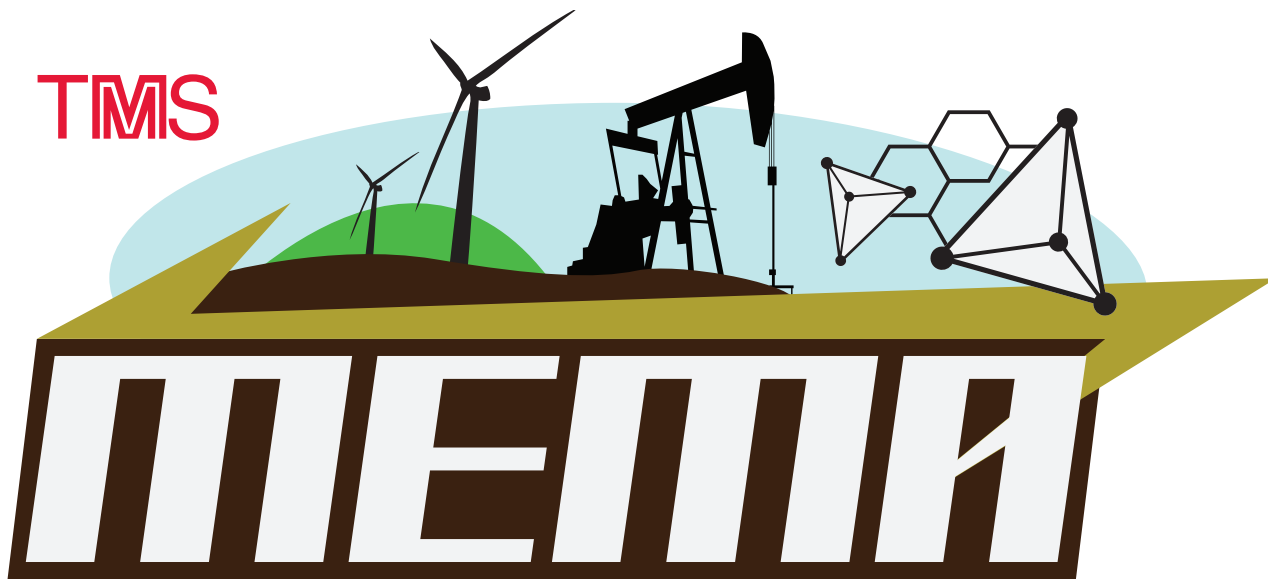


TMS



The TMS Middle East - Mediterranean Materials Congress on Energy and Infrastructure Systems **2015**



PROGRAM PREVIEW

January 11–14, 2015
Ritz-Carlton Doha • Doha, Qatar

Register by December 1, 2014 and save!

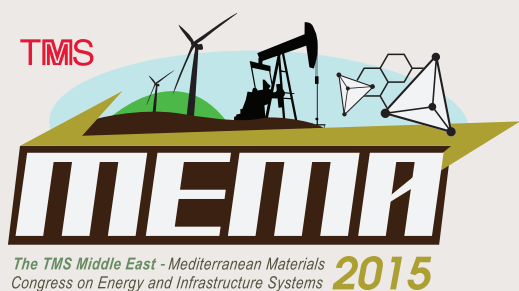
www.tms.org/MEMA2015

Organized by: In Cooperation with:



MEETING INFORMATION

**REGISTER NOW
FOR**



**Register by
December 1, 2014 and SAVE!**

This materials congress will focus on new materials research and development in applications of interest for Qatar and the entire Middle East and Mediterranean region. The goal of this congress is to build synergy among researchers working on different materials applications but with similar objectives of enhancing design, sustainability, and functionality of materials. The congress will also be a forum for establishing collaboration among academia, research institutions, and industry in the Middle East and Mediterranean region and the rest of the world.

Attendees are expected from government, academia, and industry and the fields of energy, sustainability, and computational materials.

CONGRESS ORGANIZERS

Lead Organizer:

- Ibrahim Karaman, Texas A&M University

Co-Organizers:

- Raymundo Arroyave, Texas A&M University
- Eyad Masad, Texas A&M University at Qatar

Additional Organizers:

- Zoubeida Ounaies, Pennsylvania State University
- Dimitris Lagoudas, Texas A&M University
- Mohammed Khaleel, Qatar Foundation
- Mariam Al-Maadeed, Qatar University
- Pradeep Sharma, University of Houston

Local Organization Committee and Industry Liaisons:

- Eyad Masad, Texas A&M University at Qatar
- Mariam Al-Maadeed, Qatar University

- Bilal Mansoor, Texas A&M University at Qatar
- Georges Ayoub, Texas A&M University at Qatar
- Aboubakr M. Abdullah, Qatar University
- Srinath Iyengar, Texas A&M University at Qatar
- Said Mansour, Qatar Energy and Environment Research Institute, Qatar Foundation
- Abdulaziz Al Mathami, Qatar Petroleum
- Chris Devadas, Hydro Aluminum Technology Centre – Qatar
- Mabroouk Ouderni, Qatar Petrochemical Company – QAPCO
- Wakeel Ahmed Khalid Ahmed, Qatar Steel

International Advisory Committee:

- Thomas Zacharia, Qatar Foundation, Committee Chair
- Yehia Bahei-El-Din, The British University in Egypt
- Tahir Cagin, Texas A&M University
- Hussein Zbib, Washington State University
- Imad Al-Qadi, University of Illinois at Urbana-Champaign
- Tom Scarpas, Delft University of Technology
- Zachary Grasley, Texas A&M University
- Dallas Little, Texas A&M University
- Nick Kanellopoulos, National Center for Scientific Research “Demokritos”
- Marwan Khraisheh, Qatar Energy and Environment Institute, Qatar Foundation
- Peter Hewlett, British Board of Agrement and University of Dundee
- Tayssir Hamieh, Lebanese University
- A.G. Mamalis, PC-NAE
- M. Enokizono, Oita University
- Tasneem Pervez, Sultan Qaboos University

**TMS would like to thank our
GOLD SPONSORS
for their gracious support of the event.**



REGISTRATION

All congress attendees, including authors, presenters, and session chairs, are required to register.

To receive the discount registration rate, register at www.tms.org/MEMA2015 by December 1, 2014.

| Registration Fees | Discount* | Standard |
|-------------------|-----------|----------|
| Member | \$475 | \$575 |
| Nonmember+ | \$575 | \$675 |
| Student** | \$295 | \$295 |

+Includes TMS membership for 2015

* Discount pricing through December 1, 2014

**Copy of student school identification card must accompany registration form

Prices are shown in U.S. Dollars

Registration package includes:

- One copy of the congress proceedings
- Technical sessions
- Refreshment breaks and lunch each day
- Welcome reception on Sunday
- Poster reception on Tuesday
- Dinner event on Monday
- Banquet on Tuesday

LOCATION, HOUSING & TRAVEL

Congress Location – Ritz-Carlton Doha

Discover the Ritz-Carlton Doha hotel and experience the breathtaking beauty of the Gulf. From the city's traditions and culture to its modern amenities and exciting attractions, this stunning luxury hotel in Qatar provides guests with convenient access to everything this unforgettable destination has to offer. For more information, visit www.ritzcarlton.com/Doha.

Housing

A block of rooms has been reserved at the Ritz-Carlton Doha at a special rate. Accommodations must be secured by December 10, 2014. Single occupancy is QR 950 (approximately \$260) per night and double occupancy is QR 1050 (approximately \$290) per night. The hotel rate includes breakfast and complimentary internet access in the sleeping rooms. To make your reservations visit www.tms.org/MEMA2015.

Getting There

The Ritz-Carlton Doha is located about 12 miles from the Hamad International Airport. Taxis are available at the airport.

NETWORKING/SOCIAL EVENTS

Sunday, January 11

Welcome Reception

6:00 p.m. to 7:30 p.m.

Monday, January 12

A Fun Evening Out in Doha

Sponsored by Texas A&M University of Qatar

7:00 p.m. to 9:00 p.m.

Buses will depart at 6:30 p.m.

Tuesday, January 13

Poster Session

3:20 p.m. to 4:30 p.m.

Banquet at Ritz-Carlton

6:00 p.m. to 8:00 p.m.

TECHNICAL PROGRAM

The goal of the technical program is to leverage regional interests and expertise, particularly along three tracks:

Track 1: Sustainable Infrastructure Materials

This track will encompass materials issues and solutions pertaining to critical infrastructure and will have an overarching theme of sustainability.

Track 2: Materials for Energy Extraction, Conversion, and Storage

In this track there will be an emphasis on materials issues for not just alternative energy sources such as energy harvesting, solar and wind power but also oil and gas, and thermal which are topics of key interest to the Mideast-Mediterranean/North Africa geographic area.

Track 3: Computational Materials Design

This track will focus on computational materials design, especially as applied to energy and infrastructure systems.

The sessions will be conducted in English.

SPONSORSHIP OPPORTUNITIES

Corporate sponsorship offers high visibility at the congress reception, refreshment breaks, and attendee social activities, as well as on registration amenities like reusable canvas bags, badges, and lanyards.

For more information on purchasing a corporate sponsorship, visit the Sponsorship page of the MEMA 2015 website: www.tms.org/MEMA2015.

TECHNICAL PROGRAM

MONDAY, JANUARY 12, 2014

Plenary

Room: Al Wosail

- 8:00 AM **Introductory Comments**
- 8:20 AM **Keynote**
Modeling at Multiple Scales to Support Materials Design: *David McDowell*¹; ¹Georgia Institute of Technology
- 9:05 AM **Break**

1-1: Cementitious Materials, Composites

Room: Al Wosail 1

- 9:20 AM **Invited**
Computational Materials Science to Enable Sustainable Concrete Material Design: *Zachary Grasley*¹; Xiaodan (Sonia) Li¹; ¹Virginia Tech
- 10:00 AM **Vertical Scanning Interferometry: A New Method to Quantify Solute-solvent Reaction Dynamics in Cementitious Environments: *Gaurav Sant***¹; ¹University of California, Los Angeles
- 10:20 AM **Effect of Interface and Interphase Regions on the Elasticity of Nanocomposite Cement: *Ala Abu Taqa***¹; Ahmed Senouci¹; Rashid Abu Al-Rub²; ¹Qatar University; ²Masdar Institute of Science and Technology
- 10:40 AM **Finite Element Simulation of the Response of No-Tension Materials: *Alieh Alipour***¹; Tom Scarpas¹; ¹Delft University of Technology
- 11:00 AM **Investigation and Modeling of the Damage Evolution in Natural Fiber Composites: *Habiba Bougherara***¹; Zia Mahboob¹; Fodil Meraghni²; Laurent Peltier³; ¹Ryerson University; ²ENSAM - Arts et Métiers ParisTech; ³
- 11:20 AM **Lunch**

2-1: Ferrocaloric Materials

Room: Al Wosail 2

- 9:20 AM **Invited**
The Direct Conversion of Heat to Electricity Using Multiferroic Materials: *Richard James*¹; ¹University of Minnesota
- 10:00 AM **Invited**
Origin of Hysteresis in Multicaloric Materials: *Sebastian Fähler*¹; ¹IFW Dresden
- 10:40 AM **Measurements of the Electrocaloric Effect in Some Relaxor Ferroelectrics: *Mehmet Sanlialp***¹; Vladimir V. Shvartsman¹; Doru C. Lupascu¹; ¹University Duisburg-Essen
- 11:00 AM **The Tunable Microstructure and its Influence on the Giant Magnetocaloric effect in Magnetic Shape Memory Alloys: *Nickolaus Bruno***¹; Yujin Huang²; Ibrahim Karaman¹; Joseph Ross¹; Jianguo Li²; ¹Texas A&M University; ²Shanghai JiaoTong University
- 11:20 AM **Studies of Magnetic Properties of Ni-Mn-In-Co Heusler-type Glass-coated Microwires: *Valentina Zhukova***¹; Mihail Ipatov¹; Alexandr Aronin²; Galina Abrosimova²; Alexandr Kiselev²; ***Arcady Zhukov***³; ¹Basque Country University; ²Institute of Solid State Physics; ³Basque Country University and Ikerbasque
- 11:40 AM **Lunch**

3-1: Ab-Initio Approaches

Room: Al Wosail 3

- 9:20 AM **Invited**
Ab Initio Thermodynamics: A Novel Route to Design Structural Materials with Superior Mechanical Properties: *Jörg Neugebauer*¹; Blazej Grabowski¹; Fritz Kormann¹; Tilmann Hickel¹; ¹Max-Planck-Institut für Eisenforschung GmbH
- 10:00 AM **A DFT Based Molecular Dynamics Study of $\text{PbI}_3(\text{CH}_3\text{NH}_3)$: *Marcelo Carignano***¹; ¹QEERI - Qatar Foundation

TECHNICAL PROGRAM

- 10:20 AM **Thermal Expansion Coefficient of Two Dimensional Materials:** *Cem Sevik*¹; ¹Anadolu University
- 10:40 AM **Strong Stacking Between Organic and Organometallic Molecules as the Key for Material Design:** *Snezana Zaric*¹; Dusan Malenov²; Dragan Ninkovic²; ¹Texas A&M University at Qatar; ²Innovation Centre of the Department of Chemistry
- 11:00 AM **Calculation of Electronic Structure and Field Induced Magnetic Collapse in Ferroic Materials:** Raymundo Arroyave¹; *P. Entel*²; N. Singh³; M. Gruner²; A. Grünebohm²; V. V. Sokolovskiy⁴; V. D. Buchelnikov⁴; ¹Texas A & M University; ²University, Duisburg-Essen; ³University of Houston; ⁴Chelyabinsk State University
- 11:20 AM **Lunch**

1-2: Cementitious Materials Sustainability

Room: Al Wosail 1

- 1:30 PM **Introductory Comments**
- 1:40 PM **Invited**
Utilising Fine and Coarse Recycled Aggregates from Qatar in Concrete: *Roderick Jones*¹; Judith Halliday¹; Laszlo Csetenyi¹; Li Zheng¹; Nikolaos Strompinis¹; ¹University of Dundee
- 2:20 PM **Multiwalled Carbon Nanotubes Aspect Ratio, Functionalization, Weight Fraction & Surfactant Effect on the Mechanical Properties of Cementitious Materials:** *Mohamed Mohsen*¹; Rashid Abu El Rub²; Ahmed Senouci¹; Nasser Alnuaimi¹; Khaldoon Bani Hani³; ¹Qatar University; ²Masdar Institute of Science and Technology; ³Jordan University of Science and Technology
- 2:40 PM **Defined Polymers as Candidates for Pavement Subgrade Soil Stabilization:** *Chandramohan Ayyavu*¹; Srinath R. Iyengar¹; Howard J. H. M. Hanley¹; Hassan S. Bazzi¹; Dallas Little¹; ¹Texas A&M University at Qatar
- 3:00 PM **Break**

2-8: Lightweight and High Performance Materials I

Room: Al Wosail 1

- 3:20 PM **Nanomaterials for “Smart” Membrane Pretreatment and RO Desalination Technologies:** *Khaled Mahmoud*¹; ¹QEERI-Q
- 3:40 PM **3D Nanotubular Surfaces for Energy Storage and Conversion:** *Tolou Shokuhfar*¹; ¹Michigan Technological University
- 4:00 PM **Mechanical Properties of Al-Zr-Sc Alloys with Si and Er Micro-additions:** Nhon Vo¹; Nick Barta²; Georges Ayoub³; Ibrahim Karaman²; *David Dunand*¹; ¹Northwestern University; ²Texas A&M University; ³Texas A&M University at Qatar
- 4:20 PM **Development of High Strength and Ductile Al-xMg Alloys for Sustainable Applications:** Min Zha¹; *Hans Rover*²; Chris Devadas³; ¹Norwegian University of Science and Technology; ²Qatar University; ³Hydro Aluminium QSTP Qatar
- 4:40 PM **Microstructural and Mechanical Characterization of Friction-Stirred Welded (FSW) TRC AZ31B Magnesium Alloy Sheets:** *Abdelhakim Dorbane*¹; Georges Ayoub¹; Bilal Mansoor¹; Ramsey Hamade²; Ghassan Kridli³; Abdellatif Imad⁴; ¹Texas A&M University at Qatar; ²American University of Beirut; ³University of Michigan-Dearborn; ⁴Ecole Polytech'Lille

2-2: Energy Storage Materials

Room: Al Wosail 2

- 1:30 PM **Introductory Comments**
- 1:40 PM **Invited**
Nanomaterial Design Strategies for Capacitive Energy Storage Applications: *Husam Alshareef*¹; ¹King Abdullah University for Science & Technology (KAUST)
- 2:20 PM **Rechargeable Batteries: Lessons from Real Time Observation of Lithiation/Delithiation in Nanoscale Anode Materials:** *Reza Shahbazian-Yassar*¹; ¹Michigan Technological University

TECHNICAL PROGRAM

| | |
|---------|--|
| 2:40 PM | Electrode Materials Based on Phosphates for Lithium Ion Batteries as Efficient Energy Storage System: <i>Saadoune Ismael</i> ¹ ; Lasri Karima ¹ ; Bezza Ilham ¹ ; Ehrenberg Helmut ¹ ; Indris Sylvio ¹ ; Daniel Brandell ² ; ¹ University Cadi Ayyad Marrakech; ² Uppsala University |
| 3:00 PM | Break |
| 3:20 PM | Interfacial Stresses and Degradation of Oxide Scale and Substrate Interface at High Temperatures: <i>Mohammed Khaleel</i> ¹ ; E. Stephens ² ; J. Stevenson ² ; ¹ Qatar Foundation; ² Pacific Northwest National Laboratory |
| 3:40 PM | Predicting Acoustic Emission and Electrochemical Impedance Spectra for Damage Stochastics in Energy Materials: Pallab Barai ¹ ; Chien-Fan Chen ¹ ; <i>Partha Mukherjee</i> ¹ ; ¹ Texas A&M University |
| 4:00 PM | Novel Organic Electrodes for Organic Rechargeable Batteries: <i>Burak Esat</i> ¹ ; Sumeyye Bahceci ¹ ; Sevda Akay ¹ ; Aliyu Bawa Abdullahi ¹ ; ¹ Fatih University |
| 4:20 PM | Na₂Fe_{0.5}Mn_{0.5}P₂O₇ as Promising Cathode Material for Rechargeable Sodium Ion Batteries (NIBs): <i>R. Shakoor</i> ¹ ; Ramazan Kahraman ¹ ; Chanseon Park ² ; Soo Lim ² ; Jang Choi ² ; ¹ Qatar University; ² Korea Advanced Institute of Science and Technology (KAIST) |
| 4:40 PM | Nanomaterial-based Ultracapacitor for Power Integrated Circuits: <i>Daniel Choi</i> ¹ ; Waqas Gill ¹ ; Maarten Geest ¹ ; ¹ Masdar Institute of Science and Technology |

3-2: Energy Materials Simulation

Room: Al Wosail 3

| | |
|---------|---|
| 1:30 PM | Introductory Comments |
| 1:40 PM | Invited Application of Phase-field Method to Modeling Microstructure Evolution in Li-ion Batteries: <i>Long Qing Chen</i> ¹ ; ¹ Penn State University |
| 2:20 PM | Modeling of Thermal Behavior and Efficiency of Photovoltaic Panels: <i>Said Ahzi</i> ¹ ; ¹ University of Strasbourg/Qatar Foundation |
| 2:40 PM | A Biomimetic-computational Approach to Optimizing the Quantum Efficiency of Photovoltaics: <i>Andreas Holzenburg</i> ¹ ; Lisa Perez ¹ ; ¹ Texas A&M University |
| 3:00 PM | Break |
| 3:20 PM | Using Nonlinear Electret Effects to Design Piezoelectricity and Magnetoelectricity in Soft Materials: <i>Pradeep Sharma</i> ¹ ; ¹ University of Houston |
| 3:40 PM | Stability, Mechanical, Dielectric and Piezoelectric Properties of {Ax^xA^{1-x}}{By^yB^{1-y}}O₃ Ceramics: <i>Berna Akgenc</i> ¹ ; Çetin Tasseven ² ; Tahir Cagin ³ ; ¹ Kirklareli University; ² Yildiz Technical University; ³ Texas A&M University |
| 4:00 PM | Martensitic Transformation of Ni₂FeGa Magnetic Shape Memory Alloy Studied by Density Functional Theory: <i>Sevgi Ozdemir Kart</i> ¹ ; Cengiz Soykan ¹ ; Cem Sevik ² ; Tahir Çagin ³ ; ¹ Pamukkale University; ² Anadolu University; ³ Texas A&M University |
| 4:20 PM | Revealing the Role of Organic Ligands in Hybrid Halid Perovskites for Phovoltaics Applications: Carlo Motta ¹ ; <i>Fadwa El-Mellouh</i> ² ; Fahhad Alharbi ² ; Nouar Tabet ² ; Kais Sabre ² ; Stefano Sanvito ¹ ; ¹ Trinity College Dublin and CRANN; ² QEERI |
| 4:40 PM | Tailoring Thermal Conductivity of Ge/Si Core-Shell Nanowires: <i>Sevil Sarikurt</i> ¹ ; Cem Sevik ² ; Alper Kinaci ³ ; Justin Haskins ⁴ ; Tahir Cagin ⁵ ; ¹ Dokuz Eylul University; ² Anadolu University; ³ Argonne National Laboratory; ⁴ NASA Ames Research Center; ⁵ Texas A&M University |

TUESDAY, JANUARY 13, 2014

Plenary

Room: Al Wosail

| | |
|---------|---|
| 8:00 AM | Introductory Comments |
| 8:10 AM | Keynote Materials Research for the Energy Industry Collaboration Opportunities between Energy Industry and Academia: <i>Rustom Mody</i> ¹ ; ¹ Baker Hughes |
| 8:55 AM | Break |

TECHNICAL PROGRAM

1-3: Multi-scale Characterization and Simulations of Infrastructure Materials

Room: Al Wosail 1

- 9:10 AM **Invited**
Quantifying Material, Environmental, and System Variables Influencing the Structural Performance of Reinforced Concrete Structures Affected by Alkali Silica Reactions: *David Trejo*¹; Joseph Bracci²; Paolo Gardoni³; ¹Oregon State University; ²Texas A&M University; ³University of Illinois at Urbana-Champaign
- 9:50 AM **Invited**
Monitoring Concrete Infrastructure Condition Using Acoustic Sensing and Imaging: *John Popovics*¹; ¹University of Illinois
- 10:30 AM **Multiscale Design of Palm Natural Fiber Based Composite:** *Yehia Bahei-El-Din*¹; Taher Wahba¹; Tarek Hatem¹; ¹British University in Egypt
- 10:50 AM **Mechanical Properties of Concrete Containing Qatar's Municipal Wastes:** *Nesibe Gozde Ozerkan*¹; Deniz Tokgoz¹; Joseph Antony²; ¹Qatar University; ²University of Leeds
- 11:10 AM **Stochastic Framework for the Modeling and Propagation of Linear Viscoelastic Material Properties of Asphalt Mixtures in Pavement Structures:** *Loujaine Mehrez*¹; Eyad Masad¹; ¹Texas A&M University at Qatar
- 11:30 AM **Lunch**

2-3: Nano-Engineered Materials for Energy Conversion

Room: Al Wosail 2

- 9:10 AM **Invited**
Challenges and Opportunities for Nano Engineered Materials: *Pulickel Ajayan*¹; ¹Rice University
- 9:50 AM **Towards Engineering Efficient Thermoelectrics: Large-scale Synthesis of Nanowires and their Assembly into Stable Welded Nanowire Networks:** *Sreeram Vaddiraju*¹; ¹Texas A&M University
- 10:10 AM **Design of New Electroactive Materials Based on Nanoparticle-modified Polymers:** *Zoubeida Ounaies*¹; Nirmal Shankar Sigamani¹; ¹The Pennsylvania State University
- 10:30 AM **Active Nanocomposite Materials for Photo-mechanical Actuation:** *Igor Krupa*¹; Klaudia Czanikova²; Maria Omastova²; ¹Qatar University; ²Polymer Institute SAV
- 10:50 AM **Inherent Nonlinear Non-conservative Behavior of Resonant Piezoelectric Energy Harvesters: A Dynamical Systems Approach:** Stephen Leadenham¹; *Alper Erturk*¹; ¹Georgia Institute of Technology
- 11:10 AM **A Multiscale-Based Model for Composite Materials with Embedded PZT Filaments for Energy Harvesting:** *Yehia Bahei-El-Din*¹; Ahmed El-Etriby¹; Mohamed Abdel-Meguid¹; Khalid Shalan¹; Tarek Hatem¹; ¹British University in Egypt
- 11:30 AM **Lunch**

3-3: Modeling Materials Across the Scales

Room: Al Wosail 3

- 9:10 AM **Invited**
Computational Modeling of Deformation Mechanisms in Mg and Mg Alloys: *W Curtin*¹; M. Ghazisaedi²; A. Luque³; Z. Wu³; ¹EPFL; ²Ohio State University; ³Ecole Polytechnique Federale de Lausanne
- 9:50 AM **Multiscale Modeling and Design of Advanced Interface Materials for High Energy Environments:** *Hussien Zbib*¹; ¹Washington State University
- 10:10 AM **Periodic Homogenization of SMA Composites under Isothermal Conditions:** *George Chatzigeorgiou*¹; Yves Chemisky¹; Fodil Meraghni¹; ¹Arts et Metiers ParisTech
- 10:30 AM **Modeling the Deformation Mechanisms in Magnesium Single Crystals: Multiscale Dislocation Dynamics Analyses:** *Wassim Jaber*¹; Mutasem Shehadeh¹; ¹American University of Beirut
- 10:50 AM **Analysis of Solid State Bonding in the Extrusion Process of Magnesium Alloys -Numerical Prediction and Experimental Verification:** *Nabeel Alharthi*¹; Wojciech Misiolek²; Anthony Ventura²; ¹Lehigh University and King Saud University; ²Lehigh University

TECHNICAL PROGRAM

11:10 AM **Multiscale Modeling of Discontinuous Precipitation in U-Nb:** *Thien Duong*¹; Alexander Landa²; Robert Hackenberg³; Patrice Turchi²; Raymundo Arroyave¹; ¹Texas A&M University; ²Lawrence Livermore National Laboratory; ³Los Alamos National Laboratory

11:30 AM **Lunch**

1-4: Environmental Degradation

Room: Al Wosail 1

1:30 PM **Introductory Comments**

1:40 PM **Invited**
Corrosion Challenges for the Oil and Gas Industry in the State of Qatar: *Roy Johnsen*¹; ¹Norwegian University of Science and Technology

2:20 PM **Effect of Electroless Co-P and Co-Ni-P Coatings on Cavitation Erosion-corrosion Resistance:** *Shemy Mohamed Ahmed Gaber Gaber*¹; Mohammed Aboraia²; Mohammed Doheim²; Salem Karrab. A³; ¹Majmaah University; ²Assiut University; ³Misurata University

2:40 PM **Prevention of Chloride Stress Corrosion Cracking (CSCC) using Thermally Sprayed Coating (TSC):** *Rehan Ahmed*¹; ¹Petronas Carigali

3:00 PM **New Self-Healing Coatings Technique for Corrosion Protection:** *Eman Fayyad*¹; Mariam Al-Maadeed¹; ¹Qatar University

2-4: Ferroelectric Materials in Energy Conversion

Room: Al Wosail 2

1:30 PM **Introductory Comments**

1:40 PM **Invited**
Insights into the Nature and Dynamics of Point Defects in Ferroelectric Materials: *Clive Randall*¹; ¹Penn State University

2:20 PM **Flexoelectricity and Nanoscale Energy Harvesting:** *Pradeep Sharma*¹; ¹University of Houston

2:40 PM **Investigation of Electrical and Piezoelectricity of New Nanocomposites Based on Nanofibrillated Cellulose and Copolymers Containing Fluorinated and Nitrile Derivatives with Controlled Structure:** *Kaddami Hamid*¹; Kadimi Amal¹; Ounaies Zoubaida¹; Raihane Mustapha¹; ¹Cadi Ayyad University

3:00 PM **Novel Polymeric Materials for Mechanical Energy Harvesting:** *Miroslav Mrlík*¹; Mariam Al Maadeed¹; ¹Qatar University

3-4: Alloy and Microstructure Design

Room: Al Wosail 3

1:30 PM **Introductory Comments**

1:40 PM **Invited**
Discovery of Sustainable Magnesium Alloys: *Pedro Rivera-Diaz-del-Castillo*¹; ¹University of Cambridge

2:20 PM **Alloy Design Strategies through Computational Thermodynamics and Kinetics Approaches:** *Raymundo Arroyave*¹; Shengyen Li²; Ruixian Zhu²; Ibrahim Karaman; ¹Texas A&M University

2:40 PM **Microstructure Design and Homogenization using Correlation Functions:** *Hamid Garmestani*¹; ¹Georgia Institute of Technology

3:00 PM **Development of Tailored Residual Stress States Through Microstructurally Informed Modeling:** *Dimitris Lagoudas*¹; Brian Lester¹; ¹Texas A&M University

TECHNICAL PROGRAM

Poster Session

Room: Foyer • 3:20 PM – 4:30 PM

A Durability Analysis of Super-Quiet Pavement Structures: *Santosh Srirangam*¹; Kumar Anupam¹; Tom Scarpas¹; Cor Kasbergen¹; Peter The²; ¹Delft University of Technology; ²Directie Techniek en Technisch Management/Afdeling Wegen en Geotechniek, Rijkswaterstaat, Dienstonderdeel Grote Projecten en Onderhoud (GPO)

A New Test for Asphalt Binder Ductility and Intermediate Temperature: *Alaeddin Mohseni*¹; Haleh Azari²; ¹Pavement Systems; ²AASHTO

A New Test Method for Asphalt Mixture Fatigue Characterization: *Alaeddin Mohseni*¹; Haleh Azari²; ¹Pavement Systems; ²AASHTO

Active Composite Materials Undergoing Damage: A Homogenization Approach: George Chatzigeorgiou¹; *Fodil Meraghi*¹; Yves Chemisky¹; Hassene Ben Atitallah²; Zoubeida Ounaies²; ¹Arts et Metiers ParisTech; ²Pennsylvania State University

Alignment of Nanofibrillated Cellulose (NFC) in Silicone Oil by an Electrical Field: Impact on Effective Electrical Properties: *Kaddami Hamid*¹; Kadimi Amal¹; Raihane Mustapha¹; Ounaies Zoubeida²; ¹Cadi Ayyad University; ²The Pennsylvania State University

Boron Removal from Seawater Using β -Cyclodextrin Modified Magnetic Nanoparticles Fixed on Cellulose Nanocrystals: *Deema Almasri*¹; Tarik Rhadfi¹; Khaled Mahmoud¹; ¹QEERI

Computational Assessment of the Performance of Lead Halide Perovskite Solar Cells using Inorganic Layers as Hole Transport Materials: *Mohammad Hossain*¹; Fahhad Alharbi¹; Nouar Tabet¹; ¹QEERI

Control of Grain Refinement of A356 Aluminum Alloy by Computer Aided Cooling Curve Analysis: *Ahmad Sharifi*¹; Najmeddin Arab¹; ¹Islamic Azad University

Controlled Growth of (1-D) ZnO Nanorod Supported Platinum Nanoparticle as Catalyst Materials: *Sarim Dastgir*¹; Reem Al-Alawi²; Joydeep Dutta²; ¹Qatar Environment and Energy Research Institute; ²Sultan Qaboos University

Coupled Turbulent Flow and Solidification Modeling in a Brass Slab Continuous Caster: *Mandana Adeli*¹; M. Reza Aboutalebi¹; ¹Iran University of Science & Technology

Crystal Plasticity Simulations Using Discrete Fourier Transforms: *Hamad Alharbi*¹; Suray Kalidindi²; ¹King Saud University; ²Georgia Institute of Technology

Damage Mechanisms of AZ31B Twin Roll Cast (TRC) at Different Strain Rates and Temperatures: *Ana Rodriguez*¹; Georges Ayoub²; Amine Benzerga¹; ¹Texas A&M University; ²Texas A&M University at Qatar

Density Functional Theory Based Theoretical Calculations for Investigation of Highly Active Visible Light Driven TiO₂ Based Photocatalyst Photoelectrochemical Applications: *Matiullah Khan*¹; Wenbin Cao²; Bilal Mansoor¹; ¹Texas A&M University at Qatar; ²University of Science and Technology Beijing

Design of Advanced Materials with Tailor-Made Properties Using Molecular Simulation: Ionic Liquids for the Chemical Process Industries: *Ioannis Economou*¹; Eleni Androulaki²; Niki Vergadou²; ¹Texas A&M University at Qatar; ²National Center for Scientific Research "Demokritos"

Development of a Redox Model for SOFC Anodes: *Bora Timurkutluk*¹; Mahmut Mat²; ¹Nigde University; ²Meliksah University

Different Approaches to Fabricate Doped-Graphene Composite Films and their Application as a Photovoltaic Transparent Electrode: *Adnan Ali*¹; Khaled Mahmoud¹; Marwan Khraisheh¹; ¹Qatar Environment and Energy Research Institute

Direct Observation of Effects of Foam Density, Gating Design and Pouring Temperature on Mold Filling Process in Lost Foam Casting of A356 Alloy: *Ahmad Sharifi*¹; Mehdi Mansouri Hasan Abadi¹; Roholla Ashiri¹; ¹Islamic Azad University

Discrete Element Simulation of Asphalt Mixtures Fracture: *Enad Mahmoud*¹; Shadi Saadeh²; ¹UTPA; ²CSLB

Effect of RE Elements on the Sorption Properties of Nanocrystalline Zr-Co Getters Prepared by Mechanical Alloying: *Ali Heidary Moghadam*¹; Valiollah Dashtizad²; Ali Kafrou²; Hossein Yoozbashizadeh³; ¹Department of Materials Science and Engineering, Dezful Branch, Islamic Azad University, Dezful, Iran; ²Department of Advanced Materials and Renewable Energy, Iranian Research Organization for Science and Technology, Tehran, Iran; ³Department of Materials Science and Engineering, Sharif University of Technology, Tehran, Iran

Efficient Route for Functionalization of Graphene Nanosheets with Catechol for Preparation of Performance Supercapacitor Electrodes: *Efat Jokar*¹; Azam Iraj Zad¹; Saeed Shahrokhian¹; ¹Sharif University of Technology

Electrowinning of Aluminium Using a Depolarized Gas Anode: *Geir Martin Haarberg*¹; ¹Norwegian University of Science and Technology and Qatar University

TECHNICAL PROGRAM

Evaluation of Asphalt Mixes Workability and Compactability Using Laboratory and Accelerated Field Testing: *Samer Dessouky*¹; Manuel Diaz¹; ¹University of Texas-San Antonio

Thermo-Mechanical Description of AISI4140 Steel at Elevated Temperatures: *Farid Abed*¹; ¹American University of Sharjah

Fabrication of Bulk Nanocomposites by Mechanical Alloying and Shock Compaction: *Nikoloz Chikhradze*¹; Guram Abashidze¹; Mikheil Chikhradze¹; Akaki Giginishvili¹; George Oniashvili¹; ¹Mining Institute/Georgian Technical University

Finite Element Analysis in Static and Dynamic Behaviors of Dental Prosthesis: *Djebbar Noureddine*¹; ¹Université Djillali Liabes de Sidi Bel Abbes

Fluid Flow and Heat Transfer Modeling to NO_x Characterization in Electric Arc Furnace (EAF): *Ali Ershadi*¹; ¹Department of Mechanic Engineering, Dezful Branch, Islamic Azad University, Dezful, Iran

Fracture Topography of Forged and Direct Quenched Ti/Nb/V HSLA Steels: *Sikaddour Yacine*¹; Lebaili Soltane¹; ¹USTHB

Graphene /TiO₂ Composite Electrodes Toward Oxygen Reduction Reaction: *Halema Al-Kandari*¹; Aboubakr Abdullah²; Ahmad Mohaméd³; Shekha Al-Kandari³; ¹PAAET (Public Authority of Applied Education and Training); ²Qatar University; ³Kuwait University

High Haze Nano-Textured Aluminum doped Zinc Oxide with Plasmonic Silver Nanoparticles for Enhanced Optical Absorption and Photocurrent of a-Si:H Thin Film: Hisham Nasser¹; Engin Ozkol¹; Alpan Bek¹; *Rasit Turan*¹; ¹Middle East Technical University (METU)/ The Center for Solar Energy Research and Application (GUNAM)

Hydrogen Embrittlement in Pd: Binding Energetics and Structure at Grain Boundaries: *Tahir Cagin*¹; ¹Texas A&M University

Improved Q-factor Cavities with Variation of Deposited Nanomaterials' Densities: Ishac Kandas¹; *Nader Shehata*¹; Yong Xu²; ¹Alexandria University; ²Virginia Tech

Influence of Joining Time on Microstructure and Mechanical Properties of TLP-joined IN-738LC to GTD-111: *Mahdi Asgharzadeh Ghadi*¹; Mohammad Amin Amjadi¹; Mohammad Saeed Shahriari¹; Meysam Khakian¹; ¹Mapna/Mavadkaran

Mass Production and Large-scale Assembly of Degradation-resistant Nanowires: *Venkata Vasiraju*¹; Yongmin Kang¹; Sreeram Vaddiraju¹; ¹Texas A&M University

Mechanical Response and Evolution of Damage of Al 6061-T6 Under Different Strain Rates and Temperatures: *Abdelhakim Dorbane*¹; Georges Ayoub¹; Bilal Mansoor¹; Ramsey Hamade²; Ghassan Kridli³; Abdellatif Imad⁴; ¹Texas A&M University at Qatar; ²American University of Beirut; ³University of Michigan-Dearborn; ⁴Ecole Polytech'Lille

Methane Production from Carbon Dioxide and Increasing Energy Investment -EROI in Shale Oil: *Osama Akoubeh*

Modeling of Carbon Dioxide Absorption Process by Solvent MEA & MEDA: *Forough Kazemzadeh*¹; Mohammad Heidary Moghadam²; ¹Chemical Engineering, Dezful Branch, Islamic Azad University, Dezful, Iran; ²Electrical Engineering, Dezful Branch, Islamic Azad University, Dezful, Iran

Molecular Dynamics Study on Physical Properties of Cu Nanoparticles: *Hasan Kart*¹; Hüseyin Yildirim²; Sevgi Ozdemir Kart¹; Tahir Cagin³; ¹Pamukkale University; ²Karabuk University; ³Texas A&M University

Multicomponent Pyrophosphate as a Promising Cathode Material for Rechargeable Lithium Ion Batteries (LIBs): *R. Shakoor*¹; Ramazan Kahraman¹; Chanseon Park²; Soo Lim²; Jang Choi²; ¹Qatar University; ²Korea Advanced Institute of Science and Technology (KAIST)

Non-destructive Assessment of Concrete Mixtures at Cryogenic Temperatures: Towards Primary LNG Containment: *Reginald Kogbara*¹; Srinath Iyengar¹; Zachary Grasley²; Eyad Masad¹; Dan Zollinger²; ¹Texas A&M University at Qatar; ²Texas A&M University

Numerical Optimization of Lead Free Perovskite Solar Cell: *Mohammad Hossain*¹; Ounsi Daif¹; Nowshad Amin²; Fahhad Alharbi¹; Nouar Tabet¹; ¹QEERI; ²National University of Malaysia

On the Effects of Plastic Anisotropy on the Ductile Fracture of Mg Alloys: Amine Benzerga¹; *S. Basu*¹; E. Dogan¹; I. Karaman¹; ¹Texas A&M University

Optimization of Soft Magnetic Properties in Nanocrystalline Glass-coated Microwires: Valentina Zhukova¹; Ahmed Talaat²; Juan Blanco²; Mihail Ipatov²; Juan del Val²; *Arcady Zhukov*³; ¹Basque Country University, UPV/EHU ; ²Basque Country University, UPV/EHU; ³Basque Country University and Ikerbasque

Organic Molecule-Functionalized Zn₃P₂ Nanowires for Photochemical H₂ Production: DFT and Experimental Analyses: G. Ramos-Sanchez¹; M. Albornoz¹; Y-H. Yu²; Z. Cheng¹; V. Vasiraju³; S. Vaddiraju¹; *Fadwa El-Mellouhi*¹; P. B. Balbuena¹; ¹Artie McFerrin Department of Chemical Engineering; ²Department of Materials Science & Engineering, Texas A&M University; ³Department of Materials Science & Engineering, Texas A&M University; ⁴QEERI

TECHNICAL PROGRAM

Phenomenological Model for Phase Transformation Characteristics of Textured Shape Memory Alloys: *D. Chatziathanasiou*¹; Y. Chemisky¹; F. Meraghni¹; E. Patoor¹; ¹Arts et Métiers ParisTech

Predictive Modeling For Sustainable Energy Solutions: *Chaker El Amrani*¹; Othmane Bouhali²; ¹Abdelmalek Essaadi University, Tangier; ²Texas A&M University at Qatar

Principles of Improvement the Energy Efficiency in Pyrometallurgy of Copper: Utilization the Secondary Heat Energy of Intermediate Products: *Milorad Cirkovic*¹; Mile Bugarin¹; Vlastimir Trujic¹; Zeljko Kamberovic¹; ¹Mining and Metallurgy Institute Bor, Serbia

Process Optimization of Seed Assisted Growth of Vertically Aligned ZnO Nanorods via Facile Solution Synthesis: *Muhammad Aftab Akram*¹; ¹National University of Sciences and Technology Pakistan

Pulsed Electrodeposition of Nano-Crystalline Ni with Uniform Co-Deposition of Micron Sized Diamond Particles on Annealed Copper Substrate: *Prashant Kumar*¹; ¹Indian Institute of Technology Banaras Hindu University Varanasi

RAETEX Sustainable Pavement Technology: Michelle Ward¹; *Shayan Barmand*¹; ¹RAETEX Industries

Rejuvenation of Long-Term Exposed Nimonic 90 Made Turbine Blades: *Mohammad Saeed Shahriary*¹; Mohammad Cheraghzadeh¹; Ali Khanjani¹; ¹Mavadkaran Engineering Company

Simulation of Solidification, Relaxation and Long-Term Behavior of a Borosilicate Glass: *Nicolas Barth*¹; Daniel George²; Said Ahzi¹; Yves Rémond²; Mohammad Ahmed Khaleel³; Frédéric Bouyer⁴; ¹University of Strasbourg/Qatar Foundation; ²University of Strasbourg-CNRS; ³Qatar Foundation; ⁴CEA (French Alternative Energies and Atomic Energy Commission)

Storage and Release of Thermal Energy of Phase Change Materials Based on Linear Low Density Polyethylene, Paraffin Wax and Expanded Graphite Applicable in Building Industry: *Patrik Sobolciak*¹; Mustapha Karkri²; Igor Krupa³; Mariam Al. Maadeed³; ¹Qatar University; ²Université Paris-Est; ³Qatar University

Structural Alloy AA6082 – Joining by Friction Stir Welding: Zhiui Zhang¹; Christophe Herbelot¹; Abdellatif Imad¹; *Rajashekhar Shabadi*¹; ¹University of Science and Technology of Lille

Surfactant Less Microwave Synthesis of Hierarchical Nanostructures of Titania and Their Application: *Sofia Javed*¹; ¹National University of Sciences and Technology Pakistan

Synthesis and Evaluation of Heterogeneous Nano-catalyst : Cr₂O₃ Loaded in to MCM-41: *Ali Salemi Golezani*¹; ¹KIAU

The Effect of Using a Titanium Interlayer in Explosively Welded Cu/Al Plates: *Majid Etminanbakhsh*¹; Mandana Adeli²; ¹Iran Research Center; ²Iran University of Science & Technology

Thermal Analysis of Solar Panels: *Nicolas Barth*¹; Joao Pedro de Magalhaes Correia²; Said Ahzi¹; Mohammad Ahmed Khaleel³; ¹Qatar Foundation/University of Strasbourg; ²University of Strasbourg; ³Qatar Foundation

Thermo-mechanical Fatigue and Fracture of NiTiHf High Temperature Shape Memory Alloys: *Ceylan Hayrettin*¹; Omer Karakoc¹; Ibrahim Karaman¹; ¹Texas A&M University

Toughness Improvement of Ferritic Mn Steels for Low Temperature Application: Il-Cheol Yi¹; *Yunik Kwon*¹; Yumi Ha¹; Hakcheol Lee²; Nack J. Kim¹; ¹POSTECH; ²POSCO

Transport through Quantum Dots: *Hamidreza Vanaie*¹; ¹Islamic Azad University

Trends in (Poly)olefination Catalyst Development for Energy and Environment Application: *Sarim Dastgir*¹; ¹Qatar Environment and Energy Research Institute

Warm Mix Asphalt: Microstructural, Chemical and Thermal Analyses: *Iliaria Menapace*¹; Eyad Masad¹; Dallas Little²; Emad Kassem²; Amit Bhasin³; ¹Texas A&M University at Qatar; ²Texas A&M University; ³The University of Texas at Austin

WEDNESDAY, JANUARY 14, 2014

Plenary

Room: Al Wosail

8:00 AM Introductory Comments

8:10 AM Keynote
Achievable Innovation in a Sustainable Infrastructure: *Dallas Little*¹; ¹Texas A&M University

8:55 AM Break

TECHNICAL PROGRAM

1-5: Asphaltic Materials

Room: Al Wosail 1

- 9:10 AM** **DEM Simulation of the Asphalt Concrete Flow Number Test:** *Thomas Papagiannakis*¹; Habatamu Zelelew; ¹University of Texas San Antonio
- 9:30 AM** **Assessment of the Benefits of Implementing Warm Mix Asphalt (WMA) for Roadways in Qatar:** Yara Hamdar¹; *Ghassan Chehab*²; Issam Srour³; ¹Graduate Research Assistant, Corresponding Author; ²Associate Professor, Department of Civil and Environmental Engineering; ³Assistant Professor, Engineering Management Program
- 9:50 AM** **Effect of Warm Mix Asphalt on Aging of Asphalt Binders:** *Ala Abbas*¹; Munir Nazzal²; Savas Kaya²; Sunday Akinbowale¹; Bijay Subedi¹; Lana Abu Qtaish²; ¹The University of Akron; ²Ohio University
- 10:10 AM** **Investigation of Long- and Short-term Moisture Damage Characteristics of Warm Asphalt Mixtures Containing Reclaimed Asphalt:** *Aikaterini Varveri*¹; Stavros Avgerinopoulos²; Athanasios (Tom) Scarpas¹; ¹Delft University of Technology; ²De Montfort University
- 10:30 AM** **Improving Asphalt Mixtures Performance by Mitigating Oxidation Using Anti-Oxidants Additives:** *Samer Dessouky*¹; Manuel Diaz¹; ¹University of Texas-San Antonio
- 10:50 AM** **An Innovative Concept for Testing Rutting Susceptibility of Asphalt Mixture:** *Alaedddin Mohseni*¹; Haleh Azari²; ¹Pavement Systems; ²AASHTO
- 11:10 AM** **Evaluation of Performance Characteristics of Warm Mix Asphalt in Qatar:** *Emad Kassem*¹; Lorena Garcia Cucalon²; Eyad Masad³; Dallas Little²; ¹Texas A&M Transportation Institute; ²Texas A&M University; ³Texas A&M University-Qatar
- 11:30 AM** Lunch

2-5: Shape Memory Alloys in Energy Conversion

Room: Al Wosail 2

- 9:10 AM** **On the Fracture Response of Shape Memory Alloy Actuators:** *Dimitris Lagoudas*¹; Theocharis Baxevanis¹; ¹Texas A&M University
- 9:30 AM** **High-temperature Shape Memory Alloys for Actuation and Damping Applications – Functional Properties and Degradation Behavior:** *Thomas Niendorf*¹; Philipp Krooss²; Hans Maier³; ¹TU Bergakademie Freiberg; ²University of Paderborn; ³Leibniz Universität Hannover
- 9:50 AM** **Thermal Stability of Ni-rich Ni-Ti-Hf and Ni-Ti-Zr High Temperature Shape Memory Alloys Containing H-phase Precipitates:** Aquilina Perez-Sierra¹; Alper Evirgen²; *Jaume Pons*¹; Ruben Santamarta¹; Ibrahim Karaman²; Ronald Noebe³; ¹University of the Balearic Islands; ²Texas A&M University; ³NASA Glenn Research Center
- 10:10 AM** **Large Strains and Nondissipative Character of Superelastic Behavior of Ni-Fe-Ga(Co) Single Crystal:** *Volodymyr Chernenko*¹; Victor Lvov²; Elena Villa³; Jose Manuel Barandiaran⁴; ¹BCMaterials,UPV(EHU) & Ikerbasque; ²Institute of Magnetism; ³IENI-CNR; ⁴BCMaterials & UPV(EHU)
- 10:30 AM** **Development of SMA Actuated Morphing Airfoil for Wind Turbine Blade Load Alleviation:** Anargyros Karakalas¹; Theodore Machairas¹; Alexandros Solomou¹; Vasilis Riziotis²; *Dimitris Saravanos*¹; ¹University of Patras; ²National Technical University of Athens
- 10:50 AM** **Identification of Model Parameter for the Simulation of SMA Structures using Full Field Measurements:** *Yves Chemisky*¹; F. Meraghni¹; N. Bourgeois²; S. Cornell³; R. Echchorfi¹; E. Patoor¹; ¹Arts et Metiers ParisTech; ²Université de Lorraine; ³Texas A&M University
- 11:10 AM** **Comparison of the Work Output Values of Gradually Changing Porosity Samples and the Samples with Single Percent Porosity Level:** Halil Tugrul¹; Sule Cakmak¹; *Benat Kockar*¹; ¹Hacettepe University
- 11:30 AM** Lunch

2-7: Materials Issues in Energy Conversion

Room: Al Wosail 3

- 9:10 AM** **Synthesis, Characterization and Environmental Impact Assessment of Graphene:** *Mariam AlAli AIMa'adeed*¹; Noorunnisa Khanam Patan¹; Maryam Al-Aji¹; Roda F. Al-Thani¹; ¹Qatar University
- 9:30 AM** **Numerical Modeling of Cathode Contact Material Densification in SOFCs:** *Mohammed Khaleel*¹; Brian Koeppel²; Elizabeth Stephens²; ¹Qatar Foundation; ²Pacific Northwest National Laboratory

TECHNICAL PROGRAM

| | |
|----------|--|
| 9:50 AM | Thin Film Coated Interconnectors Used in Solid Oxide Fuel Cells (SOFC) Via RF Magnetron Sputtering Method: <i>Fatma Aydin</i> ¹ ; Ali Ozmetin ² ; Mahmut Mat ² ; ¹ University of Nigde; ² University of Meliksah |
| 10:10 AM | Perovskites Of Type LaBO₃ Prepared by the Microwave-assisted Method for Oxygen Production: Shimaa Ali ¹ ; Nada Atta ¹ ; Yasser Abd Al-Rahman ¹ ; <i>Ahmed Galal</i> ¹ ; ¹ Cairo University, Faculty of Science |
| 10:30 AM | Nitrogen-Doped Carbon Nanofiber – Supported Nickel Oxide Composite for Methanol Oxidation: <i>Aboubakr Abdullah</i> ¹ ; Abdullah Al-Enizi ² ; Ahmed El-Zatahry ² ; Salem Al-Deyab ² ; ¹ Qatar University; ² King Saud University |
| 10:50 AM | Aluminum and Tin Doping Effect of ZnO Thin Films on the Photovoltaic Parameters of CuIn_{1-x}Ga_xS₂/β-In_{2-x}Al_xS₂/ZnO Solar Cells: <i>Najoua Kamoun</i> ¹ ; Mejda Ajili ¹ ; ¹ Faculty of Science TUNIS/ Physics Condensed Matter Laboratory |
| 11:10 AM | Ammonia Borane (AB) as a Portable Source & Storage Material for Hydrogen: <i>Muhammad Sohail</i> ¹ ; ¹ QEERI |
| 11:30 AM | Lunch |

2-9: Lightweight and High Performance Materials II

Room: Al Wosail 1

| | |
|---------|---|
| 1:30 PM | Introductory Comments |
| 1:40 PM | Sustainable Novel Technology for Producing New Generations of Structural Al-alloys and Al Containing Bi-metals: <i>Hans Roven</i> ¹ ; Kristian Skorpen ² ; Oddvin Reiso ³ ; Chris Devadas ⁴ ; ¹ Qatar University; ² Norwegian University of Science and Technology; ³ Hydro ASA; ⁴ Hydro Aluminium QSTP Qatar |
| 2:00 PM | Modification of Aluminium Surfaces with Metal Oxides: <i>Rajashekhara Shabadi</i> ¹ ; Vishweshvara Gudla ² ; Flemming Jensen ³ ; Rajan Ambat ² ; Aude Simar ⁴ ; ¹ University of Science and Technology of Lille; ² Department of Mechanical Engineering, Technical University of Denmark; ³ Bang & Olufsen Operations A/S; ⁴ Université Catholique de Louvain |
| 2:20 PM | Parametric Study for Crash Safety Improvement of a Car Bonnet Made from a Hybrid Aluminum and Natural Fiber Composite Structure: <i>Sofiène Helaili</i> ¹ ; Moez Chafra ¹ ; Yvon Chevalier ² ; ¹ LASMAR; ² SUPMECA |
| 2:40 PM | Adhesion Improvement Between Polyethylene and Aluminum Using Eco-friendly Plasma Treatment: <i>Anton Popelka</i> ¹ ; Igor Krupa ¹ ; Igor Novák ² ; Mabrouk Ouederni ³ ; Fatima Abdulaqder ¹ ; Shrooq Al-Yazedi ¹ ; Taghreed Al-Gunaid ¹ ; Thuraya Al-Senani ¹ ; ¹ Qatar University; ² Slovak Academy of Sciences; ³ QAPCO |
| 3:00 PM | The Effect of Tool Geometry on Material Mixing During Friction Stir Welding (FSW) of Magnesium AZ31B Welds: <i>Zeina El-Chlout</i> ¹ ; Haig Achdjian ¹ ; George Ayoub ² ; Ramsey Hamade ¹ ; ¹ American University of Beirut; ² Texas A&M University at Qatar |
| 3:20 PM | Microstructural Design of Mg Alloys for Lightweight Structural Applications: <i>Ebubekir Dogan</i> ¹ ; Matthew Vaughan ¹ ; Ibrahim Karaman ¹ ; Gwénaëlle Proust ² ; Georges Ayoub ³ ; Amine Benzerga ¹ ; ¹ Texas A&M University; ² School of Civil Engineering, The University of Sydney; ³ Texas A&M University at Qatar |
| 3:40 PM | Correlation of Magnetic Properties and Plastic Deformation Distribution in Steel Welds: <i>Athanasios Mamalis</i> ¹ ; Evangelos Hristoforou ² ; ¹ PC-MAE; ² National TU of Athens |
| 4:00 PM | Role of Multiscale Characterization to Examine the Mechanical Properties for Promoting New Material Developments: Application to Ni-base Superalloys: Bilal Mansoor ¹ ; <i>Mustapha Jouiad</i> ¹ ; ¹ Masdar Institute of Technology |

2-6: Photovoltaics and Solar-Thermal Energy Conversion

Room: Al Wosail 2

| | |
|---------|--|
| 1:30 PM | Introductory Comments |
| 1:40 PM | Sponge-like Silicon Nanostructures for Third Generation Photovoltaic Solar Cells: <i>Rasit Turan</i> ¹ ; Serim Ilday ¹ ; Emel Ozen ² ; Sinan Gundogdu ² ; Atila Aydinli ² ; ¹ Middle East Technical University; ² Bilkent University |
| 2:00 PM | Mono-crystalline Bulk Silicon Based High-Efficiency Flexible Solar Cell: <i>Rabab R. Bahabry</i> ¹ ; Jhonathan P. Rojas ¹ ; Aftab Hussain ¹ ; Muhammad M. Hussain ¹ ; ¹ Integrated Nanotechnology Lab, King Abdullah University of Science and Technology |
| 2:20 PM | Hole Mobility and Stresses in PECVD a-Si Thin Films: <i>Nouar Tabet</i> ¹ ; ¹ QEERI |
| 2:40 PM | Sonochemical Synthesis of Cu₂ZnSnS₄ and Cu₂ZnSnSe₄ Nanocrystals for Absorber Layer Application in Thin Film Solar Cells: <i>Mohammad Islam</i> ¹ ; Syed Shah ² ; ¹ King Saud University; ² University of Delaware |

TECHNICAL PROGRAM

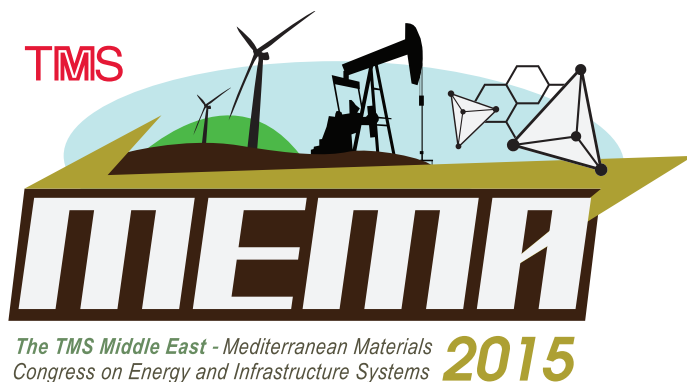
| | |
|---------|---|
| 3:00 PM | Break |
| 3:20 PM | Electrochemical Deposition of High Purity Silicon from Molten Salts: <i>Geir Martin Haarberg</i> ¹ ; ¹ Norwegian University of Science and Technology, and Qatar University |
| 3:40 PM | Cationic(V,Y)-codopedTiO₂ with EnhancedVisible Light Induced Photocatalytic Activity for Photoelectrochemical Applications: <i>Matiullah Khan</i> ¹ ; Wenbin Cao ² ; Bilal Mansoor ¹ ; ¹ Texas A & M University at Qatar; ² University of Science and Technology Beijing |
| 4:00 PM | Enhancement of the Kinetics of Heat Storage by Means of Cellular Metals: <i>Olaf Andersen</i> ¹ ; Jens Meinert ² ; ¹ Fraunhofer-Gesellschaft; ² Fraunhofer IFAM Dresden |
| 4:20 PM | Economic Technical Solutions for Enhancing the Efficiency of Thermal Solar Water Heating: <i>Iman El Mahallawi</i> ¹ ; Nagwa Khattab ² ; Ahmed Abdel- Rehim ³ ; Sayed Ak ³ ; ¹ Cairo University; ² National Research Centre; ³ British University in Egypt |

3-5: Computational Approaches towards Mechanical Damage, Environmental Degradation

Room: Al Wosail 3

| | |
|---------|---|
| 1:30 PM | Introductory Comments |
| 1:40 PM | Invited Predicting Ductile Fracture Toughness: <i>Alan Needleman</i> ¹ ; ¹ Texas A&M University |
| 2:20 PM | Investigation of Damage and Fracture in Two Magnesium Alloys: <i>Amine Benzerga</i> ¹ ; B. Kondori ¹ ; ¹ Texas A&M University |
| 2:40 PM | Micromechanical Fatigue Visco-damage Model for Short Glass Fiber Reinforced Polyamide-66: Nicolas Despringre ¹ ; Yves Chemisky ¹ ; Gilles Robert ² ; <i>Meraghni Fodil</i> ¹ ; ¹ ENSAM - Arts et Métiers ParisTech; ² Solvay Engineering Plastics |
| 3:00 PM | Break |
| 3:20 PM | Crystal Plasticity and Fracture Simulations Using a New 2.5D Dislocation Dynamics Method: <i>Shyam Keralavarma</i> ¹ ; William Curtin ² ; ¹ Indian Institute of Technology Madras; ² Ecole Polytechnique Federale de Lausanne |
| 3:40 PM | Multiparadigm Modeling of Material Safety and Sustainability: Stress Corrosion Cracking: <i>Tahir Cagin</i> ¹ ; Hieu Pham ¹ ; Amine Benzerga ¹ ; ¹ Texas A&M University |
| 4:00 PM | Understanding Dusting Corrosion in Iron from Kinetic Monte Carlo Simulations: Oscar Antonio ¹ ; <i>Fadwa El-Mellouh</i> ² ; Othmane Bouhali ³ ; Charlotte Becquart ⁴ ; Normand Mousseau ¹ ; ¹ Universite de Montreal; ² QEERI; ³ Texas A&M University at Qatar; ⁴ Ecole Nationale Supérieure de Chimie de Lille |
| 4:20 PM | Analysis of Thermo-Mechanical Rigidity of Continuously Cast Steel Slabs: <i>Mostafa El-Bealy</i> ¹ ; ¹ Ain Shams University, (CC) |

PROGRAM PREVIEW



January 11–14, 2015
Ritz-Carlton Doha • Doha, Qatar

Registration is NOW OPEN.
SAVE \$100 through December 1, 2014!

EXPERIENCE

- Technical sessions
- Poster session
- Networking opportunities

ENJOY

- Sunday welcome reception
- Monday and Tuesday dinner events

Join the global discussion on materials issues in energy and infrastructure. Register for MEMA 2015 today!

Register by December 1, 2014 and save!

www.tms.org/MEMA2015

Organized by:



In Cooperation with:



TEXAS A&M
UNIVERSITY



TEXAS A&M
UNIVERSITY at QATAR



جامعة قطر
QATAR UNIVERSITY



الهيئة العامة
Qatar Foundation



International Institute for
Materials and Energy Conversion

