae Park, Korea Institute of Industrial Technology; Ryan Ott, Ames Laboratory (USDOE)

1:30 PM

(MCARE-S9-006-2018) Recycling Strategies for Critical Materials (Invited)

R. T. Ott*[1]; I. Nlebedim[2]; R. Chaudhary[2]; H. Kim[2]

1. Ames Laboratory (USDOE), Materials Sciences and Engineering, USA
2. Critical Materials Institute, Ames Laboratory, USA

2:00 PM

(MCARE-S9-007-2018) Supply Risk Reduction of Critical Materials in Clean Energy Technologies: Case Studies of Li-ion Batteries and Efficient Lighting Devices

A. Leader*[1]; G. Gaustad[1]

1. Rochester Institute of Technology, Golisano Institute for Sustainability, USA

2:20 PM

(MCARE-S9-008-2018) Manufacturing 4N5 grade Tantalum Wire from tantalum scrap by electron beam melting and drawing techniques

J. Yu*[1]; K. Park[1]; S. Hyun[2]; T. Kim[1]; J. Sim[1]; J. Lim[1]

1. Korea Institute of Industrial Technology, Republic of Korea
2. University of Inha, Republic of Korea

2:40 PM

(MCARE-S8-001-2018) Evaluating the life-cycle environmental impacts of thermoelectric generators for automotive applications

R. Iyer*[1]; K. Bakthavatchalam[1]; S. Pilla[1]

1. Clemson University, Automotive Engineering, USA

3:00 PM

Break

3:20 PM

(MCARE-S9-010-2018) Production of high efficient thermoelectric materials using powder metallurgy processes (Invited)

D. Peyala[1]; C. Lee[1]; S. Hong*[1]

1. Kongju National University, Republic of Korea

3:50 PM

(MCARE-S9-011-2018) Effect of alloying addition on structural and physical properties of novel $Ti_{95-x}Fe_5Nb_x$ ternary alloy

M. Haq*[1]; E. Jeon[2]; B. Lee[2]; B. Kim[2]

1. University of Science and Technology, Republic of Korea
2. Korea Institute of Industrial Technology, Republic of Korea

4:10 PM

(MCARE-S9-012-2018) Recovery of PGM from spent automotive catalysts with copper anode slimes by solvent extraction

W. Chen[1]; J. Yang*[1]; C. Lee[1]

1. National Cheng Kung University, Resource Engineering, Taiwan

4:30 PM

(MCARE-S8-002-2018) Life-cycles of lithium ion batteries: Understanding impacts from extraction to end-of-life

G. Gaustad*[1]; C. Babbitt[1]; E. Olivetti[2]

1. Rochester Institute of Technology, USA
2. Massachusetts Institute of Technology, USA

4:50 PM

(MCARE-S9-014-2018) Temperature dependent phase transformation of powder metallurgy processed Nd-Fe-B magnet

J. Cho*[1]; S. Nam[1]; S. Abbas[1]; Y. Choa[2]; T. Kim[1]

1. Korea Institute of Industrial Technology, Korea Institute for Rare Metals, Republic of Korea
2. Hanyang University, Republic of Korea

SYMPOSIUM 13

Symposium on Materials for Super Ultra Low Energy and Emission Vehicle

Room: Grand Ballroom C

Session Chair: Kwan-Young Lee, Korea University

1:30 PM

(MCARE-S13-001-2018) Cu/SSZ-13 Catalysts for the Selective Catalytic Reduction of NOx: Unusual Features of the Complex Redox Reaction Mechanism (Invited)

C. H. Peden*[1]; D. Mei[1]; Y. Wang[1]; J. Szanyi[1]; F. Gao[1]

1. Pacific Northwest National Lab, Institute for Integrated Catalysis, USA

2:00 PM

(MCARE-S13-002-2018) Tuning the low temperature catalytic activity of Cu-SSZ-13 over NO SCR: Control of Al content and acidity

S. Park[2]; H. Jeong[1]; K. Lee[2]; Y. Kim[3]; C. Kim[3]; S. Cho*[1]

1. Chonnam National University, Chemical Engineering, Republic of Korea
2. Korea University, Republic of Korea
3. Hyundai Motor Group, Advanced Catalysts and Emission-Control Research Laboratory, Republic of Korea

2:20 PM

(MCARE-S13-003-2018) Facile synthesis of a hierarchically structured MFI and the effect of its physicochemical properties with Cu-loaded MFI on cold-start test

K. Jinseong*[1]; C. Jungkyu[1]

1. Korea University, Chemical & Biological Engineering, Republic of Korea

2:40 PM

(MCARE-S13-004-2018) Reducing NOx emissions from diesel engines by optimizing the size of SCR reactor with urea injector

B. Lee*[1]; S. Lim[1]; Y. Kim[1]; T. Park[1]; J. Lee[1]

1. Seoul National University, School of Chemical and Biological Engineering, Republic of Korea

3:00 PM

Break

3:20 PM

(MCARE-S13-005-2018) Catalytic NO reduction by CO over CoO_x/CeO_2 catalysts (Invited)

T. Kim*[1]

1. Stony Brook University, Materials Science and Chemical Engineering, USA

3:50 PM

(MCARE-S13-006-2018) Re-dispersion of precious metal catalysts for diesel oxidation by hydrothermal treatment

H. Lee*[1]; H. Jeong[1]; J. Bae[1]; B. Kim[1]

1. Korea Advanced Institute of Science and Engineering (KAIST), Republic of Korea

4:10 PM

(MCARE-S13-007-2018) Effect of the change in Pt-ceria Interaction on CO Oxidation Ability of Pt/CeO_2 Catalysts

J. Lee[1]; Y. Ryou[1]; J. Kim[1]; D. Kim*[1]

1. Seoul National University, Republic of Korea

4:30 PM

(MCARE-S13-008-2018) Silver loaded macroporous structure CeO_2 catalyst for soot oxidation

J. Lee*[1]; C. Park[1]; E. Jeong[1]; S. Lee[1]; K. Lee[1]

1. Korea University, Department of Chemical and Biological Engineering, Republic of Korea

Tuesday, August 21, 2018

Plenary II

Room: Grand Ballroom A & B

Session Chair: Sanjay Mathur, University of Cologne

8:30 AM

(MCARE-PLEN-002-2018) Metal oxide-based high efficiency and durable perovskite solar cells: Current progress and perspectives

T. Miyasaka*[1]

1. Toin University of Yokohama, Faculty of Biomedical Engineering, Japan

9:10 AM

Break

SYMPOSIUM 1

Materials for Solar Fuel Production and Applications IV

Room: Grand Ballroom A

Session Chairs: Yung-Jung Hsu, National Chiao Tung University; Doh Lee, Korea Advanced Institute of Science and Engineering (KAIST)

9:30 AM

(MCARE-S1-013-2018) Dependence of Oxygen Evolution Reaction Performance on Geometry Factors of Delafossite Copper Gallium Oxide (Invited)

Y. Mao*[1]; S. Mohan[1]

1. University of Texas Rio Grande Valley, Department of Chemistry, USA

10:00 AM

(MCARE-S1-014-2018) Transition Metal Sulfides Prepared by Sequential Gas Phase Deposition as Efficient Electrocatalysts (Invited)

H. Shin*[1]

1. SungKyunKwan University, Department of Energy Science, Republic of Korea

10:30 AM

(MCARE-S1-015-2018) Catalytic Properties of Mo_2C - Graphene Oxide Composites for Photocatalytic Water Splitting (Invited)

J. Lee*[1]

1. University of Pittsburgh, Mechanical Engineering and Materials Science, USA

11:00 AM

(MCARE-S1-016-2018) Durable and efficient Ni-Mo catalyzed TiO_2/CdS/CIGS photocathode for solar water splitting under various pH conditions

M. Baek*[1]; D. Kim[1]; M. Lee[1]; D. Kim[1]; K. Yong[1]

1. POSTECH, Republic of Korea

11:20 AM

(MCARE-S1-017-2018) Enhanced Photoelectrochemical Performance of Modified ZnO Nanorod Photoanode under Solar Light

Y. Lin*[1]; Y. Lin[2]; L. Hsu[2]; P. Peng[2]; S. Chen[1]

1. National Chiao Tung University, Materials Science and Engineering, Taiwan
2. National Synchrotron Radiation Research Center, Scientific Research Division, Taiwan

SYMPOSIUM 5

New Strategies for Advanced Materials in Direct Thermal-to-electrical Energy Conversion

Room: Grand Ballroom D

Session Chairs: Michitaka Ohtaki, Kyushu University; Joseph Poon, University of Virginia

9:30 AM

(MCARE-S5-001-2018) Revisiting Ag_2Se: A Novel Synthesis Route to High Thermoelectric Performance (Invited)

J. He*[1]

1. Clemson University, USA

10:00 AM

(MCARE-S5-002-2018) Utilizing Natural Nanostructures to Reduce Thermal Conductivity in Oxide Thermoelectrics

D. Alvarez-Ruiz[1]; F. Azough[1]; D. Hernandez-Maldonado[2]; D. Kepaptsoglou[2]; Q. Ramasse[2]; P. Svec[3]; P. Svec[3]; S. Day[4]; R. Freer*[1]

1. University of Manchester, Materials, United Kingdom
2. STFC Daresbury Campus, SuperSTEM Laboratory, United Kingdom
3. Slovak Academy of Sciences, Institute of Physics, Slovakia
4. Diamond Light Source, United Kingdom

10:20 AM

(MCARE-S5-003-2018) Thermoelectric properties of polymer-derived SiOCN ceramics

R. Iyer*[1]; S. Pilla[1]; J. Graser[2]; T. D. Sparks[1]

1. Clemson University, Automotive Engineering, USA
2. University of Utah, Materials Science and Engineering, USA

10:40 AM

(MCARE-S5-004-2018) Anomalously Low Thermal Conductivity of ZnO Along with Extended Solubility Limit of Al + Cu Binary Doping

M. Ohtaki*[1]; H. Fujiwara[1]; K. Watanabe[2]; K. Suekuni[1]

1. Kyushu University, Interdisciplinary Graduate School of Engineering Sciences, Japan
2. Kyushu University, Transdisciplinary Research and Education Center for Green Technologies, Japan

11:00 AM

(MCARE-S5-005-2018) LANL History of Thermionic Conversion

S. Skaggs*[1]

1. Retired LANL, USA

SYMPOSIUM 6

Application-oriented Approaches in Spectral Conversion

Room: Grand Ballroom B

Session Chair: Jose Marques-Hueso, Heriot-Watt University

9:30 AM

(MCARE-S6-011-2018) Photonic approaches to achieve an optimal performance for perovskite solar cells (Invited)

J. Martorell*[1]

1. ICFO-The Institute of Photonic Sciences, Spain

10:00 AM

(MCARE-S6-012-2018) Towards melanin-based integrated energy conversion/storage devices (Invited)

C. Santato*[1]

1. Ecole Polytechnque de Montreal, Canada

10:30 AM

(MCARE-S6-013-2018) Bridging the gap of photocatalysts by NIR to UV-blue up-conversion for pollutant degradation and H_2 generation

P. Acosta-Mora*[1]; K. Domen[2]; T. Hisatomi[2]; L. Hao[2]; J. Méndez-Ramos[1]; J. Ruiz-Morales[4]; N. Khaidukov[3]

1. Universidad de La Laguna, Physics, Spain
2. University of Tokyo, Japan
3. Russian Academy of Sciences, Russian Federation
4. Universidad de La Laguna, Chemistry, Spain

10:50 AM

(MCARE-S6-014-2018) Luminescent solar concentrators for BIPV and mobile electronics (Invited)

A. Menéndez-Velázquez*[1]

1. ITMA Materials Technology, Spain

11:20 AM

(MCARE-S6-015-2018) Luminescent glasses and glass ceramics for white light generation (Invited)

S. Schweizer*[1]; A. C. Rimbach[2]; B. Ahrens[2]; F. Steudel[1]; P. W. Nolte[1]

1. Fraunhofer IMWS, Fraunhofer Application Center of Inorganic Phosphors, Germany
2. South Westphalia University of Applied Sciences, Faculty of Electrical Engineering, Germany

11:50 AM

(MCARE-S6-016-2018) A Model of Clearness Index using atmospheric parameter for Solar Energy Applications in Offa environment, Nigeria

O. Oyeleke*[1]

1. Federal Polytechnic, Science Technology Department, Nigeria

SYMPOSIUM 10

Challenges for Sustainable Nuclear Energy

Room: Grand Ballroom C

Session Chair: Shan Sundaram, Alfred University

9:30 AM

(MCARE-S10-001-2018) Design and Durability Testing of Advanced Waste Forms (Invited)

C. M. Jantzen*[1]

1. Savannah River National Laboratory, USA

10:10 AM

(MCARE-S10-002-2018) Cesium in Hollandite Ceramics

P. Tumurugoti[1]; S. T. Misture[1]; S. K. Sundaram*[1]

1. Alfred University, USA

10:30 AM

(MCARE-S10-003-2018) ZrN and ZrC nano-phase powders for nuclear fuels by solution chemical processing

S. Naim Katea*[1]; G. Westin[1]

1. Uppsala University, Chemistry-Ångström, Sweden

10:50 AM

(MCARE-S10-004-2018) Impact of Gamma-Ray Irradiation on Rare-Earth Hafnate Nanocrystals

Y. Mao*[1]; V. Trummel[1]; S. Gupta[1]; M. Pokhrel[1]; D. Wall[2]

1. University of Texas Rio Grande Valley, Department of Chemistry, USA
2. Washington State University, Nuclear Radiation Center, USA

11:10 AM

(MCARE-S10-005-2018) Doping induced phase transition in $La_2Hf_2O_7$:U nanoparticles and its implication on speciation of uranium ion

Y. Mao*[1]; M. Abdou[1]; S. Gupta[1]; J. Zuniga[1]

1. University of Texas Rio Grande Valley, Department of Chemistry, USA

Wednesday, August 22, 2018

Plenary III

Room: Grand Ballroom A & B

Session Chair: Gabrielle Gaustad, Rochester Institute of Technology

8:30 AM

(MCARE-PLEN-003-2018) High-Energy Ni-Rich $Li[Ni_xCo_yMn_z]O_2$ Cathodes via Compositional Partitioning for Next-Generation Electric Vehicles

Y. Sun*[1]

1. Hanyang University, Republic of Korea

9:10 AM

Break

SYMPOSIUM 1

Materials for Solar Fuel Production and Applications V

Room: Grand Ballroom A

Session Chairs: Yuanbing Mao, University of Texas Rio Grande Valley; Jung-Kun Lee, University of Pittsburgh

9:30 AM

(MCARE-S1-018-2018) Challenges and Opportunities in Photocatalysis: Catalyst Design, Reaction Engineering, and Emerging Substrates (Invited)

J. Vela*[1]

1. Iowa State University, Chemistry, USA

10:00 AM

(MCARE-S1-019-2018) Surface Chemistry Approaches to Stabilizing Organo-metal Halide Perovskites for Soar Energy Conversion (Keynote)

J. Z. Zhang*[1]

1. UCSC, Chemistry and Biochemistry, USA

10:30 AM

(MCARE-S1-020-2018) Design of Heterostructure Alloy Nanoparticles for Photocatalysis of CO_2 Reduction (Invited)

D. C. Lee*[1]

1. Korea Advanced Institute of Science and Engineering (KAIST), Republic of Korea

11:00 AM

(MCARE-S1-021-2018) Effects of Nanoscale Interfacial Design on Enhanced Photoelectrocatalytic Activity at Modified Photoelectrodes

Y. Lin*[1]

1. National Synchrotron Radiation Research Center, Taiwan

11:20 AM

(MCARE-S1-022-2018) TiO_2 Nanorods-Supported In_2S_3 Nanostructures for Solar Hydrogen Production

P. Hsieh*[1]; Y. Hsu[1]

1. National Chiao Tung University, Materials Science and Engineering, Taiwan

SYMPOSIUM 2

Advanced Electrochemical Materials for Energy Storage I

Room: Grand Ballroom B

Session Chairs: Mickael Dollé, Université de Montreal; Philippe Knauth, Aix Marseille University

1:30 PM

(MCARE-S2-001-2018) Electropolymerization of ionomers for all-solid-state Microbatteries and micro-fuel cells (Invited)

P. Knauth*[1]; M. Di Vona[2]

1. Aix Marseille University, France
2. University di Roma Tor Vergata, Italy

2:00 PM

(MCARE-S2-002-2018) First-Principles Density Functional Theory based Screening of High Performance ABO3 Type Oxides

S. Kang*[1]

1. University of Ulsan, Chemical Engineering, Republic of Korea

2:20 PM

(MCARE-S2-003-2018) Flexible Thin Film Batteries for Smart Lens Applications

H. Lee*[1]; K. Kim[2]; J. Choi[1]

1. Korea Institute of Science and Technology, Center for Electronic Materials, Republic of Korea
2. Yonsei University, Department of Material Science and Engineering, Republic of Korea

2:40 PM

(MCARE-S2-004-2018) Garnet Type Solid State Electrolyte of Li-ion Battery

R. Liu*[1]; S. Hu[2]

1. National Taiwan University, Department of Chemistry, Taiwan
2. National Taiwan Normal University, Department of Physics, Taiwan

3:00 PM

Break

3:20 PM

(MCARE-S2-005-2018) Synthesis, Structure and Electrochemical Properties of New Lithium Iron Vanadates (Invited)

Y. Benabed[1]; M. Dollé*[1]

1. Université de Montreal, Chemistry, Canada

3:50 PM

(MCARE-S2-006-2018) Novel SiO_2-based ternary nanocomposite anode material for lithium-ion batteries

M. Babaa*[1]; M. Karim[3]; A. Molkenova[1]; A. Terechshenko[1]; I. Kurmanbayeva[2]; Z. Bakenov[1]

1. Nazarbayev University, Chemical Engineering Department, Kazakhstan
2. Institute of Batteries, Kazakhstan
3. Skolkovo Institute of Science and Technology, Center for Electrochemical Energy Storage, Russian Federation

4:10 PM

(MCARE-S2-007-2018) Ab initio modeling and design of vanadia based elecrode materials for post-Li batteries (Invited)

D. Koch[1]; V. V. Kulish[1]; S. Manzhos*[1]

1. National University of Singapore, Mechanical Engineering, Singapore

4:40 PM

(MCARE-S2-008-2018) Rational design approaches for organic magnesium ion cathode materials

J. Lueder[1]; Y. Chen[1]; S. Manzhos*[1]

1. National University of Singapore, Mechanical Engineering, Singapore

JOINT SESSION OF SYMPOSIUM 4 and SYMPOSIUM 12

Ferroelectrics and Multiferroics for Energy Generation, Conversion and Storage / Young Scientist Forum

Room: Grand Ballroom A

Session Chairs: Soutik Betal, Alfred University; Ram S. Katiyar, University of Puerto Rico

1:30 PM

(MCARE-S4-001-2018) Magnetic Behavior of Near Room temperature Multiferroic Gallium Ferrite And it's Application

S. Dugu*[1]; K. K. Mishra[1]; D. K. Pradhan[2]; S. Kumari[3]; M. K. Bhattarai[1]; R. S. Katiyar[1]

1. University of Puerto-Rico, Department of Physics, USA
2. Geophysical Laboratory, USA
3. West Virginia University, USA

1:50 PM

(MCARE-S4-002-2018) Barium titanate nanoparticles: Short-range lattice distortions with long-range cubic order

R. C. Haskell*[1]; C. Shi[2]; S. J. Billinge[2]; E. Puma[3]; S. Bang[4]; N. J. Bean[1]; J. de Sugny[4]; R. G. Gambee[4]; A. Hightower[4]; T. C. Monson[5]

1. Harvey Mudd College, Physics, USA
2. Columbia University, Applied Physics & Applied Mathematics, USA
3. Pomona College, Physics, USA
4. Harvey Mudd College, Engineering, USA
5. Sandia National Laboratories, Nanoscale Sciences, USA

2:10 PM

(MCARE-S4-003-2018) Dielectric and Ferroelectric Properties of La^{3+} and Sc^{3+} Doped Lead Zirconate Titanate Thin Films

M. K. Bhattarai*[1]; A. A. Instan Ballesteros[1]; K. K. Mishra[1]; S. Dugu[1]; R. S. Katiyar[1]

1. University of Puerto Rico, Physics, USA

2:30 PM

(MCARE-S4-004-2018) Micro plasma based surface modification of ZnO and Graphene based flexibe thin films

A. Katakam[1]; S. Ahmed*[2]; S. Banerjee[1]

1. California State University, Fresno, Mechanical Engineering, USA
2. Portland State University, Mechanical and Materials Engineering, USA

2:50 PM

(MCARE-S4-005-2018) Structural, dielectric, ferroelectric ordering and high energy storage capacity in (100) oriented lead-free $Ba(Zr_{0.2}Ti_{0.8})O_3$ thin film

A. A. Instan Ballesteros*[1]; K. K. Mishra[1]; R. S. Katiyar[1]

1. Universidad de Puerto Rico Rio Piedras, Physics, USA

3:10 PM

Break

3:30 PM

(MCARE-S4-006-2018) Magnetic and Dielectric properties of $LuFe_2O_4$ prepared by high-temperature solid state reaction

R. C. Rai*[1]; J. Pawlak[1]; J. Hinz[1]; M. Pascolini[1]; M. DeMarco[1]

1. SUNY Buffalo State College, Physics, USA

3:50 PM

(MCARE-S4-007-2018) Enhancing Energy Storage Density of $BaTiO_3$ Based Capacitors Using Dipole Engineering at the Nanoscale

S. Betal*[1]; D. Travis[1]; J. Scoones[1]; W. A. Schulze[1]; S. M. Pilgrim[1]; S. Tidrow[1]

1. Alfred University, USA

4:10 PM

(MCARE-S12-001-2018) Nanostructured Carbon Yarn Based Optoelectronic Rods for Efficient Energy Generation and Structural Protection

M. Uddin*[1]; J. Jaksik[1]; I. Martinez[1]; H. Moore[1]

1. University of Texas RGV, Chemistry, USA

4:30 PM

(MCARE-S12-002-2018) Enhancing capacitive thermal-to-electric energy conversion devices

J. Scoones*[1]; D. Travis[1]; S. Betal[1]; W. A. Schulze[1]; S. M. Pilgrim[1]; S. Tidrow[1]

1. Alfred University, USA

SYMPOSIUM 5

High-efficiency Bulk Thermoelectric Materials

Room: Grand Ballroom D

Session Chairs: Jian He, Clemson University; Robert Freer, University of Manchester

9:30 AM

(MCARE-S5-006-2018) Half Heuslers as Prospective Mid-To-High Temperature Thermoelectric Alloys (Invited)

J. Poon*[1]; J. He[2]; T. Tritt[2]

1. University of Virginia, Physics, USA
2. Clemson University, Physics, USA

10:00 AM

(MCARE-S5-007-2018) Electronic Mechanisms for Optimizing the Thermoelectric Properties of PbTe/SnTe alloys

D. Ben Ayoun*[1]; Y. Gelbstein[1]

1. Ben-Gurion University of the Negev, Department of Materials Engineering, Israel

10:20 AM

(MCARE-S5-008-2018) Influence of Ball Milling on Microstructure and Thermoelectric Properties of n- and p-Type Half-Heusler Materials

N. Farahi*[1]; C. Stiewe[1]; D. Truong[1]; J. de Boor[1]; E. Müller[1]

1. German Aerospace Center (DLR), Institute of Materials Research, Germany

SYMPOSIUM 6

Development of Novel Optical Materials

Room: Grand Ballroom B

Session Chair: Riccardo Marin, University of Ottawa

9:30 AM

(MCARE-S6-017-2018) Complex materials for energy applications through solution synthesis (Invited)

G. Westin*[1]

1. Uppsala University, Sweden

10:00 AM

(MCARE-S6-018-2018) La/Eu doped Zr(O,N) via a solution chemical method

S. Naim Katea*[1]; G. Westin[1]

1. Uppsala University, Chemistry-Ångström, Sweden

Plasmonics

Room: Grand Ballroom B

Session Chair: Eva Hemmer, University of Ottawa

10:20 AM

(MCARE-S6-019-2018) Optimizing the efficiency of plasmonically enhanced upconversion by nano-particle design (Invited)

P. Balling*[1]; J. Christiansen[1]; R. E. Christiansen[4]; E. Eriksen[1]; H. Lakhotiya[1]; M. Mirsafaei[5]; S. Møller[1]; A. Nazir[1]; J. Vester-Petersen[3]; B. Jeppesen[2]; P. Bomholt[2]; J. L. Hansen[2]; S. Ram[1]; O. Sigmund[4]; M. Madsen[5]; A. N. Larsen[1]; S. Madsen[3]; B. Julsgaard[1]

1. Aarhus University, Dept. of Physics and Astronomy, Denmark
2. Aarhus University, Interdisciplinary Nanoscience Center, Denmark
3. Aarhus University, Dept. of Engineering, Denmark
4. Technical University of Denmark, Dept. of Mechanical Engineering, Denmark
5. University of Southern Denmark, NanoSYD, Denmark

10:50 AM

(MCARE-S6-020-2018) Toward efficient photon upconversion: Plasmonic and covalent tethering strategies (Invited)

T. Kelly*[1]

1. University of Saskatchewan, Department of Chemistry, Canada

11:20 AM

(MCARE-S6-021-2018) More Efficienct Photon Harvesting by Designing Nanostructures (Invited)

D. Ma*[1]

1. INRS, University of Quebec, Canada

SYMPOSIUM 7

Advanced Materials for SOFC I

Room: Grand Ballroom C

Session Chairs: Sun Jae Kim, Kyushu University; Tae Ho Shin, Korea Institute of Ceramic Engineering & Technology

9:30 AM

(MCARE-S7-001-2018) Steam electrolysis cells with proton-conducting $BaZr_{0.6}Ce_{0.2}Y_{0.2}O3$-δ electrolytes (Invited)

Y. Aoki*[1]; H. Toriumi[1]; H. Habazaki[1]

1. Hokkaido University, Faculty of Engineering, Japan

10:00 AM

(MCARE-S7-002-2018) Characterization of Proton Uptake through Air Electrode Materials for Electrochemical devices

K. Leonard*[1]; V. Thoréton[1]; J. Druce[1]; J. Kilner[2]; H. Matsumoto[1]

1. International Institute for Carbon-Neutral Energy Research Center (WPI-I2CNER) Kyushu University, Electrochemical Energy Conversion, Japan
2. Imperial College London, Department of Materials, United Kingdom

10:20 AM

(MCARE-S7-003-2018) Processing Ceramic Proton conductor for Intermediate temperature Steam Electrolysis (Invited)

H. Matsumoto*[1]; Y. Lee[1]; M. Ivanova[2]; K. Leonard[1]; W. Deibert[2]; W. Meulenberg[2]

1. International Institute for Carbon-Neutral Energy Research Center (WPI-I2CNER) Kyushu University, Electrochemical Energy Conversion, Japan
2. Institute of Energy and Climate Research IEK-1, Forschungszentrum Jülich GmbH, Germany

10:50 AM

(MCARE-S7-004-2018) Insights on the proton dissolution behaviour of acceptor-doped perovskite oxides by in-situ diffuse reflectance FT-IR spectroscopy (Invited)

T. Ishiyama*[1]; H. Kishimoto[1]; K. Develos-Bagarinao[1]; K. Yamaji[1]; T. Yamaguchi[1]; Y. Fujishiro[1]

1. National Institute of Advanced Industrial Science and Technology (AIST), Japan

11:20 AM

(MCARE-S7-005-2018) Dynamic Response of Solid Oxide Fuel Cell: The Effect of Anode Microstructure on Transport Phenomena under Electrical Load Change (Invited)

Y. Bae*[1]; S. Lee[2]; K. Yoon[3]; J. Lee[3]; J. Hong[1]

1. Yonsei University, Mechanical Engineering, Republic of Korea
2. Korea University, Mechanical Engineering, Republic of Korea
3. Korea Institute of Science and Technology, High-Temperature Energy Materials Research Center, Republic of Korea

11:50 AM

(MCARE-S7-006-2018) Fabrication of lanthanum strontium cobaltite-infiltrated lanthanum strontium cobalt ferrite cathodes for high performance solid oxide fuel cells

M. Kim*[1]; G. Han[1]; H. Choi[1]; J. Kim[1]; H. Choi[1]; K. Bae[2]; J. Shim[1]

1. Korea University, Mechanical Engineering, Republic of Korea
2. Stanford University, Mechanical Engineering, USA

Advanced Materials for SOFC II

Room: Grand Ballroom C

Session Chairs: Yoshio Matsuzaki, Tokyo Gas; Taner Akbay, Kyushu University

1:30 PM

(MCARE-S7-007-2018) Strain-Driven Control of B-metal Exsolution on Perovskite Oxides: A Case Study on $SrTi_{1-x}Co_xO_{3-\delta}$ (Invited)

K. Kim*[1]; J. Han[1]; W. Jung[2]; B. Koo[2]

1. Pohang University of Science and Technology(POSTECH), Chemical Engineering, Republic of Korea
2. Korea Advanced Institute of Science and Engineering (KAIST), Materials Science & Engineering, Republic of Korea

2:00 PM

(MCARE-S7-008-2018) Strain Effects on Oxygen Dissociation Activity of Pr_2NiO_4 Dispersed with Au

S. Kim*[2]; T. Ishihara[1]

1. Kyushu University, International Institute for Carbon-Neutral Energy Research, Japan
2. Kyushu University, Department of Applied Chemistry, Faculty of Engineering, Japan

2:20 PM

(MCARE-S7-009-2018) Suppression of cation segregation in $(La,Sr)CoO_{3-\delta}$ by elastic energy minimization

J. Koo*[1]; H. Kwon[4]; M. Ahn[1]; M. Choi[1]; J. Son[3]; J. Han[2]; W. Lee[1]

1. SungKyunKwan University, School of Mechanical Engineering, Republic of Korea
2. Pohang University of Science and Technology(POSTECH), Republic of Korea
3. Korea Institute of Science and Technology, Republic of Korea
4. University of Seoul, Republic of Korea

2:40 PM

(MCARE-S7-010-2018) Nickelate as an Active and Durable Electrode for Oxygen Reduction and Oxygen Evolution Reactions

X. Zhou*[1]; Y. Wang[1]; J. Wilson[1]

1. University of Louisiana at Lafayette, Chemical Engineering, USA

3:00 PM

Break

Advanced Materials for SOFC III

Room: Grand Ballroom C

Session Chairs: Hiroshige Matsumoto, Kyushu University; Yoshitaka Aoki, Hokkaido University

3:20 PM

(MCARE-S7-011-2018) Oxygen Reduction Reaction on Strained Surfaces of La_2NiO_4 (Invited)

T. Akbay*[1]; A. Staykov[1]; J. Kilner[2]; T. Ishihara[1]

1. Kyushu University, Japan
2. Imperial College London, United Kingdom

3:50 PM

(MCARE-S7-012-2018) Designing the metallic grids using electrohydrodynamic (EHD) jet printing for enhanced interfacial properties of IT-SOFC

M. Choi*[1]; S. Hwang[1]; D. Byun[1]; W. Lee[1]

1. SungKyunKwan University, Mechanical Engineering, Republic of Korea

4:10 PM

(MCARE-S7-013-2018) Multiscale design of composite nanofibers by one-step fabrication for high-performing solid oxide fuel cells

M. Ahn*[1]; W. Lee[1]

1. SungKyunKwan University, Mechanical Engineering, Republic of Korea

4:30 PM

(MCARE-S7-014-2018) Improving thermal shock resistance in yttria stabilized zirconia (YSZ) by tungsten addition for rapid startup of solid oxide fuel cells (SOFC)

H. Hayun*[1]; C. Barad[1]; Y. Gelbstein[1]

1. Ben-Gurion University of the Negev, Materials Engineering, Israel

SYMPOSIUM 11

Metal Oxides: Fundamental Studies and Applications

Room: Grand Ballroom D

Session Chairs: Ji-Won Choi, Korea Institute of Science and Technology

1:30 PM - WITHDRAWN

(MCARE-S11-001-2018) Large-area solution-manufactured air-stable 2D material for high-performance electronics and smart sensors (Invited)

W. Wu*[1]

1. Purdue University, School of Industrial Engineering, Birck Nanotechnology Center, Regenstrief Center for Healthcare Engineering, USA

1:30 PM

(MCARE-S11-002-2018) Controlling the polarizability of high-k dielectric 2D nanosheets using A-site modification (Invited)

J. Choi*[1]

1. Korea Institute of Science and Technology, Republic of Korea

2:00 PM

(MCARE-S11-003-2018) Interaction of Light Illumination and Dielectric Charge Trapping in Zinc Tin Oxide (ZTO) Thin Film Transistor

J. Chen*[1]; Y. Hsiao[1]; C. Chang[1]; J. Li[1]

1. National Cheng Kung University, Materials Science and Engineering, Taiwan

2:20 PM

(MCARE-S11-004-2018) Solution-processed flexible and transparent high-k dielectric thin films

H. Yim*[1]; J. Choi[1]

1. Korea Institute of Science and Technology, Republic of Korea

2:40 PM

Break

3:00 PM

(MCARE-S11-005-2018) Mitochondria-Reactive Oxygen Species Targeting Surface Modified Ceria-Zirconia Nanoparticles as Antioxidants for Hepatic Cirrhosis

S. Hong*[1]; S. Choi[1]; O. Kim[2]; H. Hong[2]; S. Kim[2]; K. Yoon[1]

1. Hannam University, Department of Chemistry, Republic of Korea
2. Catholic University of Korea, Central Laboratory of Surgery, Republic of Korea

3:20 PM

(MCARE-S11-006-2018) Thermal Barrier Coating of YSZ Aerogel Composite

S. Yoon*[1]; J. Kim[1]; G. Han[1]; H. Choi[1]; J. Shim[1]

1. Korea University, Mechanical Engineering, Republic of Korea

Poster Session

Room: Grand Ballroom Foyer

5:30 PM

(MCARE-P001-2018) Evaluation of the Photoelectrochemical Properties of Manganese Oxide/Cobalt Oxide Thin Films

G. Pan[1]; T. Yang*[1]

1. National Taipei University of Technology, Chemical Engineering and Biotechnology, Taiwan

(MCARE-P002-2018) In-situ Growth Nano-catalyst for Diverse Energy Devices

Y. Kim*[1]; J. Myung[1]

1. Incheon National University, Department of Materials Science and Engineering, Republic of Korea

(MCARE-P003-2018) Preparation of Si/C Anode Material with PVA Nanocomposite for Lithium-ion Battery by Electrospinning

S. Choi*[1]

1. Pukyong National University, Republic of Korea

(MCARE-P004-2018) Molecular Precursor Approach to Lithium-vanadate Nanorods as Anode Materials for Lithium-Ion Batteries

O. Ojelere*[1]; S. Mathur[1]

1. University of Cologne, Inorganic and Material Chemistry, Germany

(MCARE-P005-2018) Composite membrane with low permeability based on sulfonated poly(phenylene oxide) (sPPO) and sulfonated silica for vanadium redox flow battery

H. Jung*[1]

1. Chonnam National University, Environment and Energy, Republic of Korea

(MCARE-P006-2018) Electrochemical characterization of Graphite/Sulfur dye mixtures

W. Lee*[1]; M. Kim[1]; M. Kim[1]; V. M. Nagulapati[1]; K. Kim[2]; S. Lee[1]

1. Pusan National University, Department of Organic Material Science & Engineering, Republic of Korea
2. Pusan National University, School of Materials Science and Engineering, Republic of Korea

(MCARE-P007-2018) Investigation of electrochemical performance of TiC supported antimony-tellurium bimetallic anodes

M. Kim*[1]; Y. Jang[1]; V. M. Nagulapati[1]; M. Kim[1]; W. Lee[1]; K. Kim[2]; I. Kim[3]; J. Hur[3]; S. Lee[1]

1. Pusan National University, Department of Organic Material Science & Engineering, Republic of Korea
2. Pusan National University, School of Materials Science and Engineering, Republic of Korea
3. Gachon University, Department of Chemical and Biological Engineering, Republic of Korea

(MCARE-P008-2018) Electrochemical performance of Sb_2Te_3-TiC anode material for sodium-ion batteries

V. M. Nagulapati[1]; M. Kim[1]; M. Kim[1]; W. Lee[1]; K. Kim[2]; J. Hur[3]; I. Kim[3]; S. Lee*[1]

1. Pusan National University, Department of Organic Material Science and Engineering, Republic of Korea
2. Pusan National University, School of Materials Science and Engineering, Republic of Korea
3. Gachon University, Department of Chemical and Biological Engineering, Republic of Korea

(MCARE-P009-2018) Fast Li-Ion Conduction of Chemically Evolved Lithium Thiophosphates with Nickel Sulfides

H. Kim*[1]

1. Korea Institute of Science and Technology, High-Temperature Energy Materials Research Center, Republic of Korea

(MCARE-P010-2018) Synthesis and Characterization of a Crosslinkable Non-Conjugated Polyelectrolyte for Optoelectronic Applications

Y. Kim*[1]; H. Jeong[1]; T. Kim[1]

1. Hannam University, Republic of Korea

(MCARE-P011-2018) Modulation of Perovskite Structures by Changing Length of Alkylammonium

J. Kim*[1]; N. Cho[2]; T. Kim[1]

1. Hannam University, Department of Advanced Materials, Republic of Korea
2. Soonchunhyang University, Republic of Korea

(MCARE-P012-2018) Exploration M-doped SnO_2 to apply for OMO multilayer in order to advanced transparent conductive electrode

H. Lee*[1]; J. Jang[1]; J. Choi[1]

1. Korea Institute of Science and Technology, Center for Electronic Materials, Republic of Korea

(MCARE-P013-2018) Study of photovoltaic cells with active layer consist of hybrid compounds

P. Jarka*[1]; T. Tanski[1]; W. Matysiak[1]; B. Hajduk[2]

1. Silesian University of Technology, Institute of Engineering Materials and Biomaterials, Poland
2. The Centre of Polymer and Carbon Materials (CMPW), Polish Academy of Sciences, Poland

(MCARE-P014-2018) Researches of photovoltaic cells with hybrid active structures containing low molecular materials and nanopoarticles

P. Jarka*[1]; T. Tanski[1]; W. Matysiak[1]; B. Hajduk[2]

1. Silesian University of Technology, Institute of Engineering Materials and Biomaterials, Poland
2. Centre of Polymer and Carbon Materials, Poland

(MCARE-P015-2018) Study of photoanodes consisting of ceramic nanowires

T. Tanski*[1]; P. Jarka[1]; M. Szindler[1]; W. Matysiak[1]

1. Institute of Engineering Materials and Biomaterials, Silesian University of Technology, Poland

(MCARE-P016-2018) Optimization of hybrid structures for improving efficiency of photovoltaic devices

T. Tanski*[1]; P. Jarka[1]; W. Matysiak[1]

1. Institute of Engineering Materials and Biomaterials, Silesian University of Technology, Poland

(MCARE-P017-2018) Nanopatterning hole extraction layer for inverted planar perovskite solar cells

H. Yang*[1]; Y. Wang[1]; W. Rho[2]; T. Mahmoudi[1]; Y. Hahn[1]

1. Chonbuk National University, School of Semiconductor and Chemical Engineering, Republic of Korea
2. Chonbuk National University, Global Frontier College, Republic of Korea

(MCARE-P018-2018) Ambient-air-solution-processed efficient and highly stable perovskite solar cells based on $CH_3NH_3PbI_{3-x}Cl_x$-NiO composite with Al_2O_3/NiO interfacial engineering

Y. Wang*[1]; T. Mahmoudi[1]; H. Yang[1]; K. S. Bhat[1]; Y. Hahn[1]

1. Chonbuk National University, Chemical Engineering, Republic of Korea

(MCARE-P019-2018) Spontaneous etching of oxide and sulfide underlayers during $Cu_{2-x}S$ ALD

R. E. Agbenyeke*[1]; B. Park[1]; T. Chung[1]; C. Kim[1]; J. Han[2]

1. Korea University of Science and Technology, KRICT School, Advanced Materials Department, Republic of Korea
2. Seoul National University of Science and Technology, Materials Science and Engineering Department, Republic of Korea

(MCARE-P020-2018) Highly oriented $BiFeO_3$ films grown by atomic layer deposition with great performance of ferroelectric properties

Y. Liu[1]; H. Lee*[1]; S. Chen[2]

1. National Synchrotron Radiation Research Center, Taiwan
2. National Chiao Tung University, Department of Materials Science and Engineering, Taiwan

(MCARE-P021-2018) Development and Evaluation of Energy Harvester in Alarm System for Movement Status Monitoring of Rotating Machines

C. Kim[1]; T. Kwon[1]; J. Yun[1]; Y. Jeong[1]; Y. Hong[1]; J. Cho[1]; J. Paik*[1]

1. Korea Institute of Ceramic Engineering and Technology (KICET), Electronic Convergence Materials Division, Republic of Korea

(MCARE-P022-2018) Ceramics materials structures, energy and fractal frontiers

V. Mitic*[1]

1. Serbian Academy of Sciences, Institute of Technical Sciences, Serbia

(MCARE-P023-2018) Barium-titanate ceramics microstructure Minkowski hull analysis

V. Mitic*[1]; G. Lazovic[2]; L. Kocic[1]; V. Paunovic[1]; B. Vlahovic[3]

1. Serbian Academy of Sciences, Institute of Technical Sciences, Serbia
2. University of Belgrade, Faculty of Mechanical Engineering, Serbia
3. North Carolina Central University, USA

(MCARE-P024-2018) Structural, optical, and electrical behaviors in lead free $[KNbO3]_{1-x}[(BaNi_{1/2}Nb_{1/2}O_{3-\delta})]_x$ electroceramics

B. Y. Rosas*[1]; A. Instan[1]; K. K. Mishra[1]; R. S. Katiyar[1]

1. UPRRP, USA

(MCARE-P025-2018) Preparation of Ni-based alloy electrodes for high-performance thermoelectric Mg_2Si modules

D. Shiojiri*[1]; K. Kaita[1]; F. Ikeda[1]; T. Kawamura[1]; K. Ikeda[1]; T. Iida[1]

1. Tokyo University of Science, Department of Materials Science and Technology, Japan

(MCARE-P026-2018) Electronic thermal transport behavior of metal-dispersed Ti_2O_3 composites by metal-insulator transition

D. Shiojiri*[1]; Y. Koga[1]; S. Takemoto[1]; T. Iida[1]

1. Tokyo University of Science, Department of Materials Science and Technology, Japan

(MCARE-P027-2018) Preparation of Highly Textured and Porous $Ca_3Co_4O_9$ Ceramics for Thermoelectric Applications Using a Topotactic Solid-State Reaction

R. Shimonishi*[1]; M. Hagiwara[1]; S. Fujihara[1]

1. Keio University, Japan

(MCARE-P028-2018) New luminescent molecules with novel structure: Design, synthesis, spectral characterization and application in cell imaging

Y. Lu*[1]

1. Nanjing University, China

(MCARE-P029-2018) Mesoporous Ni/MgO–$MgAl_2O_4$ Catalyst Promoted by Samarium- Stabilized Ceria for Steam–CO_2 Reforming of Methane

S. Kim*[1]; S. Lim[1]

1. Korea Institute of Science and Technology, Clean Energy Research Center, Republic of Korea

(MCARE-P030-2018) Polyvinylpyrrolidone nanofibers filled by TiO_2 NWs: Synthesis, structural and optical investigation of the novel type of nanocomposite material

W. Matysiak*[1]

1. Silesian University of Technology, Poland

(MCARE-P031-2018) Novel types of the polymer nanocomposites with 0D and 1D SiO_2, TiO_2 and Bi_2O_3 nanostructures

W. Matysiak*[1]; T. Tanski[1]

1. Silesian University of Technology, Poland

(MCARE-P032-2018) Design and Fabrication of Antireflective Luminescent Coatings by Liquid Processes

S. Fujihara*[1]; M. Hagiwara[1]

1. Keio University, Japan

(MCARE-P033-2018) Thermally Stable Silver Cathode for High-Performance Low Temperature Solid Oxide Fuel Cells

H. Choi*[1]; K. Bae[1]; D. Kim[1]; G. Han[1]; J. Kim[1]; H. Choi[1]; J. Shim[1]

1. Korea University, Mechanical Engineering, Republic of Korea

(MCARE-P034-2018) Fabrication of composite cathode for high performance solid oxide fuel cell using a low-price commercial inkjet printer

G. Han*[1]; M. Kim[1]; H. Choi[1]; H. Choi[1]; D. Kim[1]; J. Kim[1]; J. Shim[1]

1. Korea University, School of Mechanical Engineering, Republic of Korea

(MCARE-P035-2018) Ionic conductivity in nanocrystalline ceramic electrolytes for solid oxide fuel cells (SOFC)

H. Hayun*[1]; B. Ratzker[1]; S. Kalabukhov[1]; N. Frage[1]; Y. Gelbstein[1]

1. Ben-Gurion University of the Negev, Materials Engineering, Israel

(MCARE-P036-2018) A Novel Approach to Atomic-Layer-Deposited Zinc Oxide Thin Film Analysis Using Resonance Raman Scattering

S. G. Pyo*[1]

1. Chung-ang University, Integrative Engineering, Republic of Korea

(MCARE-P037-2018) Computational Design of Electrocatalyst for High-Temperature Co-Electrolysis

A. Cho*[1]; J. Ko[2]; B. Kim[3]; J. Han[1]

1. Pohang University of Science and Technology(POSTECH), Chemical Engineering, Republic of Korea
2. University of Notre Dame, USA
3. Korea Institute of Science and Technology, Democratic People's Republic of Korea

(MCARE-P038-2018) Innovative approach for nano-metal particles socketed electrode of solid oxide cells

H. Jeong*[1]; J. Myung[1]

1. Incheon National University, Department of Materials Science and Engineering, Republic of Korea

(MCARE-P039-2018) High-Throughput Study of Conduction Mechanisms in Triple Conducting Oxides

M. Papac*[1]; A. Zakutayev[2]; R. O'Hayre[1]

1. Colorado School of Mines, USA
2. National Renewable Energy Laboratory, USA

(MCARE-P040-2018) Liquid and solid phase sintering of Ta-Cu composite for electric contact materials

K. Park*[1]; W. Ju[1]; K. Seo[1]; Y. Park[2]; J. Park[2]; T. Song[2]

1. Korea Institute of Industrial Technology, Korea Institute for Rare Metal, Republic of Korea
2. Shin Saeng Metal Ind. Co. Ltd., Republic of Korea

(MCARE-P041-2018) Fabrication of 3D Ceramic Structures via Binder Jetting Additive Manufacturing Process

S. Chun*[1]; D. Lee[1]; H. Lee[2]; H. Kim[1]

1. Korea Institute of Industrial Technology, Green Materials & Processes Group, Republic of Korea
2. Pusan National University, School of Material Science & Engineering, Republic of Korea

(MCARE-P042-2018) Synthesis of Akaganeite/ ε-Fe_2O_3 Nanorods: Tuning the Concentration of Phases for Spintronic Based Applications

H. Khalid[1]; S. Seo*[1]; S. Heo[1]; W. Yang[1]; B. Kim[1]; T. Kim[1]

1. Korea Institute of Industrial Technology, Korea Institute for Rare Metal, Republic of Korea

(MCARE-P043-2018) Conversion of CO_2 to cyclic carbonates using a multi-ligand MOF Cu(L-Asp)(4,4′-Bpy)

D. Park*[1]; J. F. Kurisingal[1]; G. Kim[1]

1. Pusan National University, Republic of Korea

(MCARE-P044-2018) Effect of stabilizing agents on particle size and distribution of Pt

M. Byun*[1]; J. Kim[2]; J. Kim[1]; D. Park[3]; M. Lee[1]

1. Korea Institute of Industrial Technology, Green Materials & Processes Group, Republic of Korea
2. Chemical and Biological Engineering, University of British Columbia, Canada
3. Pusan National University, Republic of Korea

(MCARE-P045-2018) Study on basic sensing principle of ion-sensitive semiconductor nanowire devices using 3D numerical device simulation

J. Kim*[1]; Y. Cho[1]; G. Ji[1]; J. Kim[1]; Y. Im[1]

1. Chonbuk National University, Republic of Korea

(MCARE-P046-2018) Highly Flexible Poly(dimethylsiloxane) Nanofiber Reconstructive Electrode by Electrospinning

S. Choi*[1]

1. Hannam University, Chemistry, Republic of Korea

(MCARE-P047-2018) Effects of NiS for hematite photo anodes in Photorelectrochemical water splitting

D. Kim*[1]; S. Selvaraj[1]; H. Moon[1]

1. Chonnam National University, Chemical Engineering, Republic of Korea

(MCARE-P048-2018) A transparent nanowire film fabricated by facile sintering process for flexible smart nanodevices

S. Kim*[1]; D. Kim[1]; J. Choi[1]; D. Choi[2]

1. Korea Institute of Science and Technology, Clean Energy Research Center, Republic of Korea
2. Hanyang University, Division of Materials Science and Engineering, Republic of Korea

(MCARE-P049-2018) 3D Fc_r _l b K_qq Simulation of Solid+State Hydrogen Storage R_l i Systemq ugrf rfc Amk npcqqcb Afc k ga_j Hydride

G. Ji*[1]; Y. Cho[1]; D Yu[1]; Y Jeon[1]; H Lim, M Chung, Y. Im[1]

1. Chonbuk National University, Chemical Engineering, Republic of Korea

(MCARE-P050-2018) Computational validation of the degradation of radiation grafted anion exchange membrane via removal of vinylbenzyl trimethylammonium hydroxide

R. Espiritu*[1]; L. V. Lim[2]

1. University of the Philippines, Mining, Metallurgical and Materials Engineering, Philippines
2. University of the Philippines, Institute of Chemistry, Philippines

(MCARE-P051-2018) Synthesis of Graphite/Metal Nanoparticle Composites and Its Properties

W. Lee*[1]; S. Hong[1]

1. Kangwon National University, Chemical Engineering, Republic of Korea

(MCARE-P052-2018) Capacitive constant voltage/current source

J. Scoones*[1]; D. Travis[1]; S. Betal[1]; W. A. Schulze[1]; S. M. Pilgrim[1]; S. Tidrow[1]

1. Alfred University, USA

(MCARE-P053-2018) Effect of reduced graphene oxide as a V_2O_5-WO_3-TiO_2 catalyst support for enhancement catalytic activity

M. Lee*[1]; H. Lee[2]; H. Kim[1]

1. Korea Institute of Industrial Technology, Republic of Korea
2. Pusan National University, Republic of Korea

(MCARE-P054-2018) NO_x adsorption/desorption performance on copper oxide and barium oxide co-impregnated Y-Al_2O_3

H. Kim*[1]; K. Lee[1]

1. Korea University, Chemical and Biological Engineering, Republic of Korea

(MCARE-P055-2018) Influence of Size and Surface Structure of Co_3O_4-supported Pd Nano-particles on CO Oxidation Activity

R. Huang*[1]; K. Kim[1]; M. Jang[2]; J. Han[1]

1. Pohang University of Science and Technology(POSTECH), Chemical Engineering Department, Republic of Korea
2. University of Seoul, Chemical Engineering Department, Republic of Korea

(MCARE-P056-2018) Rational Design of Catalyst for CO Oxidation on Transition Metal Co-doped Ceria

H. Kim*[1]; G. Lee[1]; J. Han[2]

1. University of Seoul, Chemical Engineering, Republic of Korea
2. Pohang University of Science and Technology(POSTECH), Republic of Korea

(MCARE-P057-2018) A DFT Search for High Performance Nitrogen Oxide Adsorbents among the Alkaline Earth and Transition Metal Oxides

J. Lim*[1]; J. Han[2]

1. University of Seoul, Chemical Engineering, Republic of Korea
2. Pohang University of Science and Technology(POSTECH), Chemical Engineering, Republic of Korea

(MCARE-P058-2018) Enhanced Catalytic Activity of CO Oxidation on M/metal-doped CeO_2 (M = Pt, Pd, Cu, and Ni)

M. Jang*[1]; J. Han[2]

1. University of Seoul, Chemical Engineering, Republic of Korea
2. Pohang University of Science and Technology(POSTECH), Republic of Korea

(MCARE-P059-2018) Ce-Pr mixed oxide catalysts with fibrous morphology for diesel soot (PM) combustion

E. Jeong*[1]; S. Lee[2]; J. Lee[1]; C. Park[1]; K. Lee[1]

1. Korea University, Department of Chemical and Biological Engineering, Republic of Korea
2. Korea University, Republic of Korea

(MCARE-P060-2018) Effect of calcination temperature on NOx uptake of cobalt-incorporated mixed oxides derived from layered double hydroxides

Y. Choi*[1]; K. Lee[1]

1. Korea University, Republic of Korea

(MCARE-P061-2018) Rheological analysis of aluminum oxide suspensions: Effect of particle shape and pH conditions

G. Lee[1]; D. Lee[1]; K. Jung[1]; T. Yoo[1]; B. Chun[1]; H. Jung*[1]

1. Korea University, Chemical and Biological Engineering, Republic of Korea

(MCARE-P062-2018) Molecular Modeling Study on the Adsorption of Hydrocarbons (Propylene, n-butane and Toluene) on Metal Cation-exchanged ZSM-5 Zeolites

K. Kim*[1]

1. Pukyong National University, Chemical Engineering, Republic of Korea

(MCARE-P063-2018) Genetic Algorithm Using Statistical Clustering with Flexible Reliability

T. Park[1]; Y. Kim[1]; S. Lim[1]; B. Lee*[1]; J. Lee[1]

1. Seoul National University, Republic of Korea

Thursday, August 23, 2018

Plenary IV

Room: Grand Ballroom A & B

Session Chair: Michitaka Ohtaki, Kyushu University

8:30 AM

(MCARE-PLEN-004-2018) Creation of active functionality utilizing abundant elements

H. Hosono*[1]

1. Tokyo Institute of Technology, Materials Research Center for Element Strategy, Japan

9:10 AM

Break

SYMPOSIUM 2

Advanced Electrochemical Materials for Energy Storage II

Room: Grand Ballroom B

Session Chairs: Maria Luisa Di Vona, University of Rome Tor Vergata; Aitana Tamayo, Institute of Ceramics and Glass, CSIC

9:30 AM

(MCARE-S2-009-2018) Preparation of Nitrogen-doped Ordered Mesoporous Carbon Containing SeS_2 as a Cathode Materials for the Lithium-Sulfur Battery

S. Lee*[1]; J. Lee[2]; S. Lee[2]; W. Kim[2]; H. Kim[2]; K. Eom[1]; C. Pak[2]

1. Gwangju Institute of Science and Technology, School of Materials Science and Engineering, Republic of Korea
2. Gwangju Institute of Science and Technology, Graduate Program of Energy Technology, School of Integrated Technology, Institute of Integrated Technology, Republic of Korea

9:50 AM

(MCARE-S2-010-2018) Cation permeability of protonic, anionic and ampholytic membranes for all vanadium redox flow batteries

M. Di Vona*[1]

1. University of Rome Tor Vergata, Industrial Engineering, Italy

10:10 AM

(MCARE-S2-011-2018) Performance of Co@CNOs prepared from Co-containing preceramic polymers as supercapacitor electrodes

A. Tamayo*[1]; F. Rubio[1]; C. Arroyo[2]; M. Rodriguez[2]

1. Institute of Ceramics and Glass, CSIC, Spain
2. University of Extremadura, Faculty of Sciences, Spain

10:30 AM

(MCARE-S2-012-2018) Study on the chemical durability of ion selective electrode based on chalcohalide glass

G. Chen*[1]; L. Li[1]

1. East China University of Science and Technology, China

10:50 AM

(MCARE-S2-013-2018) Oxide-based all-solid-state batteries: Prospects and challenges (Invited)

M. Finsterbusch*[1]; Y. Arinicheva[1]; A. Windmueller[1]; S. Moeller[1]; C-L. Tsai[1]; S. Lobe[1]; C. Dellen[1]; S. Uhlenbruck[1]; D. Fattakhova-Rohlfing[1]; O. Guillon[2]

1. Institute of Energy and Climate Research, Materials Synthesis and Processing (IEK-1), Forschungszentrum Jülich GmbH, Germany
2. Jülich Aachen Research Alliance: JARA-Energy, Germany

SYMPOSIUM 7

Advanced Materials for SOFC IV

Room: Grand Ballroom C

Session Chairs: Taner Akbay, Kyushu University; Kwati Leonard, International Institute for Carbon-Neutral Energy Research Center (WPI-I2CNER) Kyushu University; Tatsumi Ishihara, Kyushu University

9:30 AM

(MCARE-S7-015-2018) Active Perovskite Oxide Cathode Materials for High Temperature CO_2 Electrolysis Cells using Solid Oxide Conductor (Invited)

T. Shin*[1]; H. Kim[1]; K. Hwang[1]; J. Irvine[2]

1. Korea Institute of Ceramic Engineering & Technology, Republic of Korea
2. University of St Andrews, School of Chemistry, United Kingdom

10:00 AM

(MCARE-S7-016-2018) $CuFe_2O_4$ Spinel-based Oxide Cathode used for CO_2/H_2O High-Temperature electrolysis

K. Wu[2]; T. Ishihara*[1]

1. Kyushu University, International Institute for Carbon-Neutral Energy Research, Japan
2. Kyushu University, Applied Chemistry, Japan

10:20 AM

(MCARE-S7-017-2018) Reduction in CO_2 Emissions from Methane Fueled SOFCs (Invited)

Y. Matsuzaki*[1]; M. Keller[2]; J. Otomo[2]

1. Tokyo Gas, Fundamental Technology Dept., Japan
2. The University of Tokyo, Japan

10:50 AM

(MCARE-S7-018-2018) Highly Conductive and Stable Bismuth Oxide-Based Electrolytes for Lower Temperature Solid Oxide Fuel Cells

K. Lee*[1]

1. DGIST, Energy Science & Engineering, Republic of Korea

11:10 AM

(MCARE-S7-019-2018) Effect of Ageing on the Integrity of an Electrolyte-Supported SOC

A. Masini*[1]; Z. Chlup[1]; I. Dlouhy[1]

1. Institute of Physics of Materials, AS CR, Brittle Fracture Group, Italy

11:30 AM

(MCARE-S7-020-2018) Investigation of cost-effective potassium doped strontium silicate ($Sr_{1-x}K_xSiO_{3-0.5x}$) as a solid electrolyte for IT-SOFC application

R. Pandey*[1]; P. Singh[2]

1. A.R.S.D. College, University of Delhi, New Delhi, Department of Physics, India
2. Indian Institute of Technology (BHU) Varanasi, Department of Physics, India

11:50 AM

(MCARE-S7-021-2018) Studies on hybrid composite membranes for fuel cell applications

U. Thanganathan*[1]

1. Alagappa Univeristy, Physics, India

SYMPOSIUM 11

Novel Materials, Organic and Hybrid Materials, Fundamental Studies

Room: Grand Ballroom D

Session Chairs: Yongchai Kwon, Seoul National University of Science and Technology; Dahl-Young Khang, Yonsei University

9:30 AM

(MCARE-S11-007-2018) Enzymatic biofuel cells using biocatalysts (Invited)

Y. Chung[2]; J. Ji[1]; S. Kang[3]; Y. Kwon*[1]

1. Seoul National University of Science and Technology, Republic of Korea
2. Korea National University of Transportation, Republic of Korea
3. Seoul National University of Science and Technology, Republic of Korea

10:00 AM

(MCARE-S11-008-2018) High efficiency (>17%) Si-organic hybrid solar cells by concurrent structural, electrical, and interfacial optimization via low temperature processes (Invited)

S. Yoon[1]; D. Khang*[1]

1. Yonsei University, Materials Science and Engineering, Republic of Korea

10:30 AM

(MCARE-S11-009-2018) Graphene analogues Two Dimensional Transition Metal Chalcogenides for electrochemical sensor Applications

K. Padmanathan*[1]; D. Doonyapisut[1]; C. Chung[1]

1. SungKyunKwan University, School of Chemical Engineering, Republic of Korea

10:50 AM

(MCARE-S11-010-2018) Qualification of silver-nanowire networks as an alternative transparent electrode to indium-tin-oxide thin film

S. Ham*[1]; M. Kim[1]; C. Kim[1]; G. Han[1]; S. Cho[1]

1. SungKyunKwan University, Chemical Engineering, Republic of Korea

11:10 AM

(MCARE-S11-011-2018) Electrospun Ceramic Nanofibers for Energy Harvesting and Conversion

O. Elishav*[1]; V. Beilin[1]; G. S. Shter[1]; G. Grader[1]

1. Technion - Israel Institute of Technology, Israel

11:30 AM

(MCARE-S11-012-2018) A Nickel catalyst supported on phosphate modified hierarchically macro-mesoporous alumina for effective hydrogen production by steam methane reforming

E. Im*[1]; E. Woo[1]; H. Seo[2]; D. Park[3]; G. Moon[2]; D. Lim[1]

1. Korea Institute of Industrial Technology, Energy Plant R&D Group, Republic of Korea
2. Korea Institute of Industrial Technology, Advanced Surface Coating & Processing R&D Group, Republic of Korea
3. Pusan National University, Chemical Engineering, Republic of Korea

11:50 AM

(MCARE-S11-013-2018) Electrocatalytic Activity and Stability of Nb-TiO_2 supported Pt Nanocatalyst

K. Noh*[1]; J. Han[1]

1. Pohang University of Science and Technology(POSTECH), Chemical Engineering, Republic of Korea

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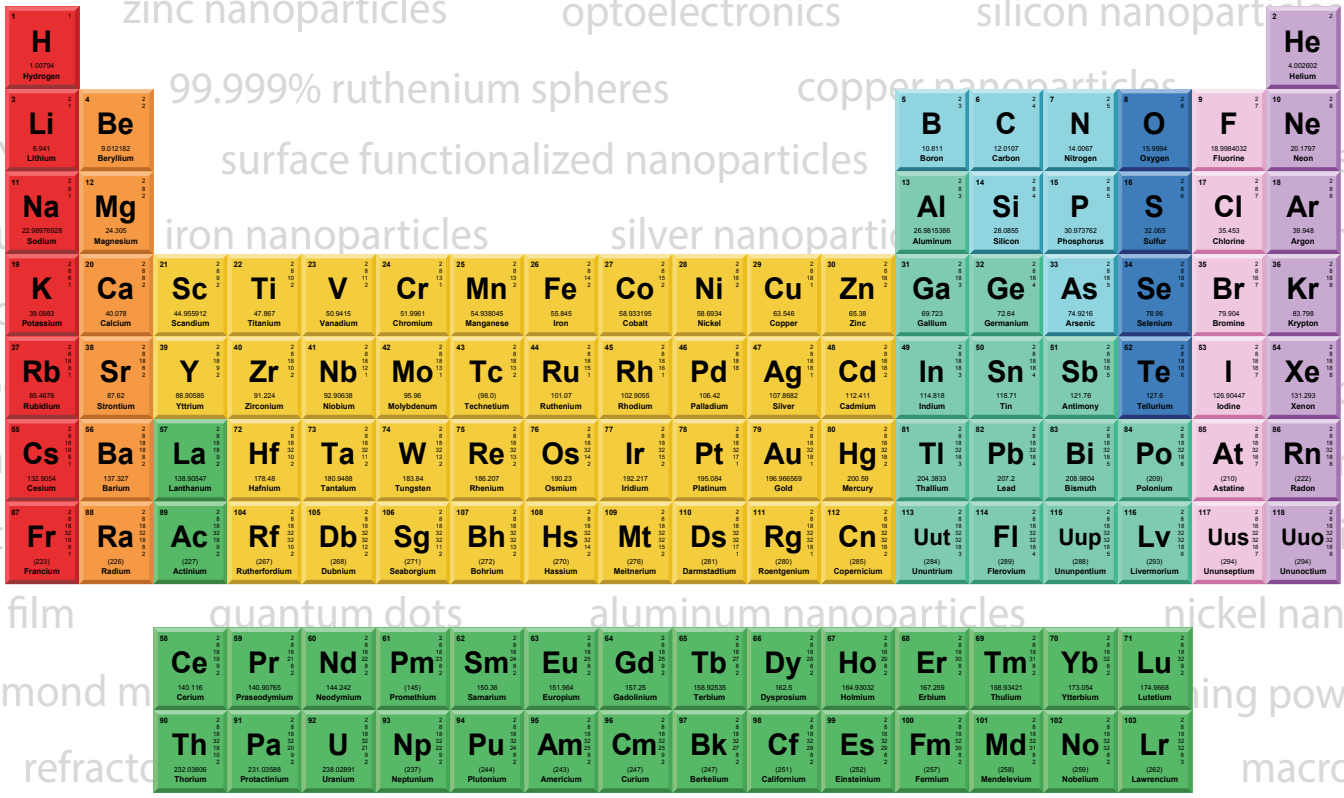

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