I. SHORT HISTORY ABOUT THE ICYRAM CONFERENCES
ICYRAM, dedicated to the support of young researchers, is the most recent of the 4 International Conferences (ICA) launched by the International Union of Materials Research Societies (IUMRS). ICYRAM was first organized in Singapore (2012), followed by China (2014), India (2016), Australia (2018). In 2022, the ICYRAM Conference will be organized for the fifth time in Asia, in Fukuoka, the largest city and metropolitan area on Kyushu in Japan.

II. MISSION
Main mission of the ICYRAM is to create international networks between young researchers, who will lead the next generation material research. Young researcher, who is <40 years old, and/or <15 years passed after receiving a PhD degree, will have unique opportunities to discuss, meet and create networks within the global materials community.

The key organizers of the various sessions are selected from all around the world. A limited number of Senior VIP’s will be invited to discuss the latest developments in Materials Science & Technology. Young researchers will have the unique opportunity
- to present their achievements in fields related to materials science and engineering
- to extend their knowledge through contact and information exchanges with other young colleagues.

III. VENUE
The conference takes place in Fukuoka, the largest city on Kyushu in Japan and gateway to east Asia. Fukuoka is the economic, political, and cultural center of Kyushu, and many foreign tourists have enjoyed Fukuoka. Fukuoka locates next to historically important cities such as Dazaihu, Yanagawa, Munakata, Kitakyushu, famous for Shinto Shrine Dazaihu-Tenman-gu, traditional canals, Okinoshima (UNESCO heritage), Yahata Steel Works UNESCO heritage), respectively.

Conference Language is English
IV. PRELIMINARY PROGRAM

List of Plenary Speakers

- 3 August 9:10–10:10 (JST)
  Zhenan Bao (Stanford University, USA)
  “Skin-inspired Organic Electronics”

- 4 August 12:50–13:50 (JST)
  Hossam Haick (Israel Institute of Technology, Israel)
  “Artificially Intelligent Nanosensors for Clinical Decisions without a Needle”

- 5 August 13:00–14:00 (JST)
  Chihaya Adachi (Kyushu University, Japan)
  “Challenge for high-performance OLEDs through materials innovation”

The program will be divided into 11 topic symposiums:

A. Novel Functional Materials

Invited Speakers

Masaya Fujioka (Hokkaido University, Japan)
“Thermodynamically metastable materials obtained by ion diffusion control”

Jun Kikkawa (National Institute for Materials Science, Japan)
“Nanometer-resolution phonon spectroscopy using monochromated electron probe”

Thao Tran (Clemson University, USA)
“Chemical Logic to Design Materials Featuring Topological Spin Textures”

Hai Feng (Chinese Academy of Sciences, China)
“Magnetic and electrical properties of 5d double perovskite oxides”

Shunsuke Sasaki (University of Nantes, France)
“The Use of Anion Redox for Topochemical Syntheses of Layered Metal Chalcogenides”

Symposium Organizers

Yoshihiro Tsujimoto (National Institute for Materials Science (NIMS), Japan)

Akira Miura (Hokkaido University, Japan)

Cedric Tassel (Kyoto University, Japan)

Huiwen Ji (The University of Utah, USA)

Hongcheng Lu (Huazhong University of Science and Technology, China)
B. Sustainable Materials, Processes and Applications

Invited Speakers

- **Nobuaki Kono (Keio University, Japan)**
  "Multiple omics approach reveals the design of protein-based materials - the case of spider silk –"

- **Kazunori Ushimaru (National Institute of Advanced Industrial Science and Technology (AIST), Japan)**
  "Elastic and self-healable materials from a wood-derived compound"

- **Taizo Kabe (Japan Synchrotron Radiation Research Institute (JASRI), Japan)**
  "The relationship between structure and properties of bio-based plastics by synchrotron X-ray analysis"

- **Bob Schroeder (University College London, UK)**
  "Novel naphthalene diimide based materials as cathode interlayer materials for photovoltaic applications"

- **Rhodri Jervis (University College London, UK)**
  "Materials and manufacturing routes to novel redox flow battery electrodes"

- **Thomas Miller (University College London, UK)**
  "Electrochemical Atomic Force Microscopy of Battery Interfaces"

- **Charles Paillard (CentraleSupélec, France)**
  "Opportunities and Challenges of Photoferroelectrics"

- **Sangmo Yang (Sogang University, South Korea)**
  "Scanning probe microscopy studies in ferroelectric oxide thin films"

- **Ingrid Hallsteinsen (NTNU, Norway)**
  "Engineering antiferromagnetic spin structures through novel epitaxial interfaces"

- **Ana Jorge Sobrido (Queen Mary University of London, UK)**
  "Freestanding Functionalised Electrospun Carbon Fibres for Oxygen Electrocatalysis"

- **Takashi Teranishi (Okayama University, Japan)**
  "Unique charge transfer architecture in Li ion battery"

- **Akifumi Matsuda (Tokyo Institute of Technology, Japan)**
  "Room-temperature heteroepitaxy of functional oxide nanomaterials with the use of excimer laser processing"

Symposium Organizers

- **Shintaro Yasui (Tokyo Institute of Technology, Japan)**

- **Alex Rettie (University College London, United Kingdom)**

- **Daniel Sando (UNSW Sydney, Australia)**

- **Ayaka Hiroe (Tokyo University of Agriculture, Japan)**
C. Advanced Materials for Energy and Environmental Science

*Invited Speakers*

Masaya Shigeta (Tohoku University, Japan)
“Computational Studies on Nanopowder Formation and Turbulence Generation in Thermal Plasma Application”

Jocelyn Veilleux (Université de Sherbrooke, Canada)
“Thermal Plasmas for Functional Materials and Advanced Ceramics: Applications to Lithium Batteries”

Hiroki Kondo (Nagoya University, Japan)
“Interfacial reaction of gas-liquid plasma in the synthesis of functional carbon nanomaterials”

Mohan Sankaran (University of Illinois, USA)
“Plasma-enhanced chemical film conversion for additive manufacturing of thin film materials”

Zheng Chen (University of California, USA)
“Nature-Derived Structures for Sustainable Si Anode in High-Energy Li-ion Batteries”

Vasyl Shvalya (Jožef Stefan Institute, Slovenia)
“Plasma-designed nanomaterials for hazardous substances SERS research”

Fiorenza Fanelli (National Research Council (CNR), Italy)
“Atmospheric pressure plasma surface engineering of materials for environmental protection and remediation”

Zhi Long (Shenzhen Institute of Advanced Technology, China)
“Sulfonated Polyphenylene-based Membranes for High-Performance and High-Temperature-Operable Fuel Cells”

He Xing (Tohoku University, Japan)
“Fabrication of Near-Invisible Solar Cell in Large Scale with 2D Materials”

*Symposium Organizers*

Manabu Tanaka (Kyushu University, Japan)

Takayoshi Tsutsumi (Nagoya University, Japan)

Matteo Gherardi (Alma Mater Studiorum – University of Bologna, Italy)

Feng Liang (Kunming University of Science and Technology, China)

Tristan Barbier (CRISMAT, Normandie University, ENSICAEN, UNICAEN, CNRS, France)

*Contributed Symposium Organizers*

- Hisaya Komen (Osaka University, Japan)
- Naoto Kodama (Nagoya University, Japan)
- Wenjing Chen (Chengdu University of Information Technology, China)
D. Nano-Materials Science and Devices

*Invited Speakers*

- **Goh PeiSean** (Universiti Teknologi, Malaysia, Malaysia)
  "Nanocomposite Membranes: A new direction in Membrane Separation Processes"

- **Shisheng Li** (National Institute for Materials Science (NIMS), Japan)
  "Wafer-scale growth of 2D transition metal dichalcogenides and their alloys using molten salt precursors"

- **Satoshi Ishii** (National Institute for Materials Science, Japan)
  "Kelvin probe force microscopy as a tool to study optically exciting hot carriers in metallic nanostructures"

- **Naoki Tarutani** (Hiroshima University, Japan)
  "Synthesis and electrochemical characterization of monolayered metal hydroxide carboxylate nanoparticles"

- **Raffaele Riccò** (Asian Institute of Technology (AIT), Thailand)
  "Nanoporous composites for environment, catalysis, and medicine: a summary of 10 years of research and its future directions"

*Symposium Organizers*

- **Takaaki Taniguchi** (National Institute for Materials Science (NIMS), Japan)

- **Kenji Okada** (Osaka Prefecture University, Japan)

- **Shao-Sian Li** (National Taipei University of Technology, Taiwan)

- **Nicolas Louvain** (Université de Montpellier, France)

*Contributed Symposium Organizers*

- **Kazuto Hatakeyama** (Kumamoto University, Japan)
- **Eisuke Yamamoto** (Nagoya University, Japan)
- **Kazumasa Suzuki** (The University of Shiga Prefecture, Japan)
- **Teruaki Fuchigami** (Nagoya Institute of Technology, Japan)
- **Yuta Kubota** (Tokyo Institute of Technology, Japan)

E. Frontier Electronics, Spintronics, Phononics

*Invited Speakers*

- **Keisuke Yamamoto** (Kyushu University, Japan)
  "Novel group IV semiconductor materials and devices for beyond Si technology"

- **Kentaro Watanabe** (Shinshu University, Japan)
  "Nanospectroscopic / electrical analyses of individual free-standing semiconductor nanorods using in-situ nanoprobe-cathodoluminescence technique"

- **Yuichi Fujita** (National Institute for Materials Science (NIMS), Japan)
  "Developing Structures and Materials of Current-Perpendicular-to-Plane Giant Magnetoresistance Devices for Spintronic and Superconducting Electronic Applications"

- **Wei Liu** (Nanjing University of Science and Technology, China)
  "A machine-learning based design methodology for low-dimensional electronic systems"

- **Xiaotao Zhang** (Tianjin University, China)
  "Preparation and photoelectric properties of organic co-crystal materials"
Wipakorn Jevasuwan (National Institute for Materials Science (NIMS), Japan)
“Energy Transfer Performances in Hybrid Nanostructures Using Si Nanowires and Nanocrystal Quantum-Dots for Photovoltaic Applications”

Symposium Organizers

Kaoru Toko (University of Tsukuba, Japan)
Zumin Wang (Tianjin University, China)

Contributed Symposium Organizers

- Keita Ito (Tohoku University, Japan)
- Ryo Matsumura (National Institute for Materials Science (NIMS), Japan)
- Hiromasa Murata (National Institute of Advanced Industrial Science and Technology (AIST), Japan)

F. Advanced Photonic Materials and Devices

Invited Speakers

Shohei Saito (Kyoto University, Japan)
“Flapping fluorophores for new polymer physics and functional supramolecules”

Yukina Takahashi (Kyushu University, Japan)
“Controlling the Spatial Arrangement of Plasmonic Metal Nanoparticles”

Ryota Kabe (OIST, Japan)
“Unique optoelectronic properties of stable organic radical ion pairs”

Takumi Kinoshita (The University of Tokyo, Japan)
“Material Design of Lead Halide Perovskite towards Next Generation Solar Cells”

Yue Hu (Huazhong University of Science and Technology, China)
“Efficient and stable printable mesoscopic perovskite solar cells”

Yaoguang Rong (Huazhong University of Science and Technology, China)
“Perovskite photovoltaics: mobile ions vs. stable devices”

Yoichi Kobayashi (Ritsumeikan University, Japan)
“Photochromic Reactions of Zinc-Based Semiconductor Nanocrystals”

Symposium Organizers

Ayumi Ishii (Teikyo University of Science, Japan)
Gyu Min Kim (Hankyong National University, Korea)
G. AI/Data Driven Materials Science and Technology

**Invited Speakers**

- **Kazuaki Toyoura** (Kyoto University, Japan)
  "Efficient Exploration of Potential Energy Surfaces by Machine Learning"

- **Akira Takahashi** (Tokyo Institute of Technology, Japan)
  "Development of efficient material exploration method by high-throughput first-principles calculations and active learning technique"

- **Keisuke Nagato** (The University of Tokyo, Japan)
  "Powder Process Informatics — Data-driven experimental-based parameter exploration in powder-film-formation process"

- **Kan Hatakeyama** (Waseda University, Japan)
  "Exploring mechanisms and processes of electrically conducting polymers by materials informatics with graph databases"

- **Kyoungdoc Kim** (Pohang University of Science and Technology, South Korea)
  "Integrated Computational Materials Engineering & Artificial Intelligence for Structural Alloy Design"

**Symposium Organizers**

- **Yu Kumagai** (Tokyo Institute of Technology, Japan)
- **Ryota Shimizu** (Tokyo Institute of Technology, Japan)
- **Minseok Choi** (Inha University, South Korea)

H. Soft Matter and Biomaterial Interface

**Invited Speakers**

- **Emily Davidson** (Princeton University, USA)
  "Molecular Design and Directed Self-Assembly via Additive Manufacturing for Locally Programmed, Responsive Liquid Crystal Elastomer Architectures"

- **Caroline Szczepanski** (Michigan State University, USA)
  "Engineering local heterogeneities to create multi-scale, hierarchically structured polymer surfaces"

- **Riku Kawasaki** (Hiroshima University, Japan)
  "Development of organic-inorganic hybrid nanoparticles for boron neutron capture therapy"

- **Shota Fujii** (The University of Kitakyushu, Japan)
  "Effects of polyethylene glycol (PEG) conformations on the in vivo fate of PEGylated nanoparticles"

- **Mikihiro Hayashi** (Nagoya Institute of Technology, Japan)
  "A route for true practical application of vitrimer concept and its importance in SDGs"

- **Masaki Nakahata** (Osaka University, Japan)
  "Development of Bio-Synthetic Hybrid Hydrogel Formed by Mucin-Boronic Acid Interaction for Application to Biomaterials"

**Symposium Organizers**

- **Keiichi Imato** (Hiroshima University, Japan)
I. Design and Applications in Molecular Technology

Invited Speakers

Charalampos Pappas (University of Freiburg, Germany)
“Emergence of protein-like structures from single monomers”

Giulio Ragazzon (University of Strasbourg, France)
“What can molecular machines offer besides motion?”

Kou Okuro (The University of Hong Kong, Hong Kong)
“Guanidinium-based Molecular Glues for Controlling Biomolecular Functions”

Andrew J. Gross (French National Centre for Scientific Research, France)
“Molecular and polymeric assemblies at carbon electrodes for enzymatic bioelectrocatalysis”

Symposium Organizers

Coming soon. Yuta Nishina (Okayama University, Japan)

Coming soon. Dibyendu Das (Indian Institute of Science Education and Research- Kolkata, India)

J. Advances in Biomedical Science and Engineering

Invited Speakers

Jiha Lee (Hiroshima University, Japan)
“Development of hydrogel with controllable drug release behavior”

Daisuke Miyamoto (Nagasaki University, Japan)
“Cell sheet engineering based on temperature-responsive polymer for liver regenerative medicine”

Maiko Okajima (Japan Advanced Institute of Science and Technology, Japan)
“Polysaccharide derived from cyanobacteria (Sacran) for biomedical applications”

Andy Tay (National University of Singapore, Singapore)
“High-aspect ratio nano-structures for efficient, minimally perturbative and transgene-free immuno-transfection”

Nako Nakatsuka (ETH Zurich, Switzerland)
“Unraveling the mysteries of neuroscience using DNA-based biosensors”

Maeda Hitoshi (Kumamoto University, Japan)
“Bioinspired albumin as a drug delivery carrier for macrophages and fibroblasts”
K. Functional Materials Research for Social Implementation

Invited Speakers

Shinya Ikematsu (Okinawa KOSEN, Japan)
“GEAR5.0～Prevention of disaster and epidemics using bioresources～”

Hideyuki Kanematsu (Suzuka KOSEN, Japan)
“R&D Platform for Anti-infectious materials and Its Development of Industries-Academia Cooperation”

Hirohisa Yamada (Nara KOSEN, Japan)
“Tetra-alkyl Phosphonium Based Ionic liquid; Impact of Cation Structure for Oxygen Reduction Reaction”

Nobuko Tsumori (Toyama KOSEN, Japan)
“Metal Nanocatalysts for Energy Application”

Shiho Hirohara (Ube KOSEN, Japan)
“Development of porphyrin derivatives for photochemical cancer treatment”

Symposium Organizers

Tadashi Okobira (Ariake KOSEN, Japan)

Gento Ishikawa (Ariake KOSEN, Japan)

Contributed Symposium Organizers

• Toshio Kamijo (Tsuruoka KOSEN, Japan)
• Hiroyuki Arafune (Tsuruoka KOSEN, Japan)
• Toru Okawara (Kitakyushu KOSEN, Japan)
• Takashi Morinaga (Tsuruoka KOSEN, Japan)
V. ABSTRACT SUBMISSION & REGISTRATION


Abstract Submission Deadline: 14 March 28 March 11 April 2022 (JST).

Notification of Acceptance: 11 April 18 April 25 April 2022 (JST)

Online Registration Open: 11 April 2022 (JST).

Early Bird Registration Closed: 02 May 09 May 2022 (JST).
Early Registration (Date, Fee)
– 02 May 09 May 2022 (JST), 50,000 YEN (General), 20,000 YEN (Students)

Regular Registration Closed: 31 May 2022 (JST).
Regular Registration (Date, Fee)
03 May 10 May – 31 May 2022 (JST), 60,000 YEN (General), 25,000 YEN (Students)

VI. ADDRESSES TO SEND YOUR SUGGESTIONS, PROPOSED ACTIVITIES, etc…

Main Conference Email Address: meetings@iumrs-icyram2022.org
Web Site: https://icyram2022.wixsite.com/official-site
Official Twitter Account: https://twitter.com/icyram2022
The MRS-Japan (Materials Research Society of Japan) was founded in March 1989, based on the premises that interdisciplinary and multidisciplinary fields should be covered, after holding MRS International Conference on Advanced Materials at Sunshine City in Ikebukuro in May 1988.

Since its establishment, the MRS-Japan has promoted research & developments and industrial applications of advanced materials science and technologies, via the interdisciplinary research activities of scientists and engineers and their global co-operations.

The MRS-Japan has organized international conferences and symposia under the cooperation with the IUMRS, such as IUMRS-ICAM (Ikebukuro, August 1993 & Yokohama, October 2003), IUMRS-ICA (Makuhari, September 1997, Nagoya, December 2008, & Fukuoka, August 2014), IUMRS-ICEM (Yokohama, September 2012), and IUMRS-ICAM (Kyoto, August 2017), while the MRS-Japan cooperates with and actively participates in the IUMRS conferences.

**IN ASSOCIATION WITH**

International Union of Materials Research Societies

European Materials Research Society

Catalysis Society of Japan

The Ceramic Society of Japan

The Chemical Society of Japan

The Electrochemical Society of Japan

The Japan Society of Applied Physics

The Society of Chemical Engineers, Japan

The Society of Polymer Science

The Japan Institute of Metals and Materials

Center for Low-temperature Plasma Sciences

N.K.G.

**SUPPORTED BY**

Nanomaterials
VIII. COMMITTEES

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MTEC, Thailand

Coming soon.  
Coming soon.  
Coming soon.  
Coming soon.

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Synchrotron Light Research Institute, Thailand  
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Coming soon.

Wittawat Saenrungrung  
Suranaree University of Technology, Thailand

Coming soon.

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Yoshiko Miura  
Kyushu University, Japan

Madoka Takai  
The University of Tokyo, Japan
Travelling Information

Fukuoka airport has direct flight from east Asia, and connected to other areas via Tokyo (Narita or Haneda airport). The access of Fukuoka airport to the city is convenient by subway. The conference venue is Centennial Hall, Kyushu University School of Medicine. A wide range of hotels in Hakata or Tenjin will provide accommodation to suit every pocket.

Getting to Fukuoka

Fukuoka Airport

Departures and Arrivals Information
https://www.fukuoka-airport.jp/english/
International Terminal Telephone: +81 092-621-0303
From international terminal, take the Free Shuttle Bus to the Domestic Terminal, and go down to the basement floor of subway.
https://www.fukuoka-airport.jp/english/subway.html

You will find taxis at all times in front of each terminal building.

Centennial Hall, Kyushu University School of Medicine

Public Transportation Access
: https://www.med.kyushu-u.ac.jp/100ko-do/english/directions/index.html

【From Fukuoka Airport】
8 minutes on foot from "Maidashi-Kyudaibyoinmae" Station (Subway Hakozaki Line)

【From Tenjin】
8 minutes on foot from "Maidashi-Kyudaibyoinmae" Station (Subway Hakozaki Line)

【From JR Hakata Station】
8 minutes on foot from "Maidashi-Kyudaibyoinmae" Station (Subway Hakozaki Line)

Timetable of trains is available at: https://fukuoka-city-subway.jorudan.biz/pc/en/diagram