

## 20th Israel Materials Engineering Conference (IMEC20)

Plenary	Small Dimensions Sessions	Soft Matter Sessions	Structural Materials Sessions	Computational MS Sessions
Reduced Dimensionality Sessions	Charge Transfer Sessions	Materials in Archeology Session	Additive Manufacturing Session	Functional Materials Session
Materials Characterization Session	Networking	Breaks		

### Tuesday, February 25, 2025

8:00 – 9:00	<i>Registration Area, Poster Area, Exhibition Area</i>
<b>Registration, Coffee Break, Poster Mounting</b>	

9:00 – 9:10	<i>Hall A</i>
<b>Opening Ceremony</b>	

9:10 – 9:55	<i>Hall A</i>
<b>Plenary 1: Grain Growth is Not Curvature Flow: Why? Consequences?</b>	

Chair: TBA

#### **Grain Growth is Not Curvature Flow: Why? Consequences?**

David J. Srolovitz, *Hong Kong University*

9:55 – 10:40	<i>Hall A</i>
<b>Plenary 2: Magnesium Technologies for Aviation and Aerospace Applications</b>	

Chair: TBA

#### **Magnesium Technologies for Aviation and Aerospace Applications**

Dan Shechtman, *Technion - Israel Institute of Technology*

10:40 – 11:10	<i>Poster Area, Exhibition Area</i>
<b>Coffee Break, Poster Viewing</b>	

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11:10 – 13:10	<i>Hall A</i>
<b>Nanomaterials</b>	

Chairs: TBA

**Presentation 1**

Shachar Richter, *Tel Aviv University*

**Presentation 2**

Mark Schwartzman, *Ben-Gurion University of the Negev*

**Presentation 3**

Shlomi Polani, *Ariel University*

11:10 – 13:10	<i>Hall B</i>
<b>Polymers &amp; Colloids</b>	

Chair: TBA

**Presentation 1**

Angelika Elkan, *Tel Aviv University*

**Space Durable 3D Printed High-Performance Polymers Based on Cyanate Ester/Extended-Bismaleimide**

Yuval Vidavsky, *MAMAG*

**Presentation 3**

Amos Bardea, *Holon Institute of Technology*

11:10 – 13:10	<i>Hall C</i>
<b>2D Materials</b>	

Chair: TBA

**Presentation 1**

Doron Naveh, *BIU*

**Presentation 2**

Oded Hod, *Tel Aviv University*

**Presentation 3**

Ariel Ismach, *Tel Aviv University*

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11:10 – 13:10	<i>Hall D</i>
<b>Materials in Archeology</b>	

Chair: TBA

### Presentation 1

Naama Yahalom-Mack, *Hebrew University of Jerusalem*

### Presentation 2

Adi Eliyahu, *Ariel University*

**The Nature of the Pumiceous Ash and Tuff used for the Construction of the Sebastos Harbor**

Yotam Asscher, *University of Haifa & Israel Airports Authority*

11:10 – 13:10	<i>Hall E</i>
<b>E. Gutmanas Symposium</b>	

Chair: TBA

### Paper-Derived Ceramic-Based Materials

Nahum Travitzky, *University of Erlangen–Nuremberg, Germany*

### Manipulating the Growth and Form of Biogenic Glass

Igor Zlotnikov, *Dresden University of Technology, Germany*

### Advancing the Knowledge of Dislocation Dynamics: A Simulation Perspective

Dan Mordehai, *Technion - Israel Institute of Technology*

### Cold Sintering Processes: A Historical Perspective on Biomaterials Applications

Aliya Sharipova, *Fraunhofer Institute for Ceramic Technologies and Systems IKTS*

### Reactive Infiltration Synthesis of Additively Manufactured Metal/Ceramic Composites

Alexander Katz-Demyanetz, *Israel Institute of Materials Manufacturing Technologies*

13:10 – 14:40	<i>Poster Area, Exhibition Area</i>
<b>LUNCH BREAK</b>	

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14:40 – 16:40	<i>Hall A</i>
<b>Materials for Energy</b>	

Chairs: TBA

### **Porosity and Energy: From Fuel Cells to Fracking**

David Eisenberg, *Technion - Israel Institute of Technology*

### **High Entropy Oxides as Materials for Energy Storage and Conversion**

Ronen Gottesman, *Hebrew University of Jerusalem*

### **Mixed Conductivity in the TiO<sub>2</sub>-SrF<sub>2</sub> and LaOxFy Systems for Energy Applications**

Yatir Sadia, *KAMAG*

14:40 – 16:40	<i>Hall B</i>
<b>Bio- &amp; Soft Materials</b>	

Chair: TBA

#### **Presentation 1**

Assaf Gal, *Weizmann Institute of Science*

#### **Presentation 2**

Lihi Adler-Abramovich, *Tel Aviv University*

#### **Presentation 3**

Dganit Danino, *Technion - Israel Institute of Technology*

14:40 – 16:40	<i>Hall C</i>
<b>Ceramics and Composites</b>	

Chair: TBA

### **Self-compensation in Metal Oxides with Application on (Fast) Sintering of MgO**

Yoed Tsur, *Technion - Israel Institute of Technology*

### **Challenges and Opportunities Utilizing Multilayer MXene as Precursors for Oriented TiC<sub>x</sub> in Ceramic Composites**

Barak Ratzker, *Max-Planck-Institut for Sustainable Materials, Germany*

### **Beyond Thin Films: ALD`s Role in Next-Generation Ceramic Materials**

Amnon Rothman, *Ben-Gurion University of the Negev*

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14:40 – 16:40	<i>Hall D</i>
<b>Quantum Materials</b>	

Chair: TBA

### Presentation 1

Ido Kaminer, *Technion - Israel Institute of Technology*

#### **Coherent Control of Phonon Anharmonicity**

Alon Ron, *Tel Aviv University*

#### **Features of Uniform and Non-Uniform Strain in Transition-Metal Dichalcogenides Mono-layers**

Moshe Harats, *Ben-Gurion University of the Negev*

14:40 – 16:40	<i>Hall E</i>
<b>Mechanical Properties &amp; Failure</b>	

Chair: TBA

### Presentation 1

Jay Fineberg, *Hebrew University of Jerusalem*

#### **Dynamics of Deformation Twinning in Magnesium**

Eilon Faran, *Technion - Israel Institute of Technology*

### Presentation 3

Mirit Sharabi, *Ariel University*

16:40 – 18:10	<i>Poster Area, Exhibition Area</i>
<b>Welcome Reception &amp; Posters</b>	

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### Wednesday, February 26, 2025

8:00 – 9:00	<i>Registration Area, Poster Area, Exhibition Area</i>
<b>Registration, Coffee Break, Poster Mounting</b>	

9:00 – 9:45	<i>Hall A</i>
<b>Plenary 3: Unveiling the Art of Self-Assembly in the Creation of Diverse Biomaterials</b>	

Chair: TBA

#### **Unveiling the Art of Self-Assembly in the Creation of Diverse Biomaterials**

*Ulyana Shimanovich, Weizmann Institute of Science*

9:45 – 10:30	<i>Hall A</i>
<b>Plenary 4: Materials Science Challenges in Developing High Energy, Safe and Durable Rechargeable Batteries</b>	

Chair: TBA

#### **Materials Science Challenges in Developing High Energy, Safe and Durable Rechargeable Batteries**

*Doron Aurbach, Bar-Ilan University*

10:30 – 11:00	<i>Poster Area, Exhibition Area</i>
<b>Coffee Break, Poster Viewing</b>	

11:00 – 13:00	<i>Hall A</i>
<b>Computational MS I</b>	

Chair: TBA

#### **Presentation 1**

*Alex Umantsev, North Carolina State University, USA*

#### **Presentation 2**

*Lee Burton, Tel Aviv University*

#### **Towards Fully Automated and Universal Metallographic Image Analysis Using AI Methods**

*Ofer Beeri, KAMAG*

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11:00 – 13:00	<i>Hall B</i>
<b>Surfaces &amp; Interfaces</b>	

Chair: TBA

### Presentation 1

Adi Solomon, *Bar-Ilan University*

#### **High Purity Nanoporous Metallic Films: Direct Synthesis and Catalytic Applications**

Hannah-Noa Barad, *Bar-Ilan University*

#### **Surface Engineering on Gold: From Atomic Steps to Nanoporous Structures and Directed Nanowire Growth**

Boaz Pokroy, *Technion - Israel Institute of Technology*

11:00 – 13:00	<i>Hall C</i>
<b>Additive Manufacturing</b>	

Chair: TBA

### Presentation 1

Shulamit Levenberg, *Technion - Israel Institute of Technology*

### Presentation 2

Amnon Shirizli, *RAFAEL*

### Presentation 3

Aslan Miriyev, *Ben-Gurion University of the Negev*

11:00 – 13:00	<i>Hall D</i>
<b>Functional Materials</b>	

Chair: TBA

### Presentation 1

Elena Meirzadeh, *Weizmann Institute of Science*

#### **On the Role of Twinning in Phase Transitions of Ferroelectric Perovskites**

Semën Gorfman, *Tel Aviv University*

#### **Non-Ergodic-Induced Negative Differential Piezoresponse in Relaxor Ferroelectrics**

Yachin Ivry, *Technion - Israel Institute of Technology*

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11:00 – 13:00	<i>Hall E</i>
<b>Physical Metallurgy</b>	

Chair: TBA

**Heusler Alloys for Spintronics and Magnetocaloric Applications: Understanding through the Lens of Diffraction Techniques**

Pnina Ari-Gur, *West Michigan University, USA*

**Presentation 2**

Hanna Bishara, *Tel Aviv University*

**Structural Materials for Nuclear Fusion Energy: Knowledge Gaps and Opportunities in Metallic Materials Innovation**

Aleksandra Baron-Wiechec, *GTIIT*

13:00 – 14:30	<i>Poster Area, Exhibition Area</i>
<b>Lunch Break &amp; Poster Session</b>	

14:30 – 16:30	<i>Hall A</i>
<b>Computational MS II</b>	

Chair: TBA

**Computational Thermodynamics: Principles and New Applications to Electrodeposition of Reactive Metals from Molten Salts**

Eli Brosh, *KAMAG*

**Presentation 2**

Sivan Refaely-Abramson, *Weizmann Institute of Science*

**Charge Transport through Catalytic Materials**

Maytal Caspary Toroker, *Technion - Israel Institute of Technology*



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14:30 – 16:30	<i>Hall B</i>
<b>Materials for Extreme Conditions</b>	

Chair: TBA

### **The Influence of Solutes and Fields on Anisotropic Grain Growth of Alumina**

Wayne Kaplan, *Technion - Israel Institute of Technology*

#### **Presentation 2**

Noam Eliaz, *Tel Aviv University*

#### **Presentation 3**

Amit Schleyer, *RAFAEL*

14:30 – 16:35	<i>Hall C</i>
<b>Materials Physics</b>	

Chair: TBA

### **Charge Transport in Calcium-Manganate Oxides for Thermoelectric Applications**

Yaron Amouyal, *Technion - Israel Institute of Technology*

#### **Chalcogenides for Extreme Light-matter Interactions**

Tomer Lewi, *Bar-Ilan University*

#### **Designing Nickelates for High-temperature Superconductivity**

Muntaser Naamneh, *Ben-Gurion University*

#### **Probing Phase Transitions and Stability within Molecular Ices by the Discharge of Weakly Bound Electrons and Ions**

Roy Sagi, *KAMAG*

#### **Metasurfaces: From science to Applications**

Uriel Levy, *Hebrew University of Jerusalem*

14:30 – 16:30	<i>Hall D</i>
<b>Materials Characterization</b>	

Chair: TBA

#### **Presentation 1**

Yevgeny Rakita, *Ben-Gurion University of the Negev*

#### **Elucidating the Structure and Composition of Buried Interfaces with New Solid State NMR Methods**

Michal Leskes, *Weizmann Institute of Science*

#### **Presentation 3**

Yoav Shechtman, *Technion - Israel Institute of Technology*

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14:30 – 16:30	<i>Hall E</i>
<b>Corrosion &amp; Electrochemistry</b>	

Chair: TBA

### **Synthesis of Functional Coatings Using the Molten Salt Plasma Electrolytic Oxidation**

Konstantin Borodianskiy, *Ariel University*

### **Enhancing the Efficiency and Stability of Reversible Zinc and Iron Electrodeposition in Mildly Acidic Electrolyte Solutions**

Daniel Sharon, *Hebrew University of Jerusalem*

### **Corrosion Performance of Biomaterials in Physiological Environments**

Galit Katarivas Levy, *Ben-Gurion University of the Negev*

16:30 – 17:00	<i>Poster Area, Exhibition Area</i>
<b>Coffee Break, Poster Viewing</b>	

17:00 – 17:45	<i>Hall A</i>
<b>Plenary 5: Underwater Technologies for Cultural Heritage in the Eastern Mediterranean: Data Capture, Curation, Analyses and Dissemination</b>	

Chair: TBA

### **Underwater Technologies for Cultural Heritage in the Eastern Mediterranean: Data Capture, Curation, Analyses and Dissemination**

Thomas Levy, *University of California San Diego, USA*

17:45 – 18:15	<i>Hall A</i>
<b>Best Poster Prize Announcement &amp; Closing Remarks</b>	