


## PROGRAM

# 6<sup>th</sup> International Conference on **MATERIALS SCIENCE & ENGINEERING**

 **June 09-10, 2025 | Seattle, WA**  
**June 11, 2025 | Online**

 **DoubleTree by Hilton Hotel Seattle Airport**  
**18740 International Blvd, Seattle, WA**

## About USG United Scientific Group

**USG United Scientific Group** is a non-profit organization with tax-exempt status 501(c)(3), highlighting its dedication to advancing scientific knowledge and fostering collaboration without the primary goal of making profits. USG has a proven track record of organizing scientific meetings both domestically and internationally. This experience underscores their capability to facilitate meaningful interactions among scientists, researchers, and professionals across various fields. The organization's extensive background in handling events of varying sizes and complexities further solidifies its reputation as a trusted organizer within the scientific community.

USG's contributions to the scientific community are significant, particularly through their efforts in organizing conferences and creating networking opportunities for researchers and professionals. The presence of senior scientists on their board of directors ensures that USG is well-positioned to support scientific endeavors and promote open access publications.

### Meeting Joining Links (Live Streaming on Zoom Platform)

**Time Zone: (GMT-7) Time in Seattle, WA, USA**

As the conference is hybrid, the virtual attendees can access the in-person presentations and queries can be asked through zoom chat box.

Meeting links is for the complete meeting to join at any point of time.

**Topic:** 6<sup>th</sup> International Conference on Materials Science & Engineering

**Dates:** June 09-10, 2025 | Seattle, WA  
June 11, 2025 | Online

**Venue:** DoubleTree by Hilton Hotel Seattle Airport  
18740 International Blvd, Seattle, WA

#### Meeting Joining Link (In-Person and Virtual)

<https://us06web.zoom.us/j/86353907661?pwd=GrcraL63GtKAWqzblQ6qysZhCcETNj.1>

**Meeting ID:** 863 5390 7661

**Passcode:** 394418

Join Zoom Meeting

<https://us06web.zoom.us/j/86353907661?pwd=Grcral63GtKAWqzblQ6qysZhCcETNj.1>

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07:30 Onsite Registrations & Badge Pickup

08:40 Opening Remarks and Introduction

## Keynote Session (40+5 Minutes)

**Moderator:** Supriyo Bandyopadhyay, Virginia Commonwealth University, VA

09:00 **Spectral Selective Solar Harvesting via Transparent Nano Hybrids for Synergistic Photothermal-thermoelectric-photovoltaic Energy Generation**  
Donglu Shi, University of Cincinnati, OH

09:45 **Density Functional Theory Optical and Electronic Properties of MoS<sub>2</sub>-graphene-metal Heterointerfaces**  
Nikolaos Dimakis, University of Texas Rio Grande Valley, TX

**10:30 Coffee Break**

**Northwest Foyer**

11:00 **Precipitation Processes in a Ti-15Mo Alloy**  
Milos Janecek, Charles University, Czech Republic

11:45 **Magnon-phonon-photon-plasmon Coupling in 2D Artificial Magneto-elastic Crystals**  
Supriyo Bandyopadhyay, Virginia Commonwealth University, VA

**12:30 Group Photo**

**12:35 Lunch Break**

**Northwest 2**

## Featured Talks (20+5 Minutes)

**Session: Advanced Functional Materials: Synthesis, Interfaces, and Applications**

**Chair:** Milos Janecek, Charles University, Czech Republic

13:35 **Improving Biodegradable Mg-Zn(-Ca) Alloys by PEO Surface Treatment**  
Peter Minarik, Charles University, Czech Republic

14:00 **PCT-based Smart Heaters from Conductive Polymers**  
Petr Spatenka, Czech Technical University in Prague, Czech Republic

14:25 **Organic Mixed Ionic-electronic Conductors for Electrochemical Applications**  
Penghui Ding, Stanford University, CA

14:50 **Flexible Organic Electrochromic Devices Having Multicolored, Low-voltage-driven and High Contrast, and Organic Photovoltaic Properties Based on Oligomers and Viologen Derivatives**  
Ping Liu, South China University of Technology, China

## Session: Nanostructured & Advanced Materials for Energy, Electronics, & Environmental Applications

- 15:15 **Recycling of Primary Spent Batteries Solution Through the Precipitation of Zeolitic Imidazolate Frameworks and Revalorization into Anode Materials for Li-ion Batteries**  
**Despoina Andriotou**, University of Grenoble Alpes, France
- 15:40 **Plastic Instabilities and Microplasticity in FeAlCr-based Complex Concentrated Alloys**  
**Michal Knappek**, Charles University, Czech Republic
- 16:05 **Critical Chloride Thresholds and Mechanisms of Corrosion Initiation in Low-carbon Steel Rebar**  
**Ebenezer Fanijo**, Georgia Institute of Technology, GA
- 16:30 **Based on Group III-Nitride Materials High Electron Mobility Transistors for mmWave Applications**  
**Hao Lu**, Xidian University, China

## Emerging Researcher Talk (10+5 Minutes)

- 16:55 **Facile Synthesis and Efficient Nickel-based Photothermal Catalyst for Selective Production of CH<sub>4</sub> and CO**  
**Guoshu Deng**, Southeast University, China

## 17:10 Poster Presentations & Networking Drinks

- MP01 **Alternative Wire Manufacturing Technology from Titanium and Nickel Shavings**  
**Michal Duchek**, COMTES FHT a.s., Czech Republic
- MP02 **Evaluating the Corrosion Resistance of Nickel-based Superalloys in Fluoride Salts for Molten Salt Reactors**  
**Pavel Podaný**, COMTES FHT a.s., Czech Republic
- MP03 **Effect of the Laser Cleaning Method on the Corrosion Resistance of Mg Alloy AZ80**  
**Frantisek Novy**, University of Žilina, Slovak Republic
- MP04 **Comparative Study of Bond Behavior of BFRP and GFRP Bars in Concrete Modified with Metakaolin and Zeolite Using Beam and Pull-out Tests**  
**Julita Krassowska**, Bialystok University of Technology, Poland
- MP05 **Characteristics of Recycled Carbon Fibers Used for Concrete Reinforcement**  
**Malgorzata Gradzka-Dahlke**, Bialystok University of Technology, Poland
- MP06 **Multi-scale Analysis of Fracture Processes in Concrete with Basalt Fiber Reinforcement**  
**Marta Kosior-Kazberuk**, Bialystok University of Technology, Poland
- MP07 **Impact of Aluminium Content on Structure and Mechanical Properties of Al<sub>x</sub>CoCrFeNi High-entropy Alloys**  
**Malgorzata Gradzka-Dahlke**, Bialystok University of Technology, Poland

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## Keynote Session (40+5 Minutes)

**Moderator & Chair:** Ian Baker, Dartmouth College, NH

- 09:00 **Doping in Diamond and Diamond as an Electronic Material–diamondtronics**  
**M S Ramachandra Rao**, IIT Madras, India
- 09:45 **Topographic Scanning Electron Microscopy Revealing the Three-dimensional Surface Structure**  
**Ouyang Jianyong**, National University of Singapore, Singapore

10:30 Coffee Break

Northwest Foyer

- 11:00 **Surprises from MAPbI<sub>3</sub>: Beyond its Optoelectronic Properties**  
**Dipankar Das Sarma**, Indian Institute of Science, India

## Featured Talks (20+5 Minutes)

### Session: Nanostructured & Advanced Materials for Energy, Electronics, & Environmental Applications

- 11:45 **Characterization of Photoconductive UV Sensors Using ZnO Single Crystal Substrates and Thin Films**  
**Takami Abe**, Iwate University, Japan
- 12:10 **Liquid Metal Jetting for Electrode Fabrication on Glass Substrates**  
**Manoj Meda**, Corning Inc., NY
- 12:35 **Novel Rare-earth-free, Tetragonal (Li<sub>0</sub>) Magnets**  
**Ian Baker**, Dartmouth College, NH
- 13:00 **From Prediction to Synthesis: Large Language Models for Accelerating Porous Materials Discovery**  
**Zhiling Zheng**, University of California, CA

13:25 Lunch Break

Northwest 2

### Session: Functional Composites, Energy Storage, and Structural Applications

**Chair:** Ouyang Jianyong, National University of Singapore, Singapore

- 14:25 **Marangoni Migration of Rare Earth Metals During Solidification in Nuclear Fuel Rods**  
**Seunguk Mun**, Sungkyunkwan University, South Korea

- 14:50 **Application of Roughness Measurements in Assessing the Resistance of CrN/CrCN Coating and Austenitic Steel to Cavitation Erosion**  
**Alicja Krella**, Institute of Fluid-Flow Machinery, Polish Academy of Science, Poland
- 15:15 **Plant-mediated Synthesis of Silver-doped Zinc Oxide Nanoparticles and Evaluation of Their Antimicrobial Activity Against Bacteria Cause Tooth Decay**  
**Mehran Zareanshahraki**, University of California, Los Angeles, CA

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**15:40 Coffee & In-person Departures Northwest Foyer**

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08:00 AV Check

08:20 Opening Remarks

## Keynote Talk (25+5 Minutes)

**Moderator & Chair:** Helena Prado Felgueiras, University of Minho, Portugal

08:30 **Cluster-based Energy Materials – A Paradigm Shift in Design and Synthesis**  
Puru Jena, Virginia Commonwealth University, VA

## Featured Talks (15+5 Minutes)

09:00 **Electrocaloric and Elastocaloric Effects in Soft Materials**  
Brigita Rozic, Jožef Stefan Institute, Slovenia

09:20 **A Review: Coffee and Tea Potential Materials for Carbonaceous Material Synthesis**  
Tutik Setianingsih, MSi, Brawijaya University, Indonesia

09:40 **Conservation of Energy and Momentum of Drifting Electrons in Materials**  
Ravi Kumar Chanana, Self-Employed Independent Researcher, India

10:00 **The Effect Of Soybeans Hull (*Glycine max*), Beans Pod (*Phaseolus vulgaris*) and Dry Willow Leaf (*Salix spp*) on the Properties of a Simple Water-based Mud**  
Sarah A. Akintola, University of Ibadan, Nigeria

10:20 **Metal-insulator Transition in Bulk  $\text{Ge}_2\text{Sb}_2\text{Te}_{(5-5x)}\text{Se}_{5x}$  Phase Change Materials**  
Utpal Chatterjee, University of Virginia, VA

10:40 **Thermoelectric Properties of Graphene Nanoplatelets and Organic Semiconductor Composites**  
Andrea REALE, University of Rome Tor Vergata, Italy

11:00 **Exascale Transport Simulations for the Understanding of the Switching Mechanism in Atomically Thin Memristors**  
Liangbo Liang, Oak Ridge National Laboratory, TN

11:20 **Structure-property Relationships of Nanostructured Materials: from Synthesis to Characterization for Multiple Applications**  
Sara Cerra, Sapienza University of Rome, Italy

11:40 **Reducing Enzyme and Bacterial Activity in Diabetic Ulcers with WAAPV-infused Electrospun Fibers**  
Helena Prado Felgueiras, University of Minho, Portugal

12:00 **Study of Radio-frequency Epsilon-negative Behavior in  $\text{LaNiO}_3$  for Microwave Shielding Applications**  
Tarun Katheriya, Indian Institute of Technology (BHU) Varanasi, India

12:20 **Impact of Hyperglycemia on Glioblastoma Cell Proliferation and the Therapeutic Potential of Green-synthesized  $\text{CeO}_2$  NPs**  
Sohail, Yangzhou University, China

12:40 **Concluding Remarks**



We wish to see you at

# **Materials-2026**

**April 2026, San Francisco, CA**

Organized by



**UNITED** | Scientific  
Group  
A non-profit organization

**USG United Scientific Group**  
(A non-profit organization)

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