

## Message from the President, Prof. Osvaldo Novais de Oliveira Junior

IUMRS is a multilateral scientific society that has brought together scientists from different countries and disciplines, contributing to the progress on materials and technologies for the betterment of society. With adhering bodies in all continents, IUMRS represents researchers responsible for ca. 70% of the entire scientific output in materials-related publications in the world. Of special relevance is the IUMRS commitment to foster a collaborative and inclusive environment where members work together, share ideas, and take part on conferences and other events with global reach. Through the adhering bodies, advocacy initiatives have been implemented for IUMRS scientists to engage with the broader community and to advocate for policies that foster the advancement of science.

Humanity faces pressing needs that are closely intertwined with the search for new materials. Indeed, materials can be designed to enhance the efficiency and sustainability of energy production, storage, and use. For instance, advanced solar cells, efficient batteries and catalysts can all help to reduce current reliance on fossil fuels and mitigate climate change. In transportation, research on materials may allow for lighter, stronger vehicles, with potential to improve fuel efficiency, reduce emissions, and enhance safety. New materials have been central in creating more effective and less invasive medical devices and therapies, such as drug delivery systems, artificial organs, and tissue engineering scaffolds. Key areas for social-economic development have also benefited from research on materials, e.g. with products that are more durable, functional, and sustainable, for consumer goods as well as for bridges, roads, and buildings.

The discovery of new materials and properties have been accelerated by machine learning and other artificial intelligence (AI) methods, while the hardware component of AI systems often requires functionalized materials. This places materials also at the spotlight of the ongoing AI revolution, which is transforming society in unprecedented ways. Scientific societies devoted to materials are surely in a position to foster programs for the responsible application of emerging technologies. With its partnerships with Adhering Bodies and other multilateral organizations, such as the International Science Council (ISC) and International Union of Pure and Applied Physics (IUPAP), IUMRS is committed to offering our members opportunities for professional growth and collaboration.

We encourage you to get involved and take advantage of all that IUMRS has to offer.

Osvaldo Oliveira Jr., President of IUMRS



Osvaldo Oliveira Jr.  
President, IUMRS

## IUMRS Executive Council 2023-2024



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Past President



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Second Vice President



Sanjay Mathur  
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John Baglin  
Liaison to ISC

The post of the  
First Vice President  
is currently vacant.

Professor Osvaldo Oliveira Jr, previously the First Vice President, has assumed the office of President of IUMRS since 1 January 2023. The former President, Professor Rodrigo Martins is now serving as the Immediate Past President for the term 2023-2024.

Professor Sanjay Mathur was elected the Secretary and will serve the term 2023-2024. Professor Mathur is affiliated with University of Cologne in Germany. In the past, Professor Mathur has served IUMRS as the part of the IUMRS Meetings Commission, and organized symposia at various meetings that were co-organized by IUMRS. He has actively contributed to a series of IUMRS events through regular participation and by delivering talks both in scientific sessions and other events targeting young professional.

The IUMRS Executive Council wishes to express its deepest appreciation to Professors Yafang Han and Jim Williams who have completed their terms as the Immediate Past Present and Secretary, respectively, for their leadership and dedicated services to IUMRS. The Council also wishes to thank Professor Tao Deng who has made significant contributions to IUMRS, as a Co-chair of the IUMRS Development Commission and in other capacities.

**About the Newsletter** This Newsletter is published by the IUMRS Head Office. The objective is to update adhering bodies and members on IUMRS activities and latest news/developments in the materials research community. The Newsletters will be distributed to adhering bodies, affiliated members, and interested parties in softcopy (PDF format). Adhering bodies, affiliated members, and members of adhering bodies are invited to contribute news items and articles. Besides activity reports, we also welcome short reviews on a research topic of current interest, book reviews, commentaries, and views on issues relevant to the materials research community, etc. Please contact the Head Office (email: [admin@iumrs-ho.org](mailto:admin@iumrs-ho.org)) if you would like to contribute an article.

Report on International Conference on Materials for Humanity (MH 22)

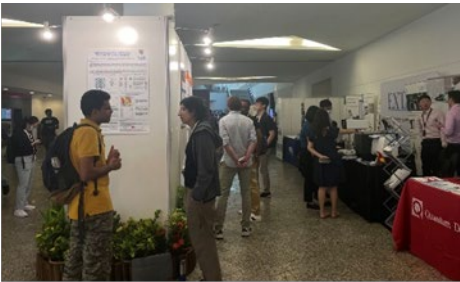


The Materials Research Society of Singapore (MRS-S) held its first hybrid format International Conference on Materials for Humanity 2022 (MH 22) during 19th - 22nd September 2022, at the University Town, National University of Singapore (NUS).

Organized in association with the NUS, Nanyang Technological University (NTU), and Agency for Science, Technology and Research (A\*STAR), the event was co-chaired by Prof. B. V. R. Chowdari (NTU), A/P Pieremanuele Canepa (NUS) and Dr. Ho Pin (A\*STAR). In total, MH 22 was attended by close to 480 participants, of which ~25% were virtual participants. The general format comprised 16 technical symposia spanning over 6 themes, 6 plenary lectures, ~120 invited lectures, ~180 contributed oral presentations, as well as ~100 posters. The conference registration fees were tiered according to virtual (SGD 200) and in-person (SGD 300) participation, while special half-priced rates were given to students and invited speakers.

HYBRID FORMAT

The conference physical venue consisted of 7 auditoriums and lecture theatres, of which Auditorium 2 at UTown with a capacity of 470 participants was selected as the primary venue for hosting the large-scale opening and closing ceremonies, plenary lectures, and sponsorship talks. Poster stands, exhibition booths, and refreshments were lined up in close proximity to promote interactions and discussions amongst participants.



The virtual component of MH 22 leverages on state-of-the-art audio-visual technologies and communication platform (Zoom), unleashing the full potential of dual modal interaction between physical and virtual participants. A comprehensive microsite was



accessible to all registered participants, wherein participants could easily navigate between talks by clicking on any of the 7 physical venues (Zoom link embedded) with ongoing symposia, or view and comment on posters. To realize the live presentations and Q&A, multiple cameras capturing both the speaker and audience were set-up and managed by at least 2 technical support staff per venue. In essence, the virtual participants were aurally and visually well-connected to real-time happenings at the physical venue, sharing similar experiences as the physical participants. A repository of pre-recorded talks did not have to be maintained in this event.

Notwithstanding the complexity and magnitude of this hybrid format conference, notably, the first hybrid MH 22 was well-executed with the synergistic efforts of the organizing committee members, symposium chairs and technical support team, as well as the adaptability of participants to such evolving technological landscape.

SYMPOSIA

MH 22 comprised 16 symposia across 6 key thematic covering emerging topics with a strong focus on the betterment of society and mankind.

PLENARY SPEAKERS

Six plenary lectures were given by internationally recognized scientists across Asia, Europe and USA, while maintaining a good gender representation.

SPONSORS

MH 22 attracted strong sponsorship support from a range of industries, consortia and publishers. Diamond and platinum sponsors held physical booth exhibits for product showcases. Additionally,

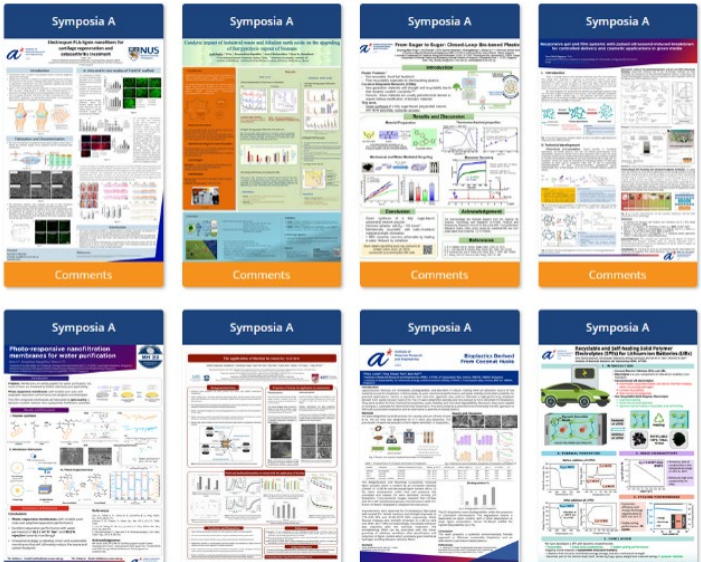


20 September

PHYSICAL VENUE - AUDITORIUM 2 - CLICK HERE FOR VIRTUAL SESSION				
Symposium	Speaker Name	Start time	End time	Presentation Title
E: Energy conversion and catalysts	Prof Madhu Bhaskaran (Chair: Ho Pin)	0900 SGT	0945 SGT	Plenary Lecture: Conformal and miniaturised sensors for health care, aged care, and point of care diagnostics
	DongLing Ma	1000 SGT	1020 SGT	Designing Nanohybrids for Energy and Environmental Applications
	Jérôme Clavier	1020 SGT	1040 SGT	Plasmonic photocatalysts free of noble metals
	Zhichuan J. Xu	1040 SGT	1100 SGT	Magnetic oxides for water oxidations: the progress and the puzzle
	Lei Wang	1100 SGT	1120 SGT	Axial ligand effect on platinum single-atom-catalyst towards efficient alkaline hydrogen evolution reaction
	Daowen Lee	1120 SGT	1135 SGT	Effects of Al2O3/ITO Structure on Silicon Heterojunction Solar Cells
	Chee Keong Goh	1135 SGT	1150 SGT	Green Solvothermal Synthesis and Characterisation of Hierarchical HZSM-5 for Production of Biofuels
	Jongchul Lim	1150 SGT	1205 SGT	Long-range charge carrier mobility of metal halide perovskite via transient photo-conductivity
	Radhika Rayya	1205 SGT	1220 SGT	Nonlinear acoustic cantilever beams for piezoelectric vibration energy harvesting under random loading
	Jagadeeshwaran P L	1220 SGT	1235 SGT	Smart textiles containing chemically coupled carbonaceous particles with excellent heat dissipation properties
		1235 SGT	1300 SGT	Diamond Sponsor Talks: AIP Systems Services



Virtual Posters



**REPORT on MH 22** (cont. from page 2)

Theme	Symposium	Chair
<b>A: Materials for environmental protection</b>	A1: Carbon neutral materials	Kai Dan, A*STAR IMRE
	A2: In situ electron microscopy of energy and environmental related nanomaterials	He Qian, NUS MSE
	A3: Unconventional photovoltaic materials	Nripan Mathews, NTU MSE
	A4: Perovskite-based tandem solar cells	Yi Hou, NUS ChBE
<b>B: Materials for clean energy and transportation</b>	B1: Advanced materials for clean energy and environment	John Wang, NUS MSE
	B2: Batteries for the future	Pieremanuele Canepa, NUS MSE
	B3: Electrochemical CO <sub>2</sub> conversion	Andrew Wong, NUS MSE
	C1: Advanced materials by self-assembly: fabrication and applications	Lee Pooi See, NUS MSE
<b>C: Materials for communication</b>	C2: Domain-specific computing through systems-technology co-design	Kelvin Fong, NUS ECE
	C3: Photonic materials	Ramon Dominguez, NTU SPMS
<b>D: Materials for healthy living and aging</b>	D1: Materials for biomedicine, diagnostics and therapy	Zhang Yong, NUS BME
	E1: Materials for quantum-enabled future	Johnson Goh, A*STAR IMRE
<b>E: Materials frontiers</b>	E2: Biomimetic and bioinspired materials and structures	Hortense Le Ferrand, NTU MSE
	E3: Magnetism and spintronics	Ho Pin, A*STAR IMRE
	E4: Data-driven materials research	Kedar Hippalgaonkar, A*STAR IMRE/ NTU MSE
<b>F: Materials for education and communication</b>	F1: Sustainable material development and use	Iuna Tsyrluheva, NTU NISTH



diamond sponsors were offered extra perks of advertisement airtime and sponsor talks.


**List of Sponsors**

**Diamond:** APP Systems, FOM Technologies, ThermoFisher Scientific


**Platinum:** Extrad, Huawei, ITS Science and Medical, JEOL, Quantum Design

**Silver:** Royal Society of Chemistry

**Bronze:** Singapore Battery Consortium, Premier Solutions




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**Platinum Sponsors**






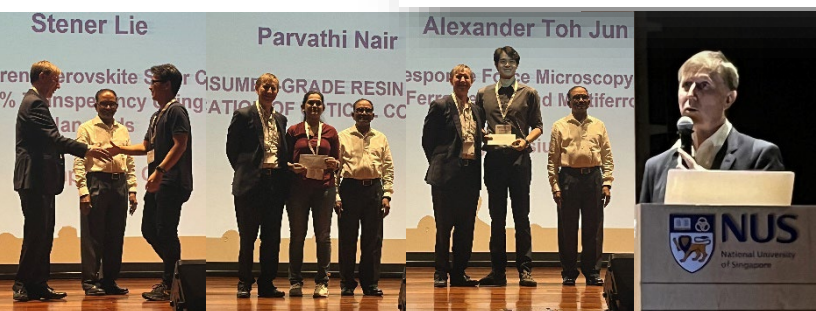


**Silver Sponsors**



**Bronze**




**AWARDS**

The posters presenters were assessed by judges in-person or virtually over the microsite. Of the 150 posters submitted, 12 poster awards worth SGD 200 each and electronic certificates were given out to deserving awardees at the closing ceremony.

Reported by Materials Research Society of Singapore

**MRS**  
Materials Research Society  
SINGAPORE

**Recent Events**

- IUMRS-ICA 2022** (23rd) was held during 19-23 December 2022, in Jodhpur, India. The conference was organized by MRS India.
- MRS-Ina organized the **International Conference on Advanced Materials and Technology 2022 (ICAMT 2022)** during 14 - 15 December 2022, in the Grand Sahid Jaya Hotel, Jakarta, Indonesia.
- The 2nd International Conference on Materials for Humanity (MH 22)**, organized by MRS Singapore took place, from 19 to 21 September 2022 in Singapore. See report on page 2 for details.
- IUMRS-ICAM 2021** (17<sup>th</sup>) was held in Cancun, Mexico, jointly with the XXX International Materials Research Congress (IMRC2022). The meeting was jointly organized by Mexican MRS and IUMRS. See report on next page for details.
- IUMRS-ICYRAM 2022** was held during 3 - 6 August, 2022 in Fukuoka, Japan. The conference was organized by MRS Japan.
- International Conference on Frontier Materials (ICFM)**, organized by IUMRS Regional Office in Asia, was held virtually from 27 to 31 May 2022. The inaugural IUMRS Frontier Materials Awards were presented at this conference. See a brief report about this conference and the awards in the last issue (August 2022) of this Newsletter.

**Upcoming Events**

- MRS Thailand is organizing its **Forth Materials Research Society of Thailand International Conference** (MRS-Thailand 2023), on February 28 - March 4, 2023 at Sunee Grand Hotel & Convention, Ubon Ratchathani, Thailand. More details about this conference can be found at <https://www.mrsthailand2023.com>.
- IUMRS-ICAM 2023 & ICMAT 2023**. This combined IUMRS-ICAM and ICMAT conference will take place during 26 – 30 June 2023 at Suntec Singapore. The conference is organized by MRS Singapore. Visit the conference web site <https://icmat2023.mrs.org.sg/> for more details.
- IUMRS-ICA 2023** will be organized by MRS Japan and will be held in Kyoto in 2023, jointly with the 3rd Materials Research Meeting as an international grand meeting (MRM2023/IUMRS-ICA2023). Conference web site: <http://mrm2023.jmru.org/>.
- ICFM-2023** will continue be organized by IUMRS Regional Office in Asia. The conference will be held in Qingdao in October 2023. The exact dates will be announced soon.
- IUMRS-ICEM 2024**. The next IUMRS-ICEM will be organized by MRS Hong Kong, tentatively during 26 - 31 May 2024. Scientific sessions will be held in Hong Kong and Shenzhen. More details will be made available soon at IUMRS web site.

# Report on International Conference on Advanced Materials (ICAM 22)



The 30th International Materials Research Congress (IMRC 2022) in its annual edition, was organized by the Sociedad Mexicana de Materiales (SMM) working in partnership with the Materials Research Society (MRS) and the International Union of Materials Research Societies (IUMRS). It was held from 14 - 19 August 2022 in Cancún, México.

Over the years, it has become the main event of materials science and engineering in Latin America and is already well recognized around the world, attracting scientists, researchers, and students from many countries, and covering a wide range of topics of interest to the international materials research community. The IMRC offers different activities such as symposia, plenary talks and special lectures, tutorial courses, invited talks, oral and posters presentations, joint meetings and workshops, a graduate programs fair, SMMater-University Chapters, a commercial high tech and scientific exhibition, technical sessions by commercial exhibitors, and other special events and activities related with the promotion and advancement in the materials science and technology field.

This year, after the havoc created by the Covid 19, for the second time we organized a hybrid IMRC in which we received 1,177 attendees on-site and 628 virtual that came from 448 institutions from 48 different countries. Of the 1,177 In-person attendees, 703 were students, 254 non-members and 220 members; and of the 628 Virtual attendees, 364 were students, 178 nonmembers and 86 members of the Sociedad Mexicana de Materiales.

With the IMRC 2022 we accomplished the following goals:

- 1. A joint event with the International Union of Materials Research Societies – IUMRS: The 17th International Conference on Advanced Materials – ICAM (IUMRS-ICAM 2022).
- 2. Eight (8) plenary talks by international leading scientists and one (1) Science, Technology, and Society lecture.
- 3. Seven (7) symposia clusters with 41 symposia.
- 4. One workshop: “Women in Science and Engineering Gender Agenda” organized by outstanding scientific and professional women in diverse science, technology, and engineering fields.
- 5. 11 tutorial courses to introduce and better prepare participants for the symposia.
- 6. IMRC 2022 Poster Awards with three sessions and three winners of first place, and MRS Spring Meeting 2021 Poster Awardees Presentations of two of the three winners.
- 7. Graduate Programs Fair with 24 participating institutions from Mexico and USA offering graduate and postgraduate programs in the materials science and engineering field.
- 8. Five (5) special events: Symposium Organizers Luncheon Conference, MRS Publishing Workshop, University Chapters poster presentation, and two professional development talks for participating students.
- 9. Five (5) Technical Sessions offered by commercial exhibitors at the IMRC.
- 10. An exhibition with 38 international commercial & scientific exhibitors representing more than 50 companies and institutions, exhibiting in 41 booths.

### IMRC – ICAM Attendees

1,805 participants from 48 countries and 448 institutions, from which 1,067 of the participants were students and 738 regular members and new attendees. Of all the participants, 692 were women and 1,113 were men.

Type of Attendee	In-person	Virtual	Total
Members	220	86	306
Non-Members	254	178	432
Students	703	364	1,067
Total	1,177	628	1,805

### Plenary Lectures

8 outstanding researchers delivered their plenary lectures which covered a wide range of topics.

Composition of Attendees	
Women	692
Men	1,113
Total	1,805

**PROF. FRANCESCA IACOPI**, Professor, School of Electrical and Data Engineering. The University of Technology Sydney, Australia. Topic: **Epitaxial Graphene on Silicon Carbide on Silicon: Towards Integrated Applications**

**DR. NICK BIRBILIS**, Dean and Professor, College of Engineering and Computer Science. The Australian National University, Australia. Topic: **A Contemporary Look at the Corrosion and Passivation of Engineering Alloys, What is the Current State of Knowledge?**

**PROF. LUIS LIZ MARZÁN**, Ikerbasque Research Professor and Scientific Director, The Basque Centre for Cooperative Research in Biomaterials (CIC biomaGUNE), Spain. Topic: **Plasmonic Nanocomposites to Monitor Tumor Metabolism.**

**PROF. MATTHEW TIRRELL**, Dean of the Pritzker School of Molecular Engineering, University of Chicago, USA. Topic: **Electrostatic Self-Assembly of Charged Macromolecules: New Physics and New Applications.**

**PROF. SAW WAI HLA**, Physics & Astronomy Department, Ohio University, Athens, OH, USA. Topic: **Quantum Molecular Machines**

**PROF. DRAGOS AXINTE**, Director of The Rolls-Royce UTC in Manufacturing and On-Wing Technology, University of Nottingham, Nottingham, UK. Topic: **Some Aspects of workpiece Surface Integrity when Machining Ni-based Superalloys: From Macro to Nano studies.**

**PROF. NARENDRA B. DAHOTRE**, Center for Agile & Adaptive Additive Manufacturing, Department of Materials Science & Engineering, University of North Texas, USA. Topic: **Laser Based Additive Manufacturing**

**PROF. JOSEP NOGUÉS**, ICREA Research Professor and Group Leader of the Magnetic Nanostructures Group, Catalan Institute of Nanoscience and Nanotechnology, Barcelona, Spain. Topic: **Magneto-plasmonic Nanodomes as a Novel Structure for Biomedical Applications**

### Science, Technology and Society Lectures

The Science, Technology and Society Lecture was delivered by

**DRA. CARMEN ENEDINA RODRÍGUEZ**, Director of Higher and Intercultural Education at the Ministry of Education, México

REPORT on ICAM 22 (cont. from page 4)

IMRC – ICAM Organization

IMRC Chairs:

- 1. Patricia Zambrano, General Chair, Universidad Autónoma de Nuevo León, México.
- 2. Margarita Sánchez-Domínguez, Centro de Investigación en Materiales Avanzados (CIMAV), Monterrey, México.
- 3. Norma A. Alcantar, University of South Florida, USA.
- 4. John J. Boeckl, Air Force Research Laboratory, USA.
- 5. Facundo Almeraya, Universidad Autónoma de Nuevo León, México.

IUMRS-ICAM Chairs:

- 1. Leticia Torres, Centro de Investigación en Materiales Avanzados (CIMAV), Chihuahua, México.
- 2. Miguel J. Yacaman, Northern Arizona University, USA.
- 3. Soo Wahn Lee, Sun Moon University, Korea.

Abstracts Received and Accepted for the Symposia

Abstracts Received		Abstracts Accepted		
Total		Total	Oral	Poster
2,529		2,375	1,164	1,209

Symposia & Workshops

See Table on next page.

Tutorials

No	Tutorial
T1	Characterization of Materials Sargassum: Basic Theory and Practice, <i>Organized by the symposium: C2. Sustainable Uses of Sargassum Materials: Fundamentals to Applications</i>
T2	Computational Methods for Electronic Structure in Catalytic Materials and its Cases of Study, <i>Organized by the symposium: A4. Advanced Catalytic Materials: Nano and Bulk</i>
T3	DC and AC Electrochemical Techniques for Interfacial Characterization <i>Organized by the symposium: D3. AMPP (NACE): Corrosion and Metallurgy</i>
T4	Fundamentals of Scanning Electron Microscopy (SEM), <i>Organized by the symposium: D7. Structural and Chemical Characterization of Metals and Alloys</i>
T5	Isolation and Characterization of 2D Bio-nanostructures: Cellulose and Chitin, <i>Organized by the symposium: D6. Aeronautical and Aerospace Processes, Materials, and Industrial Applications</i>
T6	Mentoring Young Scientists: Developing Survival Skills, <i>Organized by the symposium: B5. Challenges In Materials and Technologies for Energy Conversion, Saving and Storage (MATECSS)</i>
T7	Nanomedicine, <i>Organized by the symposium: E2. Nanomaterials for Drug Delivery, Imaging and Immuno-Engineering</i>
T8	Novel Techniques of Electron Microscopy, <i>Organized by the symposium: A3. Novel Techniques and Applications in Electron Microscopy and Spectroscopy of Nanomaterials and their Heterostructures</i>
T9	Optimizing Intermolecular Potentials Using Machine Learning for Molecular Simulations, <i>Organized by the symposium: E1. Equilibrium and Beyond-Equilibrium Self-Organization in Soft Materials</i>
T10	Piezoelectric Characterization of Ferroelectric Domains by Piezoresponse Force Microscopy (PFM) by using Dual AC, <i>Organized by the symposium: G5. Science of Multiferroics, Ferroelectrics, Meta-</i>
T11	<i>Materials, and Technological Applications to MEMS Devices</i> Properties and Advanced Characterization of Inorganic/Organic Hybrid and Organic Materials for Solar Cell Applications, <i>Organized by the symposium: B4. Photovoltaics, Solar Energy Materials and Technologies</i>

IMRC 2022 Poster Awards

The 3 First Place winners of the Poster Sessions of the IMRC 2022:

- 1. **Jorge Aarón Castillo Hernández**, Title: Effect of the Post-Curing Temperature in the Wear Resistance of Composites Obtained by Vacuum Infusion Process

- 2. **Oscar Luis Quintero Lizárraga**, Title: Synthesis of Bismuth Halide Perovskite Photocatalysts to Produce Renewable Fuels from Co2 Photoreduction
- 3. **Cindy Viridiana Peto Gutierrez**, Title: Fabrication of Microelectrodes with Large Electrochemically Active Surface Area Based on Shrink Polymer Film and Rapid Low-Cost Prototyping Techniques

Special Events

- 1. Symposium Organizers Luncheon Conference: “Science and Technology Research within the U.S. Army”, Adam Rawlett, Ph.D., Senior Research Scientist (Materials Science), U.S. Army Research Laboratory, USA.
- 2. MRS Workshop: Essentials of Getting your Work Published.
- 3. University Chapters: Local States Poster Winners Presentation and student chapter activities report.
- 4. Conference: “Ciencia de los materiales, nanotecnología, sustentabilidad, diseño. ¡Todo en un lugar!” KNOVEL, Pedro Gallardo, Elsevier (for students).
- 5. Conference: “La importancia del talento en Ternium: Oportunidades de formación y desarrollo”, José Pérez – Coordinador de Marca Empleadora, Ternium (for students).

Technical Sessions by Exhibitors

No	Technical Session	Exhibitor
1	Consideration for High Resolution and Sensitivity on XRD Measurements, with Applications.	Anton-Paar
2	Multi-modal Surface Imaging: Combining Raman, Photoluminescence and Photoluminescence Lifetime.	Edinburgh Instruments
3	Leading the Next Generation of an XRD Compact System	Malvern Panalytical
4	Chemical Imaging with Raman, EDS & EBSD: The Complete Picture of Material Properties	WITec – Oxford Instruments
5	FIB-SEM Applications in Nanotomography	Carl Zeiss

Exhibitors

38 international high technology companies and scientific institutions in the field of materials science and engineering exhibiting in 41 booths.

BOOTH	COMPANY/INSTITUTION	BOOTH	COMPANY/INSTITUTION
43	AGILENT	42	MATERIALS RESEARCH SOCIETY (MRS)
8	ANALITEK	31	METROHM MÉXICO
27	ANTON PAAR	7	MATERIALS RESEARCH SCIENCE AND ENGINEERING CENTER (NSF) U. of Wisconsin
6	ANYOVER – HIDEN	13	NANOCIENCIAS
19	BRUKER	30	NANOMETRIX – ALS
49	CARL ZEISS	5	NETZSCH INSTRUMENTS
M8	CIMICROSCOPIA	15	OXFORD INSTRUMENTS AMERICA
46	CTR SCI	11	PARK SYSTEMS
4	EDAX –SIPROA	26	QUANTUM DESIGN
32	EDINBURGH	M2	SAIDE - SISTS. AUT. E IND. DIV. ELEC.
14	ELECTRON DEVICES	44	SOCIETY OF WOMEN ENGINEERS – SWE
38	ELECTRÓNICA COM	M1	TA INSTRUMENTS
21 & 22	I&E FALCON	10	TECNO LAB - OCEAN INSIGHT
29	ICDD	24	THERMO FISHER SCI – FEI
9	INNOVA	16	WITec – OXFORD INSTRUMENTS
12	INSTRUMENTS NANOTECH	20	MALVERN PANALYTICAL
17 & 18	INTERCOVAMEX		
39	IONAUTICS		
25	ISASA		
2 & 28	JEOL		
20	MALVERN PANALYTICAL		
3 & 23	MARKTEK		

**REPORT on ICAM 22** (cont. from page 5)**List of IMRC – ICAM Symposia & Workshops****A. NANOSCIENCE AND NANOTECHNOLOGY**

- A1 Protein Cages as Next Generation Nanomaterials
- A2 Colloidal Crystals
- A3 Novel Techniques and Applications in Electron Microscopy and Spectroscopy of Nanomaterials and their Heterostructures
- A4 Advanced Catalytic Materials: Nano and Bulk
- A5 Nano-Alloys: Theory, Synthesis & Characterization

**B. MATERIALS FOR ENERGY CONVERSION, STORAGE, AND HARVESTING**

- B1 Developing Circular Economy and Sustainable Design for Emerging Energy Technologies
- B2 Advanced Materials and Processes for CO<sub>2</sub> Capture, Utilization, and Storage (CCUS)
- B3 Electrochemical Energy Storage and Generation: Batteries, Electrochemical Capacitors and Fuel Cells
- B4 Photovoltaics, Solar Energy Materials and Technologies
- B5 Challenges in Materials and Technologies for Energy Conversion, Saving and Storage (MATECSS)
- B6 Thermoelectric Materials for Sustainable Development

**C. MATERIALS FOR SUSTAINABILITY AND ENVIRONMENTAL APPLICATIONS**

- C1 Emerging Materials for Clean Energy and Environmental Remediation Applications
- C2 Sustainable Uses of Sargassum Materials: Fundamentals to Applications
- C3 Materials and the Environment
- C4 Advances on Biofuels: Materials, Characterization, Processing and Testing
- C5 Advances in Sustainable Concrete and Cement Based Materials
- C6 Photoluminescence in Rare Earth Doped Materials

**D. MATERIALS PROCESSING AND DESIGN**

- D1 Next Generation Metallic Lightweight Structural Materials for Ground Transportation, Electronic and Biomedical Industries (*cancelled*)
- D2 Advances in Powder Metallurgy: Materials and Processes
- D3 AMPP (NACE): Corrosion and Metallurgy
- D4 Advances in Functional Semiconducting Materials
- D5 Advanced Structural Materials: Mechanics, Properties and Applications. The Focus on Severe Plastic Deformation
- D6 Aeronautical and Aerospace Processes, Materials, and Industrial Applications
- D7 Structural and Chemical Characterization of Metals and Alloys
- D8 Nanocomposites and Multilayered Thin Films Studied in Terms of Grain-boundaries and Interfaces

**E. ORGANIC AND HYBRID MATERIALS: EXPERIMENTAL AND COMPUTATIONAL ANALYSIS**

- E1 Equilibrium and Beyond-Equilibrium Self-Organization in Soft Materials
- E2 Nanomaterials for Drug Delivery, Imaging, and Immuno-Engineering
- E3 In Honor of Matthew Tirrell - Implications of Crowded Macromolecules: Self-Assembly, Phase Behavior and Interfacial Engineering in Confined Spaces
- E4 Polymers and Nanopolymers: Chemistry, Characterization and Applications
- E5 Metal and Covalent-Organic Frameworks: from Synthesis to Applications

**F. BIOAPPLICATIONS, INCLUDING BIOMATERIALS, SMART TEXTILES, AND WEARABLES**

- F1 Innovative Smart Materials by Soft Chemistry for Flexible/Wearable and Large-Area Electronics
- F2 Complex Behavior, Interfaces, and Applications of Biomembranes
- F3 Phase Transitions in Advanced Functional Materials
- F4 Micro and Nanostructured Materials for Biomimetics and Single-Cell Studies
- F5 Materials for Health Applications: Biomaterials for Permanent and Temporary Implants, Dental, and Cosmetics
- F6 Bio Physics

**G. GENERAL**

- G1 AI-Enabled Advances in Materials Imaging, Automation, and Analysis
- G2 Machine Learning for Materials Modeling and Discovery
- G3 Materials in Nuclear Science and Technology
- G4 Advanced Defense Materials
- G5 Science of Multiferroics, Ferroelectrics, Meta-Materials, and Technological Applications to MEMS Devices
- G6 La Innovación y los Mecanismos de Transferencia de Tecnología en México

**WORKSHOP**

- W1 Women in Science and Engineering Gender Agenda

**Student & Researcher Financial Support Programs**

Students and Researchers were financially supported to attend and participate in the IMRC 2022 through five (5) different programs:

1. Student University Chapters. 40 students from 23 student chapters were supported to present their work and help symposia presenters during the IMRC. The support consisted of paid transportation, lodging, meals, and registration to the congress.
2. Monitors Team. 148 students (73 women and 75 men) from

universities of 22 different Mexican states were supported with transportation, lodging and congress registration to help symposia presenters during the IMRC and to present their academic work (oral and poster).

3. Registration Waivers (See the next item).
4. MRS Spring Meeting Best Student Poster Awardees. Two (2) lodgings and IMRC 2022 registrations.
5. One to two nights lodging for 15 Instructors of the 11 Tutorials and 22 Instructor registration waivers, two per Tutorial.

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Registration Waivers

A total of 366 Regular and Student registration waivers, and 171 for In-person students assisting symposia sessions.

- 1. Regular waivers: 141 In-person registrations and 45 Virtual registrations.
- 2. Student: 128 In-person registrations and 52 Virtual registrations.
- 3. Student Monitors (assisting all symposia sessions): 139 In-person registrations.
- 4. Student University Chapter (assisting all symposia sessions): 32 In-person registrations.

IMRC Sponsoring Organizations

- Consejo Nacional de Ciencia y Tecnología – CONACYT, Mexico.
- US Army RDECOM-Americas, US Navy ONR-G and US Air Force AFOSR, USA.

Sponsors of specific symposia and poster awards

- 1. G4. Advanced Defense Materials: *US Army, US Navy, and US Air Force.*
- 2. A1. Protein Cages as Next Generation Nanomaterials: *Funding from CNYN-UNAM and CONACYT (grant CF-MI-6357).*
- 3. B5. Challenges In Materials and Technologies for Energy Conversion, Saving and Storage (MATECSS): *UNESCO Chair in Materials and Technologies for Energy Conversion, Saving and Storage, and Coatings, an Open Access Journal by MDPI.*
- 4. C2. Sustainable Uses of Sargassum Materials: Fundamentals to Applications: *Consejo Quintanarroense de Ciencia y Tecnología - COQCYT, B. Medina, Equipos y Material de Laboratorio.*
- 5. Best Poster Awards – IMRC 2022: *The Royal Society of Chemistry Journals of Digital Discovery, Materials Advances, Materials Horizons, Nanoscale, Nanoscale Advances, and Nanoscale Horizons.*

Additional Information

Institutions Participation

A total of 1,805 attendees, 1,177 on-site and 628 virtual, came from 448 different institutions from 48 countries.

Participation by Country

Country	Attendees	Country	Attendees
Argentina	11	Martinique	2
Australia	4	Mexico	1,249
Austria	4	Netherlands	7
Belgium	2	New Zealand	1
Brazil	19	Paraguay	2
Canada	38	Peru	7
Chile	15	Poland	13
China	10	Puerto Rico	5
Colombia	75	Rumania	3
Costa Rica	5	Russia	1
Czech Republic	5	Servia	2
Ecuador	1	Singapore	4
El Salvador	5	Slovakia	1
Estonia	1	Slovenia	1
Finland	4	South Africa	1
France	20	Southern Korea	3
Germany	11	Spain	27
Hong Kong	1	Sweden	4
India	2	Taiwan	2
Israel	4	Thailand	1
Italy	13	Turkey	3
Japan	31	United States	132
Korea	4	United Kingdom	38