

IUMRS General Assembly 2022



The 2022 IUMRS General Assembly was held, in hybrid format, immediately before the International Conference on Electronic Materials (IUMRS-ICEM) in Cancun, Mexico. Some participating attended the meeting at the conference venue and the rest online. Here is a brief summary of major topics of discussion and decisions made at this GA meeting.

Head Office. The Head Office carries out all of the various administrative tasks of IUMRS. The finances of IUMRS are managed through a not-for-profit company IUMRS-SG that acts for and on behalf of the IUMRS Officers. An annual general meeting (AGM) of IUMRS-SG was held virtually on 3 Jun 2022. At the AGM, the audited financial statements of IUMRS-SG for the financial year ended 31 Dec. 2021, together with the report of Auditors and the Statement by Directors were received and considered. New Directors and members were either re-elected or appointed, and all directors/members are the EC Officers of IUMRS, along with the IUMRS Head Office Director. Directors are: Rodrigo Martins, IUMRS President, Yafang Han, IUMRS Past-President, Byungha Shin, IUMRS Treasurer, and BVR Chowdari, IUMRS Head Office Director. The members are: Osvaldo N Oliveira Jr, IUMRS First Vice President, Yuan Ping Feng, IUMRS Second Vice president, and Jim Williams, IUMRS Secretary. Rama & Co was re-appointed as Auditors of IUMRS-SG. It was also reported that, with the help of Elton Kaufmann, the iumrs.org domain was renewed and transferred to the current web-hosting/maintenance company for iumrs-ho.org. In future, iumrs.org will be the URL of IUMRS web site.

Conferences. Despite Covid-19, a number of IUMRS or IUMRS endorsed conferences have been successfully organized. These include IUMRS-ICA 2020 (23-26 Feb 2021, Chiangmai, Thailand, hybrid), International Conference on Materials for Humanity (MH21, 6-9 Jul 2021, Singapore, virtual), IUMRS-ICEM 2021 (30 Aug – 3 Sept 2021, Brazil), IUMRS-ICA 2021 (3-8 Oct 2021, Jeju, Korea, hybrid), International Conference on Functional Materials (ICFM 2022, 28-31 May, China, hybrid), IUMRS-ICYRAM 2022 (3-6 Aug 2022, Fukuoka, Japan). In addition, three other conferences will be held in 2022: IUMRS-ICAM 2021 (14-19 Aug, Cancun, Mexico), MH22 (19-21 Sept, Singapore) and IUMRS-ICA 2022 (19-23 Dec, Jodhpur, India). Conferences confirmed to take place in 2023: IUMRS-ICEM 2022 (May or Oct, Hong Kong), IUMRS-ICAM 2023 (23-30 Jun, Singapore), ICFM 2023 (Oct, Qingdao, China), IUMRS-ICA 2023 (Dec, Japan). Calls for hosting IUMRS conferences in 2024-2026 will be sent out soon.

Funding Support for ICYRAM and Bob Chang Student Award. It was decided that IUMRS will support a new Bob Chang student award and contributions to travel of students and young researchers, to attend ICYRAM conferences. The funding will be up to a maximum of US\$2000. The detailed guidelines will be formulated by the Meeting Commission. It was noted that normally IUMRS does not provide support for conferences other than the ICYRAM conference series. However, in special circumstances, notably seed funding support for conferences in underdeveloped regions, including attendance of young researchers, funding support may be considered on a case-by-case basis.

Elections of IUMRS officers. The positions of IUMRS First Vice President and Secretary are due for election for 2023-2024. The election will be carried out electronically, with the following timeline, (i) call for nominations with a deadline of 7 October 2022, (ii) ballots for both positions sent out with the statements/CV of candidates, with completed ballots due by 4 November 2022, (iii) the Treasurer determines the valid votes based on dues paid for each Adhering Body (AB), and the Secretary and HO Director counts votes on 7 November 2022, (iv) the results are sent to the Executive Council (EC) Officers for approval on 8 November 2022, (v) successful candidates are informed and then all ABs are informed of the election results. It is noted that the same candidate cannot be nominated for both Officer positions and dues must be paid for the nomination to be valid.

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IUMRS Governance Review. IUMRS has completed a governance review recently. Two possible IUMRS governance models, aimed at improving equity across ABs of membership levels and voting rights were proposed and considered by ABs. However, at this stage, ABs clearly preferred not to change IUMRS governance. Instead, there were strong views that IUMRS should expand its global coverage (membership) before changing governance. Hence, it was decided that finding new members, particularly in under-represented continents/regions should be a priority. Specifically, First Vice President Osvaldo N Oliveira Jr will work with Membership Affairs and Development Commissions to develop strategies to increase global coverage of IUMRS, by reaching out to regions which are currently not covered.

IUMRS Regional Offices. With strong support of Shanghai University, IUMRS Regional Office in Asia has been in operation in Shanghai since Jan 2021. In the past year, it has successfully organized the Asia Advanced Materials Summit (March 2021), the International Conference on Frontier Materials (May 2022), the Asian Energy and Environmental Materials Summit 2022 (June 2022), and compiled and published the IUMRS 30 Years book. At the inaugural ICFM conference, the IUMRS – Frontier Materials Awards were established. The regional office is currently working on the second ICFM (Oct 2023 in Qingdao), IUMRS-ICEM (May/Oct 2023, with Hong Kong MRS), China-UK Materials Summit, 2023 IUMRS Frontier Materials Awards, collaboration with local governments, as well as establishing a new materials journal.

IUMRS Regional Office in Africa has been fully established in BITRI, Botswana. It has established strategic partnerships with African Research Universities Alliance, ARUA Centre of Excellence in Materials Energy & Nanotechnology, United Nations Economic Scientific and Cultural Organization. Working closely with African MRS, it has organized many activities to promote materials research and nanotechnology in Africa.

International Science Council (ISC). John Baglin, IUMRS the Liaison Officer to ISC, highlighted five domains of action of ISC, namely, i) global sustainability; ii) converging science and technology in a digital era; iii) science in policy and public discourse; iv) changing practices in science and science systems; and v) freedom and responsibility in science. He encouraged IUMRS and all ABs to take up the challenges and develop strategies to work with ISC and solve some of the most pressing global problems.



John Baglin leading the discussion on IUMRS-ISC collaboration.

IUMRS Financial Statements. IUMRS Treasurer, Byungha Shin, presented the latest IUMRS financial statements and budget for 2023. It is noted that the union is in a financially sound position. The ABs will vote to accept the 2021-2022 financial statements and the 2023 budget in coming weeks.



Treasurer Byungha Shin presenting financial statement.

IUMRS Initiatives and Priorities. President Rodrigo Martins highlighted IUMRS initiatives and priorities in the coming years. He encouraged all to work with ISC, and hopes that IUMRS can be an active and influential organization. He emphasized the importance of IUMRS membership expansion. More importantly, he urges that IUMRS and all ABs can work more closely with stakeholders, and make the effort to be more influential at the policy making level. For example, the key policy people can be invited to our conferences for interaction.



President Rodrigo Martins presenting IUMRS Initiatives and Priorities.

International Conference on Frontier Materials



After postponing twice due to Covid-19, the inaugural International Conference on Frontier Materials (ICFM) finally took place during 27-31 May 2022 in a virtual format. It consisted of 25 symposia, covering most areas in frontier materials research. The meeting featured 8 keynote lectures, 875 oral presentations, of which more than half were invited, and a large number of online posters. Papers presented at the conference were generally high quality. The successful organization of the virtual meeting at this large scale could be valuable experience for future IUMRS event organization. ICFM will be organized regularly under the umbrella of IUMRS.

At this inaugural ICFM, IUMRS launched a new series of awards, the IUMRS Frontier Materials Awards. The three types of awards, i.e., IUMRS Frontier Materials Scientists Award (FMSA), IUMRS Frontier Materials Young Scientists Award (FMYSA) and IUMRS Frontier Materials Graduate Students Award (FMGSA), were set up to recognize excellent and well-performed materials scientists, to advance international exchange and collaboration, and to encourage young researchers and graduate students. The committee received 88 high quality nominations for the 2021 and 2022 awards. 8 outstanding scientists were honoured with the FMSA, 12 young researchers were awarded the FMYSA and 24 graduate students received the FMGSA (see pages 6-8). Each of them was presented a medal, a certificate and a cash award.



MRS-Thailand Science & Innovation of Advanced Materials Colloquium



MRS-Thailand is organizing the MRS-Thailand Science and Innovation of Advanced Materials Colloquium (Zoom online). This activity is organized every month (Thursday of the fourth week) starting from June 2022. This activity is endorsed by IUMRS.

Dr. Adison Tuantranont of NSTDA, Thailand was the first speaker. He talked about "Advanced Carbon Nanomaterials for Energy Storage Applications" on 30 June. The speaker for the July colloquium is Dr.

Saranyoo Sornkamnerd of Energy Absolute Public Company Limited, Thailand. The topic of his talk is "Evaluation of three-dimensional molecular orientation in biopolyimide film using polarized ART/FT-IR". The colloquium is open to all. To attend, visit facebook page of MRS Thailand.

Invitation to MRM2023/IUMRS-ICA2023 Kyoto

The 24th IUMRS-ICA will be held in Kyoto in 2023 jointly with the 3rd MRM as an international grand meeting (MRM2023/IUMRS-ICA2023), covering a broader range of fields. This is a large-scale meeting that merges the features of each to create new value. We invite researchers, engineers, and students from all over the world in all fields related to materials science and engineering to participate in this Grand Meeting. Now MRS-J is calling for **symposium proposals** for the meeting. <http://mrm2023.jmru.org/>.

Achievements and Highlights in 2021 - a Report by the President

The following is a summary of a presentation made by the IUMRS President Professor Rodrigo Martins at the IUMRS Executive Council meeting held virtually on 10 March 2022, outlining IUMRS achievements and highlights during his first year as President of IUMRS.



1. IUMRS EC and GA meetings in 2021

There were 6 meetings (all virtual) of the full Executive Council (EC) members, held in January, February, May, June, September and November. This is a record number of such meetings for IUMRS, and allowed a wide range of business matters to be addressed, including many important issues discussed and resolved, as well as a range of new initiatives established, as indicated in the points below.

There were also two virtual General Assembly (GA) meetings. The first GA in February was actually the postponed 2020 GA meeting, and basically communicated information and progress, including important decisions since the previous GA in May, 2019. The second GA was the regular 2021 GA held just after the (virtual) IUMRS-ICEM meeting in Brazil in September. There was a normal agenda for this meeting but all voting occurred electronically after the meeting, as indicated below in point 13.

2. Establishment of the new IUMRS Head Office in Singapore

- The IUMRS Head Office (HO), for business operations only, was established on January 1, 2021, at the Nanyang Technological University (NTU) as host institution. The HO manages IUMRS's financial transactions and day to day business operations.
- It receives generous support from NTU (and from MRS-Singapore). Here, we highlight the support of the secretariat given.
- To comply with Singapore regulations and facilitate tax-free status, a limited liability, not-for-profit public company (IUMRS-SG) was set up to undertake HO operations and financial transactions on behalf of IUMRS. All decisions of IUMRS-SG are made by the IUMRS EC. Furthermore, the Directors/Members of IUMRS-SG are the EC Officers (or their nominee) and they must work for and on behalf of IUMRS. BVR Chowdari has been appointed by the EC as the Director of the HO to manage day to day business.
- Strict procedures have been developed for all activities of the HO to ensure that all financial transactions (and other business actions) are approved by the President, Treasurer or other nominated EC Officer.

3. The Asian Regional Office (RO) of IUMRS

This RO moved to Shanghai on January 2021 and is very well supported by MRS-C. It is co-chaired by Professor Han, and planned a number of initiatives and events during 2021 and beyond, as indicated below.

4. A new IUMRS website and newsletter

As a result of the loss of the previous website run by the former IUMRS HO at Northwestern University, IUMRS approved the design, build and management of a new website. This project was managed by Yuan Ping Feng, Second Vice President. The new website was launched around the middle of 2021 (<http://iumrs-ho.org>). Yuan Ping is to be congratulated for his hard work and careful oversight of the project that has delivered a functional and attractive site.

Along with the website, also under the management of the Second Vice President, a newsletter was launched with the aim to promote IUMRS initiatives and to provide information on relevant topics for the broad scientific community associated with IUMRS, including Adhering Body information.

5. New IUMRS Officers elected for 2021/2022

Elected Officers of First Vice President, Osvaldo Oliveira, and Secretary, Jim Williams, began their 2021/2022 terms of office on January 1, 2021.

6. Conferences in 2021

Three very successful virtual conferences were held in 2021. They were

- ICA 2020 was held in February 2021 in Thailand, and organized by MRS-Thai.
- The First Asia Advanced Materials Summit (AAMS) was held in Shanghai China in March, and organised by the Asian Regional Office of IUMRS.
- ICA 2021 was held in Jeju Island, Korea in October 2021, and organised by MRS-Korea.

7. Gender Equity and Diversity Initiative

A committee was set up early in 2021 to oversee the establishment of a gender equity and diversity policy and code of conduct for IUMRS. The EC approved a policy and code of conduct at its May EC meeting, which is available on the IUMRS website under the governance tab. An IUMRS gender equity committee has also been established, consisting of Jim Williams (IUMRS Secretary), Joanne Etheridge (Australian-MRS), Byungha Shin (MRS-Korea), Claudia Gutierrez Wing (MRS-Mexico) and Madoka Takai (MRS-Japan).

8. The IUMRS Commemorative 30-year book

A book to commemorate 30 years of IUMRS was compiled and published during 2021. Thanks are due to Professor Han and C-MRS for producing a very impressive book that provides not only the history of IUMRS over its first 30 years, but contains many photographs and memories from IUMRS and Adhering Body office bearers over that period.

9. International Matters and ISC

IUMRS stepped up its interaction with the International Science Council (ISC), sister international Unions and other global bodies in 2021.

John Baglin, who has been the historical contact with ISC for several years was made a full member of the IUMRS EC to be able to report on ISC matters at every EC meeting. These improved communication channels led to several opportunities for IUMRS to join ISC projects and events. For example, IUMRS accepted an invitation to join ISC's "Gender Equity in Science" committee along with several other international Unions. The goals of this venture are very consistent with IUMRS's recently constituted Gender Equity and Diversity policy and code of conduct. In addition, IUMRS accepted an invitation from IUPAP to join a committee organizing events and activities for the International Year of Basic Science for Sustainable Development 2022 (IYBSSD) along with many other international Unions. BVR Chowdari is IUMRS's delegate to that committee. IUMRS also actively took part in the election of ISC Office bearers and board members, endorsing nominations for positions from our Adhering Bodies, and in the ISC voting process. Four Officers and ten Governing Board members were elected, and, as a highlight, this number included 5 members that were supported by IUMRS (Vice-President for Finance of the Council: Sawako Shirahase; and ordinary members: Françoise Baylis, Mei-Hung Chiu, Helena Nader, and Martin Visbeck).

Concerning European initiatives, there were several highlights of activities of great relevance to IUMRS. These involved the establishment, by the European Research Council, of a panel fully devoted to Materials Engineering. This panel will enhance the impact of materials in defining the road map for future breakthrough science and technology activities. Moreover, the IUMRS President, along with the E-MRS European Affairs Committee, have been involved in the definition of new actions concerning the relevancy of materials within the European Commission, in particular in the Directorate-General (DG) Research and Innovation, by launching the Materials 2030 Manifesto for which global actions are foreseen. This initiative is also seen as a launching ground for promoting advanced education networking, where again materials are the activators and accelerators of the transformations needed to have a global impact (educating young talent and in science frontiers raised by the brightest minds). This initiative will be initiated in 2024 and will be a pilot program

Achievements and Highlights in 2021 - a Report by the President (cont.)

supported by the 4 European pillars that support research: the European Research Council (ERC); the European Innovation Council (EIC); the DG Research and Innovation; and Marie-Sklodowska-Curie-actions (doctoral networks). Further actions will be announced during 2022, and E-MRS is in the loop in terms of the advocacy and outreach actions related to this topic.

10. Review of IUMRS Commissions

A review of IUMRS Commission role statements and membership was undertaken in 2021. A short, revised role statement for each Commission that reflects their activities and processes is posted on the IUMRS website. The membership of each commission was revisited with the criteria that all IUMRS Adhering Bodies need to be represented across commissions, and that improved gender equity and diversity should be demonstrated. Membership of all Commissions is now finalized and the membership lists are also posted on the website. There are 42 members in total across the Commission membership that covers all Adhering Bodies, with 11 women members.

11. IUMRS Governance review

Following proposals from EMRS concerning issues with IUMRS governance and voting rights, the EC established a governance working group to review IUMRS governance and to make recommendations to the EC and ultimately the GA. This is the first time that IUMRS has undertaken a review of governance in its more than 30-year history. Much progress has been made in developing possible governance options, Adhering Bodies have been consulted and asked to fill in a governance questionnaire, and 4 possible governance options have been proposed by the governance working group. In early 2022, these options will be put to Adhering Bodies to choose the best option, with a vote on a new governance model expected at the 2022 GA.

12. The global spread of IUMRS and new initiatives

Oswaldo Oliveira was asked to take the lead on initiatives to enhance the global spread of IUMRS. The Membership Affairs Commission were also involved in discussions. It was decided that there was a real opportunity for IUMRS to do more with and for Adhering Bodies, and this could be done as a first step, before any moves to attract additional members (Adhering Bodies and other) into IUMRS. A series of possible initiatives and events that could all be held virtually was proposed, and these discussed individually with each Adhering Body. Some very useful feedback was obtained, not only on these initiatives but also on IUMRS governance. Many Adhering Bodies were excited about contributing to on-line events such as: webinars, distinguished lecturer series, virtual laboratory tours and workshops on specific research topics.

13. The agenda and decisions of GA meetings in 2021

Whereas the 26th Feb. 2021 GA was simply to update ABs on IUMRS business and decisions since the previous GA in 2019 (i.e. no motions or voting), the 6 Sept. 2021 GA included a full agenda as well as a number of motions (electronic voting after the GA).

1. There was discussion and timeline for the Officer elections for 2022/2023, for Treasurer and Second Vice President. Following a ballot and vote for these positions, the following Officers were elected for 2022/2023 terms: Byungha Shin, MRS-K as IUMRS Treasurer, and Yuan Ping Feng, MRS-S for a second term as Second Vice President. Naoki Kishimoto was thanked for his outstanding work as Treasurer for 2020/2021.
2. There was a presentation by Samuel Chigome, President of African MRS, on a proposal for a Regional Office of IUMRS in Africa. Following the GA, an electronic vote was held, and a Regional Office in Africa was approved unanimously. The African MRS negotiated that the IUMRS Regional Office in Africa will be located in Botswana and hosted by the Institute for Technology Research and Innovation (BITRI).
3. Following the presentation of IUMRS financial statements, there were motions to accept the 2021 and 2022 budgets. These motions were subsequently voted on after the GA, and both approved unanimously.

14. The IUMRS Financial arrangements

The Treasurer, along with the Head Office, put in place procedures for approving all financial transactions that involved approval first by the President, followed by endorsement by the Treasurer. Only then was the Head Office authorized to undertake the transaction. Any transactions not foreseen in the budget previously approved by the GA, were subsequently presented at the next GA for approval.

At the GA on September 6, 2021, the Treasurer stated the following: "The Treasurer acknowledges that the financial operations of the IUMRS are performed properly complying with the laws and regulations etc., and executed effectively toward the solid achievement of IUMRS missions. The Treasurer acknowledges that the methods and results of the audit performed by the external auditor are appropriate. The Treasurer further acknowledges that the proposal for dealing with profits complies with the laws and regulations and that the financial report is appropriate and fairly presents the financial status of IUMRS."

15. Detailed report of the relocation of the IUMRS HO to Singapore

Following a series of questions about the relocation of the IUMRS Head Office from Northwestern University to Singapore by the General Secretary of EMRS, Paul Siffert, it was decided that the Secretary, with the help of the Head Office staff, should put together a comprehensive document outlining the decision processes, procedures, and documents related to the relocation. A more than 60-page report was presented to the GA on September 6, 2021. The report contained all approvals of the GA at several meetings, approvals by the EC at various meetings related to official documents, the support that the Head office would receive from the host institution (Nanyang Technological University), expert and legal advice on the process of setting up a Head Office in Singapore, as well as all related documents, as well as approval processes for all decisions to be implemented by the Head Office, including financial transactions. It was stated in the document that the Head Office was a business operations office only.

It is clear that, as a result of this extensive process, IUMRS has never had more transparent processes for decision making that require approvals by appropriate EC members on all business and financial transactions. Following presentation of the report to the GA, all Adhering Bodies were asked if they were happy with the relocation process and report. There were no negative comments. Point-by-point answers to questions posed by EMRS were also sent in a letter to the EMRS General Secretary. In terms of communication with EMRS on this matter, it was decided that Oswaldo Oliveira would be the point of contact for the IUMRS Executive Council, and continue to communicate with EMRS to resolve any outstanding issues.

16. The President's vision for IUMRS

For the present year it is expected that IUMRS will:

- consolidate actions begun in 2021, namely, concerning IUMRS procedures, improved governance, commitments to gender issues, and involvement with ISC and IUPAP projects and activities;
- promote actions already started under the auspicious coordination of IUMRS First Vice President Oswaldo Oliveira, such as cross-cutting web-based seminars aimed at identifying and promoting the ongoing research and activities in science involving IUMRS Adhering Bodies;
- launch the IUMRS Frontier Materials Awards: the IUMRS Frontier Materials Young Scientists Award and the IUMRS Frontier Materials Graduate Students Award, all under the patronage of MRS-China;
- enhance young talent networking, involving all young talent across Adhering Bodies;
- re-establish face-to-face dialogue and promote more multilateral events on the frontiers of materials research, including the establishment of common projects involving all societies that comprise IUMRS.

Recognition of IUMRS Leadership & Research



IUMRS congratulates Professor **Elvira Fortunato** who was recently appointed the **Minister of Science, Technology and Higher Education of the XXIII Government of the Portuguese Republic**. Being a materials scientist, Professor Fortunato is a world pioneer specialist in paper electronics and a strong supporter of IUMRS and its activities. Find out more at <https://www.fct.unl.pt/en/news/2022/03/elvira-fortunato-appointed-minister-science-technology-and-higher-education>.



IUMRS President, Professor **Rodrigo Martins** has been awarded the **SPM Career and Recognition Award 2021**, the most prestigious award by the Portuguese Materials Research Society, <https://spmateriais.pt/site/premio/>. The prize presentation ceremony was held during Materials 2022, 10-13 April, Marinha Grande. Photo from <https://cemop.uninova.pt/news/rodrigo-martins-receives-spm-career-and-recognition-award-2021>. Professor Rodrigo Martins also won the merit NOVA-Altice prize (20000 €) on 31 May 2022, in the first edition (<https://www.fct.unl.pt/en/news/2022/05/rodrigo-martins-winner-1st-edition-nova-altice-research-award>).



Prof. Yafang Han, Immediate Past President of IUMRS and Chief Director of IUMRS Regional Office in Asia has been elected the Vice President of International Science Council – China, with a 3-year term till June 2025.



First Vice-President of IUMRS, Prof **Osvaldo Novais de Oliveira Junior**, took over as **director of São Carlos Institute of Physics – University of São Paulo (IFSC – USP)**. Source: B-MRS Newsletter, Year 9, Issue 3 (<https://www.sbpmat.org.br/en/boletim-da-sbpmat-edicao-no-114/>)



Professor Chowdari receiving his SNAS fellowship certificate from Professor Tit Meng Lim, President of SNAS.

Professor **B V R Chowdari** has recently been elected a **fellow of the Singapore National Academy of Science (SNAS)**. Beginning in 2011, the prestigious SNAS Fellowships have been conferred on outstanding researchers in Singapore to recognise those who have distinguished themselves in the field of science. The SNAS, which was established in 1976, is widely respected for its key role in promoting the advancement of science and technology – and recognising excellence in science – in Singapore, as well as representing the scientific opinions of its members. SNAS Fellows are outstanding scientists who are working or have worked in Singapore. They play important roles in advising and/or contributing to the government and other national organizations on various aspects of science including research, teaching, science policy; promotion and public communication of science, etc. A few other prominent materials research scientists, including John Wang, Xiaodong Chen, Xiaogang Liu, Yixin Lu, were also conferred the prestigious SNAS Fellowships in 2022. More information about SNAS fellowship can be found at <https://snas.org.sg/aboutfellowship>.

Professor **Naoki Kishimoto**, the immediate past IUMRS Treasurer and EC member, has been awarded the prestigious Japanese national medal, **“The Order of the Sacred Treasure, Gold Rays with Rosette”**.

Dr. Naoki Kishimoto, Treasurer of the IUMRS (2020-2021), Councilor of the MRS-Japan, former Director of Quantum Beam Research Center (NIMS), and former Director of the General Strategy Office of National Institute for Materials Science, received the national medal for his research achievements:



Research on In-situ Measurement and Material Control of the Non-equilibrium Processes Using Quantitative Beam Technology: Dr. Kishimoto has developed “Extreme Quantum Field Devices” that combine the world’s highest- current heavy-ion beam accelerator and a high-power laser, and applied them to analyze and develop electronic functional materials and ceramic structural materials. By using the unique technology developed, he focused on not only to control the atomic displacement/injection processes but also to control the electronic excitation effects and succeeded in the dynamic atomistic characterization and the novel material control of the nanostructured materials.

- Research on Materials Development of Metal Nanoparticle Composites using Ion Beam Technologies and the Plasmonic Applications:
- Dr. Kishimoto has developed the nanomaterials technology for the efficient generation and precise spatial control of nanoparticle materials by using the ion beam technology, not only controlling the chemical composition but also the crystallinity and the nanoparticle positioning/patterning. The ion beam technology developed spanned from high-current negative-ion implantation to the ion implantation combined with electron beam evaporation, laser-co-irradiation, and the negative ion-beam nano-patterning. The technologies were applied to develop plasmonic devices, such as ultra-fast optical switching.

IUMRS Frontier Materials Awards

During the inaugural International Conference on Frontier Materials (ICFM) which was held in May 2022, IUMRS launched a series of Frontier Materials Awards. The three categories of awards, IUMRS Frontier Materials Scientists Award, IUMRS Frontier Materials Young Scientists Award, and IUMRS Frontier Materials Graduate Students Award, are to recognize scientists and experts who are devoting to the research in frontier materials, and encourage young researchers to excel in frontier materials research. The winners of these awards are featured here.

IUMRS Frontier Materials Scientists Award-2021



Lei Jiang
Tech. Inst.
of Phys. &
Chem.,
CAS, China

Prof. Jiang's main research field is bioinspired interfacial material systems with superwettability, from both fundamental research to commercialization. He has led the way in exposing an extraordinary range of potential applications for his discoveries and transferring his research findings from the laboratory to practical products in the market. He has 70 patents and 56 pending patent applications. Up to now, some of them have already been developed to form terminal technologies that are widely commercialized, such as superwettability-based self-cleaning technique, oil-water separation technique, phase-change liquid-cooling technique, and nano green printing technique. More than 4 million self-cleaning nano-neckties with superamphiphobic functions have been produced by ELITE company in Ningbo, China.

Prof. Fortunato's main research field is on transparent electronics using sustainable materials and environmentally friendly technologies. Prof. Fortunato is a Chair Professor in the Materials Science Department at the Faculty of Science and Technology at NOVA University of Lisbon and was Vice-Rector of this university. She has coordinated the research area since 2017. She was also Director of the Associated Laboratory of the Institute of Nanomaterials, Nanofabrication and Nanomodelling. From 2015 to 2020 she was part of the Committee constituted by seven researchers that formed the European Commission Scientific Advice Mechanism based on scientific evidence. Since 2010 she has been in the Chancellery of the Honorary Orders of Portugal, at the Presidency of the Republic.



Elvira Fortunato
NOVA
University
of Lisbon,
Portugal



Xiaodong Chen
Nanyang
Tech. Univ.,
Singapore

Prof. Chen's Main research field is soft composite materials for flexible electronics, and he helps advance the frontiers of flexible electronics and create the potential to disrupt advanced manufacturing and digital healthcare. His interest in fundamental research to benefit humanity is well-demonstrated in his pursuit to partner with the private sector and government agencies to accelerate the deployment of his technology. He has published over 330 highly cited and globally recognized papers, chalking up more than 30,000 citations to date. His illustrious research has garnered several prestigious accolades for his exceptional scientific contributions, including the Singapore President Science Award, Winner of Falling Walls, and Friedrich Wilhelm Bessel Research Award.

Prof. Sekino's main research is ceramic and nanocomposite materials science. He served/is serving on the editorial board of several journals. He is a member of wide range of national and international societies. He serves steering, organizing and editorial committee of the International Symposium on Eco-Materials Processing and Design series for more than 20 years as a key member. He was awarded various scientific and technological prizes including the Scientific Encouragement Award by The Japan Society of Powder and Powder Metallurgy (1997/2004), the Prizes for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology (MEXT, Japan), Japan (2016), and the 70th Ceramic Society of Japan Awards for Academic Achievements (2016).



Tohru Sekino
Osaka
University,
Japan

IUMRS Frontier Materials Scientists Award-2022



Younan Xia
Georgia
Institute of
Technology,
USA

Prof. Xia's main research fields include nanomaterials and biomaterials, and his original contributions are exemplified by the invention and development of many nanomaterials for a broad range of applications. He has played a leadership role in nanomaterials development, continuously pushing the frontiers of materials research with impactful breakthroughs to advance humanity. He pioneered and defined the research in colloidal nanocrystals by bringing in both mechanistic understanding and experimental control to the nucleation and growth steps. It is a fair statement that the silver nanowires invented by Xia about 20 years ago are enabling the introduction of cost-effective and high-performance touch screen interfaces, changing dramatically how people interact and communicate with each other.

Prof. Mathur's main research field is application of nanomaterials and advanced ceramics for energy technologies. He holds 11 patents and has authored/co-authored over 500 original research publications and has edited several books. He is an Academician of the World Academy of Ceramics and Fellow of the American Ceramic Society and ASM International. He was awarded the Honorary Doctorate of the Vilnius University in 2016. Since 2018, he chairs the Academic Affairs Committee of the Materials Research Society. He was awarded the R. C. Mehrotra Lifetime Achievement Award of Indian Science Congress Association in January 2020.



Sanjay Mathur
University
of Cologne,
Germany



Dongbai Sun
Sun Yat-Sen
University,
China

Prof. Sun's main research fields are Synchrotron X-ray Techniques, corrosion and metallic materials. His research systematically improved the test and research capabilities of large-size and full-scale materials and components and overall strength of safety assessment technology in China. He led the plan, design and construction of two major national scientific and technological infrastructures independently, together with the Shenzhen Innovation Light-source Facility which is currently under construction for serving the development of high-tech industries in Shenzhen. He has established a new paradigm of the 4R test and research for the service safety of engineering materials, which is under real service safety conditions to do the investigation of the real process of real substance in the real time.

Prof. Jun He's main research field is low dimensional semiconductor materials and electronic devices. He has published more than 200 SCI papers, which are cited for more than 15000 times. He won the National Science Fund for Distinguished Young Scholars and the title of Young and middle-aged leading scientists, engineers and innovators of the Ministry of Science and Technology. He has also received National Special Support Program for High-level Talents by the Organization Department of Communist Party of China Central Committee (Ten Thousand Talents Program). Recently, He won the first prize of Natural Science Award of Hubei Province and the first prize of Science and Technology Award of China Materials Research Society.



Jun He
Wuhan
University,
China

IUMRS Frontier Materials Awards (cont.)

IUMRS Frontier Materials Young Scientists Award-2021



Xiangfeng Duan
Univ. of California,
Los Angeles, USA

Prof. Duan's research interest includes nanoscale materials, devices and their applications in future electronic and energy technologies. He has published over 300 papers with over 75,000 citations, and holds over 50 US patents. He has received many awards for his pioneering research in nanoscale science and technology, including MIT Technology Review Top-100 Innovator Award, Alpha Chi Sigma Glen T. Seaborg Award, Herbert Newby McCoy Research Award, US Presidential Early Career Award for Scientists and Engineers, Human Frontier Science Program Young Investigator Award, Dupont Young Professor, Journal of Materials Chemistry Lectureship. He is currently an elected Fellow of Royal Society of Chemistry and Fellow of American Association for the Advancement of Science.



Tzu-Wei Wang
National
Tsing Hua
Univ., Taiwan

Prof. Wang's research interests are 1) Development of functionalized smart biomaterials and 2) Control of extracellular microenvironment using physical, chemical, and biological approaches. He completed his Ph.D. degree from the Institute of Biomedical Engineering, National Taiwan University. He joined National Tsing Hua University in 2009. He has published over 50 scientific peer-reviewed SCI papers and received several international patents in the past few years. He has been awarded with TERMIS Young Plenary Award and several Young Investigator Awards in the field of Biomaterials and Tissue Engineering. He also received Research Scholar Award and Biomedical Engineering Award for his research studies and contribution in the Biomaterials and Controlled Release Society, Taiwan.



Wentao Yuan
Zhejiang
University, China

Prof. Yuan's research interests focus on utilizing and developing in-situ transmission electron microscopy methods, exploring the interaction mechanism between the surface/interface of catalysts and external environments at the atomic scale, unveiling the dynamic structure-performance relationships, developing new strategies for the design of high-performance catalytic materials. Dr. Yuan has published over 40 peer-reviewed papers. As the first and corresponding authors, he has published over 15 peer-reviewed papers including two in Science. Recently, he has achieved important advances in in-situ studies of the surface and interface active sites of the supported catalysts and these works benefit the in-situ design of the catalyst active sites in operating conditions at the atomic level.



Kai Liu
Tsinghua University,
China

Prof. Liu's research relates to interface engineering of low-dimensional materials and heterostructures for high-efficiency sensing and neuro-morphic devices. He has published more than 110 papers in leading journals and had more than 50 authorized China/US invention patents. He has been involved in a number of research projects from National Natural Science Foundation of China and National Key R&D Program of China. He has been appointed as young editorial board members of Smart Mat, J. Electron. Sci. Technol., Chinese Physics Letters, and Chinese Physics B. His awards include the First Prize of Science and Technology Award of Chinese Materials Research Society (2020), Rising Star Speaker Award at ICMAT (2019), National Outstanding Doctoral Dissertation Award of China (2010).



Wei Luo
Donghua
University, China

Prof. Luo's research focuses on the design of novel strategy for the construction of structure-function integrated ceramic materials at low temperatures based on various functional mesoporous powders with high sintering activity. He was the recipient of 2022 Youth Science and Technology Award of the Chinese Ceramic Society, 2020 Chinese Chemical Letters Outstanding Young Scholar, and 2020 Shanghai Youth May 4th Medal. Professor Luo was awarded a number of prestigious Talent Programs, such as the Excellent Young Scholars from National Natural Science Foundation of China, Youth Top-Notch Talent Support Program of Shanghai, Shanghai Rising-Star Program, and Shanghai Shuguang Program.



Lei Wang
Nanjing University,
China

Prof. Wang has been conducting research on the electrical transport properties of two-dimensional quantum materials, and has made pioneering work on fabrication of high quality 2D material heterostructure devices. In 2003, his work published in Science invented the "pick-up transfer and stacking" technique for 2D materials, which made a breakthrough in improving the quality of the 2D electronic devices, also experimentally promoted the 2D material heterostructure research field. In this field, Dr. Wang has made a series of scientific achievements, including experimental observation of the Hofstadter butterfly energy spectrum, fractional quantum Hall states tunable with an external electric field, and so on. He has published over 50 research papers, which have been cited over 20,000 times.

IUMRS Frontier Materials Young Scientists Award-2022



Chengtie Wu
Shanghai Inst. of
Ceramics, CAS,
China

Prof. Wu's research focuses on bioactive inorganic materials for tissue regeneration. He is the Principal Investigator for National Key Research and Development Program of China. He was awarded Recruitment Program of Global Young Experts of China, National Ten Thousand Plan Science and Technology Leader, Shanghai Pujiang Talent Program and Shanghai Outstanding Academic Leaders. Up to now, Prof Wu has published more than 250 SCI peer-review journal papers, including Science Advances, Advanced Materials, Materials Today, ACS Nano, Biomaterials and Nano Letters, and 54 patents, in which 12 of them have been transferred to companies. From 2015 to 2021, He was honored by "Most Cited Chinese Researchers" for seven consecutive years, which was issued by Elsevier publisher.



Silvia Vignolini
University of
Cambridge, UK

Prof. Vignolini's research interest lies at the interface of chemistry, soft-matter physics, optics, and biology. In particular, her research focuses on the study of how natural biopolymers (like cellulose) are assembled into complex architectures within living organisms and they can be exploited to fabricate a sustainable functional materials. She studied Physics at the University of Florence, Italy. In 2009, she was awarded a PhD in Solid State Physics at the European Laboratory for non-Linear Spectroscopy and the Physics Department at the University of Florence. In 2010, she moved to Cambridge as a post-doctoral research associate working in the Cavendish Laboratory and the Plant Science Department. In 2013, she started her independent research becoming a BBSRC David Philip Fellow.



Tao Yang
City University of
Hong Kong, China

Prof. Yang's research is mainly focused on innovative design and microstructural control of advanced structural materials (such as the intermetallic materials, high-entropy alloys, superalloys, titanium alloys, etc) by using multiple state-of-the-art techniques, such as the 3D atom probe tomography (3D-APT), high-resolution transmission electron microscope (HR-TEM), and 3D printing. He serves as the core member of 3D-APT Unit of Hong Kong and Hong Kong Branch of Chinese National Engineering Research Centre at City University of Hong Kong. During the past five years, he has made several significant breakthroughs and successfully published over 50 papers in various top journals like Science (3 papers), Materials Today, and Advanced Materials, Nature Communications, Acta Material, etc.



Jianhui Wang
Westlake
University, China

Prof. Wang's research focuses on energy storage materials & technologies. He devotes himself to designing new electrolytes to overcome issues faced by the commercial LiPF₆-EC-based electrolytes. He developed a series of new LiPF₆-free and EC-free electrolytes via high salt concentration and precise molecule engineering (e.g., "single salt/single solvent" 5V-class electrolytes, etc.) to advance lithium-ion batteries for safe operations in high voltages and wide-temperature range without bulky and expensive battery management system as well as for low-cost manufacturing under ambient atmosphere. Apart from the electrolytes for rechargeable batteries, Dr. Wang's research interest also includes the exploration of new approaches to circumvent the challenging issue of safe and efficient storage of hydrogen.



Peng Zhou
Fudan University,
China

Professor Zhou is interested in novel high-efficiency and low-power electronic devices based on layered materials, focusing on the application in memory, synaptic electronics, and neuromorphic systems. Prof. Zhou received his B.S. (2000) and Ph.D. (2005) degrees in physics from Fudan University, China. He has invented a new type flash memory technology with both high speed and non-volatile, and realized high-area-efficiency single-transistor logic in-situ memory technology, and obtained high-performance storage devices, high-efficiency algorithms and chips. Currently, He has published more than 200 scientific papers on Nature Nanotechnology, Nature Electronics, and Nature Communications etc.



Jie Pan
Huazhong Univ. of
Science and Tech.,
China

Prof. Pan's research is focused on the mechanical properties and deformation mechanism of metallic materials, including metallic glasses, high entropy alloys, and heterogeneous structured materials both experimentally and theoretically. He worked in National University of Singapore (NUS) as a post-doctoral fellow from 2012 to 2014. Afterward, he joined the Institute of Metal Research (IMR), Chinese Academy of Sciences as an Associate Professor. He has published over 40 papers in SCI journals, including Nature, Sci. Adv., Nature Commun., Phys. Rev. Lett., Acta Mater., and J. Mech. Phys. Solids. He won the "Outstanding Young Scientist Award" for amorphous and high entropy alloys for the Chinese Materials Research Society (2018), and China National Funds for Excellent Young Scientists (2020).

IUMRS Frontier Materials Awards (cont.)

IUMRS Frontier Materials Graduate Students Award-2021



Jing Li
Southern Univ.
Science &
Technology, China



Zhe Zhao
Fudan University,
China



Zhenyi Zheng
Beihang University,
China



**Emanuel Abreu
Antunes Carlos**
NOVA School Science
& Tech, Portugal



Hong Zhu
Fudan University,
China



Fenglei Shi
Shanghai Jiaotong
University, China



Kuncai Li
Xi'an Jiaotong
University, China



Wei Hao
University of Texas
Austin, USA



Congyang Mao
University of Hong
Kong, China



Xin Xia
Chinese University of
Hong Kong, China



Qingchen Shen
University of
Cambridge, UK



Li Liu
Harbin Institute of
Technology
(Shenzhen), China



Bogu Liu
Central Iron & Steel
Research Institute,
China



Xiangdong Guo
National Center for
Nanoscience &
Nanotech., China



Airan Li
Zhejiang University,
China



Bingyao Liu
Peking University,
China



Zhongyang Wang
Shanghai Jiaotong
University, China



Shun An
Shanghai Jiaotong
University, China



Jeong Min Park
Massachusetts
Institute of
Technology, USA



Rui Ma
Northwestern
Polytechnic
University, China



Haiyang Chen
University of Science
& Technology
Beijing, China



Junyan Zhang
Donghua University,
China



Huxiang Xia
Tsinghua University,
China



Jianhong Zhang
Northwestern
Polytechnic
University, China

Recent Events

- **IUMRS-ICAM 2021** (17th) is held in Cancun, Mexico, jointly with the XXX International Materials Research Congress (IMRC2022). The meeting was jointly organized by Mexican MRS and IUMRS.
- **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.
- **IUMRS-ICA 2021** (22nd) was held at the Jeju International Convention Center (ICC) during 3-8 Oct. 2021. The conference was organized by MRS Korea.
- **IUMRS-ICEM 2020** was postponed to 2021, and was held online from 30 Aug. to 3 Sept. 2021, together with the XIX Brazilian MRS meeting.
- **Nanotechnology Research & Innovation Bootcamp 2021** was organized by African MRS from 10 to 13 August 2021.
- **International Conference on Materials for Humanity (MH 22)**, a complete virtual conference organized by MRS Singapore, took place from 6 to 9 July 2021.

Upcoming Events

- **2nd International Conference on Materials for Humanity (MH 22)**, organized by MRS Singapore will take place, from 19 to 21 September 2022 in Singapore. All local participants and some overseas participants are expected to attend the conference on-site. Conference web site: <https://mh22-mrs.org.sg/>.
- **IUMRS-ICA 2022** (23rd) will be organized by MRS India and will be held during 19-23 December 2022, in Jodhpur, India. Conference web site: <http://iumrs.iitj.ac.in/>.
- **IUMRS-ICEM 2022**. This conference is postponed to 2023, and MRS Hong Kong will take the lead in its organization. It will be either in May in Hong Kong or in October in Qingdao (before or after ICFM). Please refer to IUMRS web site for further announcement.
- **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-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.imru.org/>.

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