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a. REPORT UU	b. ABSTRACT UU	c. THIS PAGE UU	UU	19a. NAME OF RESPONSIBLE PERSON Kevin Korpics	
				19b. TELEPHONE NUMBER 212-514-6760	

RPPR Final Report
as of 20-Sep-2023

Agency Code: 21XD

Proposal Number: 81331SMCF

Agreement Number: W911NF-23-1-0019

INVESTIGATOR(S):

Name: Kevin Korpics

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Principal: Y

Organization: **Engineering Conferences International**

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Country: USA

DUNS Number: 803033104

EIN: 061650684

Report Date: 06-Sep-2023

Date Received: 20-Sep-2023

Final Report for Period Beginning 07-Dec-2022 and Ending 06-Jul-2023

Title: Electric Field Enhanced Processing of Advanced Materials III Conference

Begin Performance Period: 07-Dec-2022

End Performance Period: 06-Jul-2023

Report Term: 0-Other

Submitted By: Kevin Korpics

Email: kevin@engconfintl.org

Phone: (212) 514-6760

Distribution Statement: 1-Approved for public release; distribution is unlimited.

STEM Degrees:

STEM Participants:

Major Goals: The objective of the conference was to pull together participants from diverse institutions with diverse interests to advance the development of enhanced processing technologies. The Organizing committee recognizes the significance of basic science as a foundation for these developments. Just a few demonstrated applications can become a great driving force for basic research. The Chair is highly cognizant that real-life applications are needed for sustained support for basic research.

Accomplishments: The conference succeeded in drawing a total of 65 attendees from 15 different countries across the world. A total of 17 graduate students, representing the future of the field, attended the meeting. The list of presentations (both oral and poster) in the final conference program illustrate the high level of expert participation in the conference. There was much discussion after sessions and during breaks at the conference. We expect many future collaborations among researchers as a major outcome of the meeting.

Training Opportunities: Nothing to Report

Results Dissemination: Nothing to Report

Honors and Awards: Nothing to Report

Protocol Activity Status:

Technology Transfer: Nothing to Report

RPPR Final Report
as of 20-Sep-2023

Partners

,

I certify that the information in the report is complete and accurate:

Signature: Kevin Korpics

Signature Date: 9/20/23 10:17AM

Program

ELECTRIC FIELD ENHANCED PROCESSING OF ADVANCED MATERIALS III: COMPLEXITIES AND OPPORTUNITIES

March 19-24, 2023

**Tomar,
Portugal**

Conference Co-Chairs

Rishi Raj

University of Colorado Boulder, USA

Luis Perez-Maqueda

CSIC, Spain



Engineering Conferences International

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Engineering Conferences International (ECI) is a not-for-profit global engineering conferences program, originally established in 1962, that provides opportunities for the exploration of problems and issues of concern to engineers and scientists from many disciplines.

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David Pearmain, Lucideon, Stoke-on-Trent, UK
Rishi Raj, University of Colorado Boulder, CO
Hidehiro Yoshida, The Universtiy of Tokyo, Japan
Haiyan Wang, Purdue University, IN,
Anthony R. West, Sheffield University, UK
Dietrich Wolf, Physics, University of Duisburg, Germany

Previous conferences in this series:

Electric Field Assisted Sintering and Related Phenomena Far From Equilibrium

March 6-11, 2016

Tomar, Portugal

Conference Chairs:

Rishi Raj, University of Colorado at Boulder, USA

Thomas Tsakalakos, Rutgers University, USA

Electric Field Enhanced Processing of Advanced Materials II: Complexities and Opportunities

March 10-15, 2019

Tomar, Portugal

Conference Chairs:

Rishi Raj, University of Colorado at Boulder, USA

Olivier Guillon, Forschungszentrum Jülich, Germany

Hidehiro Yoshida, The University of Tokyo, Japan

Conference Sponsors

Army Research Office

Office of Naval Research

Sunday, March 19, 2023

16:30 – 18:30	Check-in
18:30 – 19:30	Opening reception
19:30 – 21:00	Dinner

Notes

- *Please wear your mask except when giving a presentation or actively eating or drinking. Please maintain physical distancing as much as possible.*
- *Audio, still photo and video recording by any device (e.g., cameras, cell phones, laptops, PDAs, watches) is strictly prohibited during the technical sessions, unless the author and ECI have granted prior permission.*
- *Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).*
- *Speakers – Please leave at least 5 minutes for questions and discussion.*
- *Please do not smoke at any conference functions.*
- *Turn your mobile telephones to vibrate or off during technical sessions.*
- *After the conference, ECI will send an updated participant list to all participants. Please check your listing now and if it needs updating, you may correct it at any time by logging into your ECI account.*
- *Emergency Contact Information: Because of privacy concerns, ECI does not collect or maintain emergency contact information for conference participants. If you would like to have this information available in case of emergency, please use the reverse side of your name badge.*

TOPICS (and Posters for Each Topic)

1. Overview Presentations (no posters)

2. Reactive Flash Sintering

- 2P-1 Effect of reactive flash sintering on the magnetic and hyperfine parameters of SrFe₁₂O₁₉ ceramic permanent magnets, Pedro Sanchez Jimenez, Institute of Materials Science of Seville - CSIC, Spain
- 2P-2 A comparative study of magnetic and electrical properties of BiFeO₃ multiferroic ceramics sintered by electric field assisted-methods: spark plasma sintering and flash sintering, Pedro Sanchez Jimenez, Institute of Materials Science of Seville - CSIC, Spain

3. In-Operando Characterization

- 3P-1 Phase evolution during Conventional and Flash Sintering of hydroxyapatite-zirconia composite using in-situ synchrotron X-ray diffraction, Isabela Reis Lavagnini, University of São Paulo, Brazil

4. SPS/Microwave/UHS

- 4P-1 Effect of Mn doping on densification and properties of transparent alumina by high-pressure SPS (HPSPS), Jonathan Mottye, Ben-Gurion University of the Negev, Israel

5. Special Materials Systems

- 5P-1 Fabrication and characterization of ceramic dielectric high gradient insulator, Anat Karlin, Technion - Israel Institute of Technology, Israel
- 5P-2 Tuning the microstructure of flash sintered BZT-BCT ceramics to obtain enhanced and singular properties, Samuel López Blanco, Universitat Politècnica de Catalunya, Spain
- 5P-3 Calcium and the elongated grain shape of alumina, Iman Naamne, Technion-Israel Institute of Technology, Israel
- 5P-4 Self-joining of Y-TZP by flash event under an AC electric field, Kohta Nambu, Kyushu University, Japan
- 5P-5 Electric-field directionality effect during flash joining of metal-ceramic multi-layered structure, Raghav Mundra, Indian Institute of Technology Kanpur, India
- 5P-6 Burning of the PVB binder during window glass sintering assisted by an electric field, Eduardo Bellini Ferreira, São Carlos Engineering School, (EESC)/University of São Paulo, Brazil
- 5P-7 A study on the current-controlled flash sintering experiments on 3YSZ-Ni composites, Pranav Rai, Indian Institute of Technology Patna, India
- 5P-8 Flash sintered Al₂O₃-YSZ-Boron composite for tribological applications, Subin Jose & Merbin John, University of Nevada, Reno, US
- 5P-9 Flash sinter-crystallization: A new technique for ultrafast crystallization of glasses, João Vitor Campos, Universidade Federal de São Carlos, Brazil

6. Metals (no posters)

7. Defects, Theory & Experiment

- 7P-1 Use of phase resolved partial discharges for studying the incubation period of room temperature flash sintering of zinc oxide, Jean-Francois Fagnard, University of Liege, Belgium
- 7P-2 Finite element analysis of hot spots in flash sintering, Philippe Vanderbemden, University of Liège, ACE, Belgium
- 7P-3 The Influence of Point Defects on Flash Sintering of MgO, Rawan Halabi, Technion, Israel

8. Advanced Methods

- 8P-1 Development of a microcontroller-based phase resolved partial discharge measurement system with application to the monitoring of flash sintering discharge patterns, Thibault Gillis, Université de Liège, Belgium
- 8P-2 AC vs. DC Flash Sintering: influence of field frequency on flash processes, Pedro E. Sanchez Jimenez, Instituto de Ciencia de Materiales de Sevilla, Spain
- 8P-3 Insights into the use of Flash Sintering methods to prepare catalytic materials, Xavier Vendrell, Villafruela Universitat de Barcelona, Institut de Nanociència i Nanotecnologia (IN2UB), Spain
- 8P-4 In-Flash Measurement of Elastic Constants, Sabyasachi Panda, IIT-Madras, India

Monday, March 20, 2023

07:30 – 08:30 Breakfast

Session I: Overview Presentations

PLEASE NOTE

Please note that talks are limited to <30 min (including 5 – 10 minutes for questions) to make room for a 90 min. round table discussion at the end.

- 08:30 – 09:00 **The History of Flash Sintering**
Marco Cologna, European Commission, Joint Research Centre (JRC), Germany
- 09:00 – 09:30 **Reactive Flash Sintering**
Luis A. Perez-Maqueda, Spanish National Research Council - University of Seville, Spain
- 09:30 – 10:00 Coffee Break
- 10:00 – 10:30 **Athermally Enhanced High Temperature Plastic Flow in Zirconia Ceramics under Flash Event**
Hidehiro Yoshida, The University of Tokyo, Japan
- 10:30 – 11:00 **From Electrical Current via Non-Equilibrium n to Frenkel Defects**
Dietrich E. Wolf, University of Duisburg-Essen, Germany
- 11:00 – 11:30 Coffee Break
- 11:30 – 12:00 **Importance of in-situ Experiments in Understanding External Field Effects during Flash Sintering**
Shikhar Krishn Jha, IIT Kanpur, India
- 12:00 – 12:30 **From Pit Fire to Ultrafast High-Temperature Sintering (UHS): Shared Features of Ultra-Fast Sintering Techniques**
Salvatore Grasso, Queen Mary University of London, United Kingdom
- 13:00 – 14:30 Lunch
- 14:30 – 15:00 **Electrical Transitions/Memristors**
Tony West, Sheffield University, United Kingdom
- 15:00 – 15:30 **Ultra-Fast High Temperature Sintering (UHS) of Strontium Titanate**
Martin Bram, Forschungszentrum Juelich GmbH, Germany
- 15:30 – 16:00 Coffee Break
- 16:00 – 16:30 **Confluence of Flash and UHS**
Rishi Raj, University of Colorado-Boulder, USA
- 16:30 – 17:00 Coffee Break
- 17:00 – 18:30 **Round Table Discussion (all speakers)**
- 19:30 – 21:00 Dinner
- 21:00 – 23:00 **Posters and Social Hour**

Tuesday, March 21, 2023

07:30 – 08:30

Breakfast

Session 2: Reactive Flash Sintering

08:30 – 08:50

Manufacturing

David Pearmain, Lucideon Ltd, United Kingdom

08:50 – 09:10

Reactive Flash Sintering of High Entropy ($\text{Mn}_{0.2}\text{Co}_{0.2}\text{Ni}_{0.2}\text{Cu}_{0.2}\text{X}_{0.2}$) Fe_2O_4 (X=Fe, Mg) Spinel Oxides

Pedro Sanchez Jimenez, Institute of Materials Science of Seville - CSIC, Spain

09:10 – 09:30

Effects of Reactive Flash Sintering on Phase Evolution of Ceramic Materials

Lilian M. Jesus, UFSCar, Brazil

09:30 – 10:00

Coffee Break

Session 3: In-Operando Characterization

10:00 – 10:20

Structural Changes Induced by Flash in a Single Crystal of Pr_2CuO_4

Dmitry Reznik, University of Colorado-Boulder, USA

10:20 – 10:40

Flash Migration Velocity in Bilayers: With and Without Interdiffusion

Rishi Raj, University of Colorado-Boulder, USA

10:40 – 11:00

Studies of Grain Boundaries by High Resolution TEM

Klaus van Benthem, University of California Davis

11:00 – 11:30

Coffee Break

Session 4: SPS/Microwave/UHS

11:30 – 11:50

Effect of Microstructural Refinement on Electrical Properties of BST-Based Ceramics Prepared by Spark Plasma Sintering and Spark Plasma Texturing

Camila Ribeiro, CICECO - University of Aveiro, Portugal

11:50 – 12:10

Ultrafast High-Temperature Sintering of Advanced Ceramics: A Direct Comparison with the State-of-the-Art Techniques

Salvatore Grasso, Queen Mary University of London, United Kingdom

13:00 – 14:30

Lunch

14:30 – 14:50

Evaluating the Microwave Sintering Behaviors of Binder-jetted Additively Manufactured Alumina

Bashu Aman, Carnegie Mellon University, USA

Session 5: Special Materials Systems

14:50 – 15:10

Microstructure and Defect Formation in BaTiO_3 Ceramics Obtained by Flash Sintering of Micro and Nanopowders

Samuel López Blanco, Universitat Politècnica de Catalunya, Spain

16:00 – 16:20

Flash Sintering of Gadolinium-doped Ceria

Luca Balice, Forschungszentrum Jülich GmbH, Germany

16:20 – 17:00

Coffee Break

Tuesday, March 21, 2023 (continued)

- 17:00 – 17:20 **Field Assisted Sintering Techniques in Recycling NdFeB Magnets**
Monica Keszler, Forschungszentrum Jülich GmbH, Germany
- 17:20 – 17:40 **Effect of Absorbed Power on Densification and Grain Growth during Rapid Microwave Sintering**
Kirill I. Rybakov, Institute of Applied Physics, Russian Academy of Sciences, Russia
- 17:40 – 18:10 **Investigation of the Mechanisms of Flash Sintering in Ceramic Materials**
Thomas Tsakalakos, Rutgers University, USA
- 19:30 – 21:00 Dinner
- 21:00 – 23:00 **Posters and Social Hour**

Wednesday, March 22, 2023

07:00 – 08:30	Breakfast
	<u>Session 5: Special Materials Systems (continued)</u>
08:30 – 08:50	Flash Assisted Processing of Entropy Stabilized (Mg, Co, Ni, Cu, Zn)O <u>Mohammad Imteyaz Ahmad</u> , Indian Institute of Technology (BHU), India
08:50 – 09:10	Investigation and Enhancement in Properties of Copper Converter Slag Residue with Flash Sintering Method <u>Zeynep Çetinkaya</u> , Konya Technical University, Turkey
09:10 – 09:30	Flash Sinter-Crystallization: A New Technique for Ultrafast Crystallization of Glasses <u>João Vitor Campos</u> , Universidade Federal de São Carlos, Brazil
09:30 – 10:10	Coffee Break
10:10 – 10:30	Behind the High Electrical Performance of Flash Sintered Potassium Sodium Niobate Piezoelectric Ceramics <u>Alexander Tkach</u> , University of Aveiro, CICECO-Aveiro Institute of Materials, Portugal
10:30 – 10:50	Preliminary Results of Flash Sinter-Crystallization of $\text{Li}_{1.3}\text{Al}_{0.3}\text{Ti}_{0.7}(\text{PO}_4)_3$ for All Solid-State Batteries <u>Ana Candida Rodrigues</u> , Federal University of São Carlos, Brazil
10:50 – 11:10	Influence of Fields on Grain Boundary Mobility in Alumina <u>Rachel Marder</u> , Technion – Israel Institute of Technology, Israel
11:10 – 11:20	In-situ Generation and Grain Growth of CeO₂ Nanocrystals in AC/DC Electrical Fields <u>Vaclav Tyrpekl</u> , Charles University, Czech Republic
12:15 – 13:30	Lunch
13:50	Excursion: Meet in hotel lobby
14:00	Depart with guides on excursion
18:00	Return from excursion
18:30	Social hour in Lobby Bar
19:30 – 21:00	Dinner
21:00 – 23:00	Social Hour

Thursday, March 23, 2023

07:30 – 08:30

Breakfast

Session 6: Metals

08:30 – 08:50

Laser Powder Bed Fusion of Cemented Carbide Geometries Using Tungsten Carbide-Nickel Agglomerated Powder

Alexander Gourley, Carnegie Mellon University, USA

08:50 – 09:10

MXeene-Based Ceramic Nanocomposites Enabled by Field-Assisted Sintering

Maxim Sokol, Tel Aviv University, Israel

09:10 – 09:40

Coffee Break

09:40 – 10:00

Nanocarbon-Infused Copper Conductors by Electric Field Assisted Processing

Uthamalingam Balachandran, University of Colorado-Boulder, USA

10:00 – 10:20

Energy Deficit and Defect Formation

Jean-Marie Lebrun, St. Gobain, France

10:20 – 11:20

OPEN DISCUSSION: Defects: Calorimetry, Characterization, Phonons

13:00 – 14:30

Lunch

Session 7: Defects and Theory/Experiments

14:30 – 14:50

Memristors: The Role of Anode Interface Resistance

Rishi Raj, University of Colorado-Boulder, USA

14:50 – 15:10

Neural Network-Based Simulation Method to Examine Ion Behaviors Under Electric Fields: Application to Ion Migration in Amorphous Li_3PO_4

Koji Shimizu, The University of Tokyo, Japan

15:10 – 15:30

Probing the local structure of electroluminescing rutile TiO_2 with neutron diffuse scattering and atomistic modelling

Ty Sterling, University of Colorado-Boulder, USA

15:30 – 15:50

Role of Native Defects in Field-Assisted Sintering

Yoed Tsur, Technion - Israel Institute of Technology, Israel

16:00 – 16:30

Coffee Break

16:30 – 16:50

First-Principles Design and Discovery of New High-Entropy Materials

Liping Yu, University of Maine, USA

16:50 – 17:10

Flash Sintering as a Route to Produce Lead-Free Piezoelectric KNN

Ana Senos, University of Aveiro, Portugal

17:10 – 17:30

Understanding Flash Sintering of Semiconductor Oxide Materials at the Nano- Atomic Scale

Fátima Zorro, Instituto Superior Técnico, Portugal

17:30 – 18:45

Posters Session

18:45 – 20:00

Social hour with piano

20:00 – 22:00

Conference Gala Dinner

Friday, March 24, 2023

07:30 – 08:30 Breakfast

Session 8: Advanced Methods

08:30 – 08:50 **Touch Free Sintering with Superposition of Magnetic Fields**
Rishi Raj, University of Colorado-Boulder, USA

08:50 – 09:10 **Multi-Phase Flash Sintering: The Next Natural Step in Flash Sintering Evolution**
Sandra Molina-Molina, Spanish National Research Council (CSIC), Spain

09:10 – 09:30 **Rapid Densification of Technical Ceramic Coatings using a Precise Controlled Contactless Flash Sintering System**
Carolyn Grimley, Lucideon, USA

09:30 – 09:50 **Flash Sintering, a Novel Technique, for Manufacturing Surrogate and Active Nuclear Materials**
Gareth Jones, Lucideon Ltd, United Kingdom

09:50 – 10:30 Coffee Break

10:30 – 10:50 **Generating Electrically Conducting Single Crystals of Rutile Titania Through Repetitive Flash Experiments**
Devinder Yadav, Indian Institute of Technology Patna, Bihta, India

10:50 – 11:30 **OPEN DISCUSSION: The Future?**

13:00 – 14:30 Lunch and Departures

Electric Field Enhanced Processing of Advanced Materials III: Complexities and Opportunities

An ECI Conference Series

March 19-24, 2023

Tomar, Portugal

Poster Presentations

1. **Fabrication and characterization of ceramic dielectric high gradient insulator**
Anat Karlin, Technion - Israel Institute of Technology, Israel
2. **Burning of the PVB binder during window glass sintering assisted by an electric field**
Eduardo Bellini Ferreira, São Carlos Engineering School (EESC)/University of São Paulo, Brazil
3. **Self-joining of Y-TZP by flash event under an AC electric field**
Kohta Nambu, Kyushu University, Japan
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Iman Naamne, Technion-Israel Institute of Technology, Israel
5. **Phase evolution during Conventional and Flash Sintering of hydroxyapatite-zirconia composite using in-situ synchrotron x-ray diffraction**
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14. **Electric-field directionality effect during flash joining of metal-ceramic multi-layered structure**
Raghav Mundra, Indian Institute of Technology Kanpur, India

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15. **The influence of point defects on flash sintering of MgO**
Rawan Halabi, Technion-Israel Institute of Technology, Israel
16. **In-flash measurements of elastic constants**
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17. **Tuning the microstructure of flash sintered BZT-BCT ceramics to obtain enhanced and singular properties**
Samuel López Blanco, Universitat Politècnica de Catalunya, Spain
18. **Flash sintered Al₂O₃-YSZ-Boron composite for tribological applications**
Subin Jose and Merbin John, University of Nevada, Reno, USA
19. **WITHDRAWN**
20. **Development of a microcontroller-based phase resolved partial discharge measurement system with application to the monitoring of flash sintering discharge patterns**
Thibault Gillis, Université de Liège, Belgium
21. **Insights into the use of Flash Sintering methods to prepare catalytic materials**
Xavier Vendrell Villafuela, Universitat de Barcelona, Institut de Nanociència i Nanotecnologia (IN2UB), Spain



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Calendar of ECI Conferences

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2023

- March 19-24 **22AD** **ELECTRIC FIELD ENHANCED PROCESSING OF ADVANCED MATERIALS III: COMPLEXITIES AND OPPORTUNITIES** (Tomar, Portugal)
R. Raj, University of Colorado at Boulder; Luis Perez-Maqueda, CICA, Spain
- April 23-28 **23AC** **CELL CULTURE ENGINEERING XVIII** (Cancun, Mexico)
L. Palomares, IBT-UNAM; C. Goudar, Amgen; T. Wang, Roche
- May 7-12 **23AP** **PYROLIQ II – 2023: Pyrolysis and Liquefaction of Biomass and Wastes** (Hernstein, Austria)
F. Berruti, ICFAR & Western University; A. Dufour, CNRS, ENSIC; M. Garcia-Perez, Washington State University;
W. Prins, University of Ghent
- May 14-17 **23AU** **2023 INTERNATIONAL CONFERENCE ON SEMICONDUCTOR TECHNOLOGY FOR ULTRA LARGE SCALE INTEGRATED CIRCUITS AND THIN FILM TRANSISTORS (ULSIC VS TFT 8)** (Otaru (Sapporo), Japan)
Y. Kuo, Texas A&M University
- May 28-June 2 **21AG** **ALKALI ACTIVATED MATERIALS AND GEOPOLYMERS: SUSTAINABLE CONSTRUCTION MATERIALS AND CERAMICS MADE UNDER AMBIENT CONDITIONS** (Cetraro (Calabria), Italy)
W.M. Kriven, University of Illinois at Urbana-Champaign; C. Leonelli, Universita' degli Studi di Modena e Reggio Emilia;
J.L. Provis, University of Sheffield; A.R. Boccaccini, University of Erlangen-Nuremberg
- June 18-23 **23AI** **INNOVATIVE MATERIALS FOR ADDITIVE MANUFACTURING II (IMAM II)** (Tallinn, Estonia)
D. Schmidt (Luxembourg Institute of Science and Technology (LIST); N. Gupta, New York University; E. Eastwood, DOE;
B.G. Compton; University of Tennessee, Knoxville; G.M. Gladysz, Los Alamos National Laboratory
- July 16-21 **21AV** **SIXTH INTERNATIONAL WORKSHOP ON STRESS-ASSISTED CORROSION DAMAGE** (Washington, DC area)
A.K. Vasudevan, Office of Naval Research (retired); R. Latanision, Exponent, Inc.; H. Holroyd, Luxfer (retired);
F. Friedersdorf, Luna Innovations Inc.
- September 10-13 **23AT** **SINGLE USE TECHNOLOGIES VI** (Boston, USA)
M. Barbaroux, Sartorius; S. Kane, Takeda; S. Yoon, University of Massachusetts, Lowell
- September 17-21 **23-AH** **INTERNATIONAL HYDROGEN CONFERENCE: UNDERSTANDING HYDROGEN-MATERIALS INTERACTIONS** (Park City, Utah)
M. Martin, NIST; J. Burns, University of Virginia
- September 17-21 **23AB** **BIO-CHAR III (Tomar, Portugal)**
F. Berruti, Western University, Canada; D. Chiaramonti, Politecnico di Torino and RE-CORD, Italy; S. Fiore, Politecnico di Torino, Italy; M. Garcia-Perez, Washington State University, USA; O. Masek, University of Edinburgh, UK
- October 1-6 **23AE** **ENZYME ENGINEERING XXVII** (Singapore)
Ang Ee Lui, Singapore Institute of Food and Biotechnology Innovation, A*STAR, Singapore; Li Zhi, National University of Singapore; Yan Feng, Shanghai Jiao Tong University
- Oct. 15-19 **21AO** **ADVANCES IN OPTICS FOR BIOTECHNOLOGY, MEDICINE AND SURGERY** (Tomar, Portugal)
M. Niedre, Northeastern University; F. Leblond, Polytechnique Montreal

2024

February 4-8	24AT	ADVANCING MANUFACTURE OF CELL AND GENE THERAPIES VIII (Coronado, CA) F. Masri, Cell & Gene Catapult; C. Yeager, Georgia Institute of Technology; G. Maheshwari, BMS; J. Moscariello, BMS
February TBA	21AD	ADVANCED MEMBRANE TECHNOLOGY VIII: ENVIRONMENT, FOOD, HEALTH AND NEW FRONTIERS (Casablanca, Morocco) J. Hestekin, University of Arkansas; U. Beusche, W.L. Gore, Inc.; D. Bhattacharyya, University of Kentucky
April 4-7	20AP	DELIVERY OF NUCLEIC ACID THERAPEUTICS II: BIOLOGY, ENGINEERING AND DEVELOPMENT (Siracusa, Sicily) L. Sepp-Lorenzino, Intellia Therapeutics; S. F. Dowdy, University of California San Diego School of Medicine; M. Stanton, Generational Bio
April 14-19	24AI	ULTRA-HIGH TEMPERATURE CERAMICS: MATERIALS FOR EXTREME ENVIRONMENT APPLICATIONS V (Sicily, Italy) D. Sciti, Institute for Science and Technology of Ceramics, CNR; L. Silvestroni and F. Monteverde, ISSMC-CNR; J. Binner, Univ. of Birmingham; R. Savino, Univ. of Naples; G. Thompson, Univ. of Alabama; E. Wuchina, Naval Surface Warfare Center
April TBA	24AK	MICROBIAL ENGINEERING III (TBA) E. Keshavarz-Moore, University College London; T. Sauer, Sanofi
April/May	20AF	SYNTACTIC AND COMPOSITE FOAMS (Riga, Latvia) G.M. Gladysz and K.K. Chawla, University of Alabama at Birmingham; A. R. Boccaccini, University of Erlangen-Nuremberg; M. Fukushima, National Institute of Advanced Industrial Science and Technology
May 12-17	24AH	NANOTECHNOLOGY IN MEDICINE III: ENABLING NEXT GENERATION THERAPIES (Tomar, Portugal) K. Rege, Arizona State University; S. De Smedt, Ghent University S. Varghese, Duke University
May 19-24	24AA	VACCINE TECHNOLOGY IX (Los Cabos, Mexico) C. Lutsch, Sanofi Pasteur; L. Lua, University of Queensland; F. Godia, Universitat Autònoma de Barcelona; T. Tagmyer, Merck
June TBA	24AS	TRANSITION OF ENERGY SYSTEMS TOWARDS SUSTAINABILITY (Savanger, Norway) S. De, S. Bandyopadhyay, IIT, Bombay; M. Assadi, University of Savanger
July 21-25	24AM	BIOCHEMICAL AND MOLECULAR ENGINEERING XXIII (Dublin, Ireland) M. O'Malley, University of California at Santa Barbara; B. Pflieger, University of Wisconsin
TBA	24AP	POLYMER REACTION ENGINEERING XII (TBA) I. Konstantinov, The Dow Chemical Company; P. Iedema, University of Amsterdam; M. Grady, Axalta
Sept/Oct	24AW	WATER (Europe) D. Hunkeler, Aqua+Tech
Oct 6-11	24AN	NANOMECHANICAL TESTING IN MATERIALS RESEARCH AND DEVELOPMENT IX (Sicily, Italy) M. Sebastiani, Rome TRE University
Oct 20-24	24AB	INTEGRATED CONTINUOUS BIOMANUFACTURING VI (USA, Canada or Panama) A. Azevedo, Instituto Superior Técnico; A. Noyes, CodiakBio; K. Brower, Sanofi

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Engineering Conferences International (ECI) is a not-for-profit global engineering conferences program that has served the engineering/scientific community since 1962 as successor program to Engineering Foundation Conferences. ECI has received recognition as a 501(c)3 organization by the U.S. Internal Revenue Service and is incorporated in the State of New York as a not-for-profit corporation.

The program has been developed and is overseen by volunteers both on the international Board of Directors and international Conferences Committee. More than 1,900 conferences have taken place to date. The conferences program is administered by a professional staff and the conferences are designed to be self-supporting.

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To serve the engineering/scientific community with international, interdisciplinary, leading edge engineering research conferences

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The advancement of engineering arts and sciences by providing a forum for the discussion of advances in the field of science and engineering for the good of mankind by identification and administration of international interdisciplinary conferences

To work with engineering, scientific and social science societies and the interested general public to jointly sponsor conferences and to take other actions that will foster complementary programming.

To initiate conferences that will have a significant impact on engineering education, research practice and/or development.

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The ECI Conferences Committee invites you to suggest topics and leaders for additional conferences and encourages you to submit a proposal for an ECI conference.

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The traditional format for an ECI conference is registration Sunday afternoon with technical sessions held each morning and evening through Thursday or Friday noon. Afternoons are used for informal gatherings, poster sessions, field trips, subgroup meetings and relaxation. This format has served well to build important professional networks in many areas.

ECI welcomes proposals for shorter conferences and for conferences which span weekends in order to reduce the number of working days participants are away from their offices.

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ECI works with conference chairs in two complementary ways. First, an experienced member of the Conferences Committee acts as your technical liaison from the proposal stage through the conference itself. He or she is always available to consult with you on any conference issue.

Second, after your proposal has been approved by the Conferences Committee, the ECI staff will assume responsibility for the administration of the conference.

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The responsibilities of ECI's "full service" staff include -- but are not limited to -- the following:

- Recommend, negotiate, contract and make substantial deposits for housing, meals, meeting space, A/V equipment and tours.
- Maintain web sites for the conference and for submission of abstracts.
- Publicize via electronic and print media.
- Administer all finances including grants, contributions and purchase orders. (ECI makes grant funds available as soon as a grant is approved.) There is no need for chairs to set up a conference bank account or file tax returns for their conference.
- Process all applications and registrations.
- Produce bound program/abstracts book.
- Contract for the publication of print or electronic proceedings, if any.
- Provide on-site staff during the conference.

For more information, please contact the ECI Director at Barbara@engconfintl.org