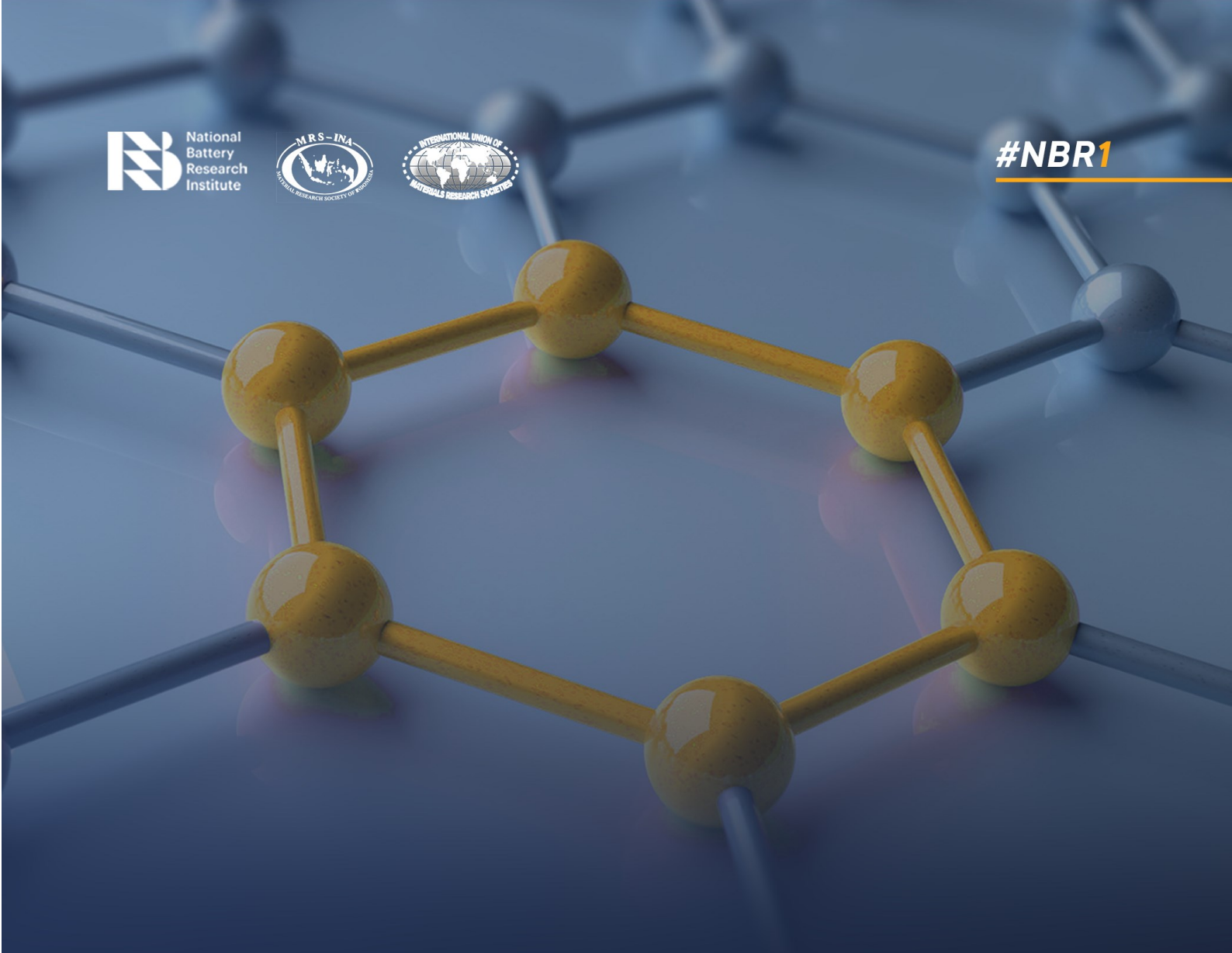
National Battery Research Institute

#NBR1



ICAMT 2021

International Conference on
Advanced Material and Technology

Report Book

www.n-bri.org

December 14-16, 2021

INTRODUCTION

International Conference on Advanced Material and Technology (ICAMT) 2021 is one of the most important event to discuss the current issue of the advanced material and technology for achieving Sustainable Development Goals target.

The conference has been organized by the National Battery Research Institute (NBRI) in collaboration with the Queen Mary University of London (QMUL), Material Research Society Indonesia (MRS-INA), International Union of Material Research Societies (IUMRS), and Indonesian Neutron Scattering Society (INSS).

The ICAMT 2021 has brought together the experts on advanced material technology from all over the world. the researchers from university and institution, practitioners from industry, and other stakeholders that related to the issue.

This conference has succeeded to deliver the output and outcome that give a beneficial for all parties. Therefore, the target of sustainable development goals through materials technology can be achieved.

Thank you so much for all of your contributions.

Founder of National Battery Research Institute (NBRI), President of Material Research Society-Indonesia (MRS-INA), and President of Indonesian Neutron Scattering Society (INSS), Indonesia

Co-Founder of National Battery Research Institute (NBRI) and Director of the Materials Research Institute, Faculty of Science and Engineering, Queen Mary University of London (QMUL), UK

Prof. Dr. rer. nat. Evvy Kartini
Chair

Prof. Alan J Drew
Vice Chair

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BACKGROUND

The Material Research Society Indonesia ("MRS-INA") was established on April 15, 2011. Since July 2017 becomes adhering bodies of the International Union of Materials Research Society (IUMRS). The goals of MRS-INA are to promote the materials research activities in Indonesia into the International forum, open national and international networking in the field of materials research, and to promote its applications in various areas of industries. MRS-INA is also responsible to educate and train young researchers or students about the materials knowledge and characterizations.

National Battery Research Institute (NBRI) is a spin-off the MRS-INA. It is a platform that brings together scientists, academicians, industry partners, the government and all stakeholders that focus on battery technology for both Electric Vehicles and Renewable Energies. The NBRI was established as center of excellence on battery and renewable energy foundation in December 17th, 2020 with the support by the UK Government's Global Challenge Research Fund (GCRF).

The Indonesian Neutron Scattering Society (INSS) is a professional organization focus on material characterization by advanced technology such as neutron scattering, high energy accelerator, synchrotron radiation, and high energy x-ray. It was established in 2015 then became the member of Asian Oceania Neutron Scattering Association (AONSA).

Since their establishment, those societies (MRS-INA, NBRI, and INSS) have experienced on conducting the international conference, international workshop and school, focus group discussion, such as ICMST 2010 & 2014, MRS-INA CNC 2017 in Yogyakarta, ICA-IUMRS 2018 in Bali, ICAMT-ICMR 2019 in Bogor, International Battery School (IBS) 2021, Climate Challenge Workshop 2021, International Conference on Battery for Renewable Energy and Electric Vehicles (ICB-REV) 2021. These events were conducted in order to promote Indonesian research activities into the international forum. On the other hand, we also invited the international world class speakers, into the event in order to share their knowledges and understand the current state of the technology in the world. Furthermore, it is also important to apply the invention to the market by having cooperation with industry.

This year, we will organize one prestigious event namely the International Conference on Advanced Material and Technology (ICAMT) 2021. The purpose of the ICAMT 2021 is to gather all the experts on advanced material and technology from all over the world to present their recent works and share their knowledge to all participants. This event is also expected to open international networking in the fields of advanced material and technology. This should be accomplished by the presence of invited world-class speakers and international participants for the scientific program to bring the impact of this battery technology. This event will invite the honorable Nobel prize winner in Physics 2014.

Following ICAMT 2021, the consecutive events will be organized as complimentary to broaden audiences such as

- International School of Battery in Electric Vehicles (ISBEV) on November 17th-18th, 2021
- International Workshop on Solar Rooftop Residential and Utilities Scale (ISRUS) on November 23th, 2021

- International Workshop on Materials and Advanced Characterization (IMAC) on December 1st-2nd, 2021.
- NBRI Youth Ideas Competition (NBRI-YIC) on December 14th, 2021

THEME

The theme for the International Conference on Advanced Material and Technology (ICAMT) 2021 is ***"Materials for Sustainable Development Goals toward Industrial Revolution 4.0 through Circular Economy.***

TIME AND VENUE

Time: December 14th -16th, 2021
Venue: Conducting Online (Indonesia)

SCOPES

1. Advanced Functional and Structural Materials
2. Polymer, Bio, and Soft Materials
3. Nano Science and Technology
4. Computational Materials, Modelling, and Simulation
5. Materials Processing and Characterization
6. Nuclear Science and Technology Application
7. Energy and Environment Materials
8. Other Related Topics

CONFERENCE TIMELINE

1. Abstract Submission Deadline: December 1, 2021
2. Abstract Acceptance Notification: December 5, 2021
3. Early Bird Payment Deadline: December 7, 2021
4. Full Paper Submission Deadline: December 12, 2021
5. Payment Registration Deadline: December 13, 2021
6. Conference Date: December 14-16, 2021

JOURNAL AND PROCEEDING PUBLICATIONS

1. Progress in Natural Science: Materials International (Q1, Scopus, Impact Factor (IF) 1.753, 5 year IF 2.113). (https://www.journals.elsevier.com/progress-in-natural-science-materials-international/)
2. IONICS (Q2, Scopus, IF 2.119). (https://link.springer.com/journal/11581)
3. International Proceeding (Indexed by Scopus): American Institute of Physics (AIP) Conference Proceedings (https://aip.scitation.org/)

ICAMT 2021 AGENDA

Sessions	Time	(Day-1) Tuesday, December 14th		Time	(Day-2) Wednesday, December 15th		Time	(Day-3) Thursday, December 16th	
Morning Session (GMT+7)	08.00-08.10	Opening by Master of Ceremony		08.20-08.30	Opening by Master of Ceremony		08.20-08.30	Opening by Master of Ceremony	
	08.10-08.20	**Prof. Dr. rer. nat. Evvy Kartini** (*Founder of NBRI and President of MRS-INA and INSS, Indonesia*)		08.30-09.20	**Prof. Osvaldo Novais de Oliveira Junior** *(Vice President of IUMRS, Brazil)*		08.30-09.20	**Andri Budhiman Firmanto, M.Eng.** *(Deputy Director for Mineral Exploration Supervision, The Ministry of Energy and Mineral Resources)*	
	08.20-08.35	**Ir. Budi Susanto, M.T.** (*Director of Metal Industry, The Ministry of Industry, Indonesia)*		09.20-10.10	**Prof. Satish Patil** *(Indian Institute of Science, India)*		09.20-10.10	**Prof. DongFeng Chen** *(President of Asia-Oceania Neutron Scattering Association (AONSA), China Spallation Neutron Source, China)*	
	08.35-08.50	**Prof. B.V.R. Chowdari** (*Director of Head Office of IUMRS, Singapore*)		10.10-11.00	**Dr. Adisorn Tuantranont** *(Thailand National Outstanding Researcher Award 2021, Thailand)*		10.10-11.00	**Prof. Dr. rer. nat. Evvy Kartini** (*Founder of National Battery Research Institute and President of MRS-INA, Indonesia*)	
	08.50-09.00	**Press Conference**							
	09.00-09.50	**Prof. Zhichuan J. Xu** (*Professor of NTU, Singapore*)		11.00-11.05	Room Transition		11.00-11.05	Room Transition	
	09.50-10.00	**Prof. Hiroshi Amano** (*Nobel Prize Winner in Physics 2014, Japan)*		11.05-11.40	Parallel Session		11.05-11.40	Parallel Sessions	
	10.00-10.05	Room Transition							
	10.05-10.40	Parallel Sessions			**Prof. Pooi See Lee** *(Professor of NTU, Singapore)*	**Assoc. Prof. Dr. Pakorn Opaprakasit** *(Thammasat University, Thailand)*		**Dr. Kedar Hippalgaonkar** *(Assistant Professor of NTU, Singapore)*	**Prof. Neeraj Sharma** *(University of New South Wales, Australia)*
		Prof. Takashi Kamiyama (*Spallation Neutron Source, China*)	**Dr. Khay W. See** (*University of Wollongong), Australia*						
	10.40-12.30	Oral Session	Student Competition	11.40-12.30	Oral Session		11.40-12.30	Oral Session	
	12.30-13.30	Break Session							
Afternoon Session (GMT+7)	13.30-14.15	**Prof. Alan J Drew** (*Co-founder of NBRI, United Kingdom*)		13.30-14.20	**Dr. rer. nat. Margarita Russina** *(Senior researcher of Helmholtz Zentrum Berlin, Germany)*		13.30-14.20	**Prof. Yun Liu** *(The Australian National University, Australia)*	
	14.15-15.30	**Prof. Rodrigo Martins** (*President of IUMRS and Director of European Academy of Science, Portugal*)		14.20-15.10	**Dr. Eddie Cussen** (*Sheffield University, United Kingdom*)		14.20-15.10	**Prof. Kostya Trachenko** *(QMUL, United Kingdom)*	
	15.30-15.35	Room Transition		15.10-15.15	Room Transition		15.10-15.15	Room Transition	
	15.35-16.10	Parallel Sessions		15.15-15.50	Parallel Sessions		15.15-15.50	Parallel Sessions	
		Prof. Sean Giblin *(Cardiff University, United Kingdom)*	**Dr. Sulalit Bandyopadhyay** *(NTNU, Norway)*		**Dr. Christian Nielsen** *(QMUL, United Kingdom)*	**Afriyanti Sumboja, PhD** *(ITB, Indonesia)*		**Prof. Nurul Taufiqu Rochman** *(BRIN, Indonesia)*	**Dr. S. M. Yusuf** *(Bhabha Atomic Research Center, India)*
	16.10-17.15	Oral Session		15.50-17.15	Oral Session		15.50-17.15	Oral Session	
							17.15-17.30	**Closing Remarks**	

Day-1 (Tuesday, December 14th 2021)

Session	Time	Code	Estimation	Speaker	Topic	Affiliation
Morning Session (GMT+7)	08.00-08.10	**Opening by Master of Ceremony**				
	08.10-08.20	OP	10’	Prof. Dr. rer. nat. Evvy Kartini		Founder of NBRI, President of MRS-INA and INSS, Indonesia
	08.20-08.35	OP	15’	Ir. Budi Susanto, M.T.		Director of Metal Industry, The Ministry of Industry, Indonesia
	08.35-08.50	OP	15’	Prof. B.V.R. Chowdari		Director of Head Office of IUMRS, Singapore
	08.50-09.00	**Press Conference**				
	09.00-09.50	PL	50’	Prof. Zhichuan J. Xu	Oxygen Evolution Catalysis on Magnetic Oxides	Professor of Nanyang Technological University (NTU), Singapore
	09.50-10.00	PL	10”	Prof. Hiroshi Amano	Message to the Young Researchers	Nobel Prize Winner in Physics 2014, Japan
	10.00-10.05	**Room Transition**				
	10.05-12.30	**Advanced Functional and Structural Materials**				
		KN	35’	Prof. Takashi Kamiyama	High Resolution Neutron Diffraction for the Study of Functional Materials	Spallation Neutron Source, China
		INV	25’	Djoko Hadi Prajitno and Febe Merita	Effect Y addition on the microstructure and micro hardness of Zr-Mo-Cr alloy for SMR structural cladding material	PRTNT- National Research and Innovation Agency (BRIN), Indonesia
		INV	25’	Safitry Ramandhany, Djoko Triyono and Eni Sugiarti	Corrosion Behaviour of Flame Sprayed Cr3C2-NiCr Coating on A516 Steel in Chloride Environment	Department of Physics, Faculty of Mathematics and Natural Science, University of Indonesia, Research Centre for Physics, National Research and Innovation Agency (BRIN), Indonesia
		OR	15’	Hamonangan R. Sitompul, Rika S. Budi, Afni Restasari, Luthfia H. Abdillah, Retno Ardianingsih, Kendra Hartaya and Heri B. Wibowo	Development of Polyurethane Coated Aluminum Powder using Solvent Evaporation Induced Method	National Research and Innovation Agency (BRIN), Indonesia
		OR	15’	Nuning Aisah, Riastuti Fidyaningsih, Seto Roseno, Saeful Rohman, Oka P. Arjasa, Wahyu Tri Utami, Yelvia Deni and Dwi Gustiono	Fabrication and Characterization of GFRP Composite Skins	National Research and Innovation Agency (BRIN), Indonesia
		OR	15’	Ismudiati Puri Handayani, Indera Faraduan and Indra Wahyudhin Fathona	Understanding The Hysteresis and The Capacitance in Multilayer WS2	Engineering Physics, Telkom University, Indonesia
		Student Competition				
		KN	35’	Dr. Khay W See	Battery Management System and Safety Implementation for Large-Scale Lithium-Ion Pack	Senior Research Fellow at the Australian Institute of Innovative Materials at University of Wollongong, Australia.

		SC	10’	Melani Puji Puspitasari	Fe3O4 @MIL-100(Fe) Loaded on Polyvinylidene Flouride as Catalytic Hybrid Membrane for an Efficient Levofloxacin Removal from Wastewater	Sebelas Maret University, Indonesia
		SC	10’	Paundra Rizky Pratama	Antibacterial Activity Investigation of Polyvinyl Alcohol/ Chitosan Composite Modified by Caesalpinia sappan Extract	Institute Technology of Sepuluh Nopember, Indonesia
		SC	10’	Andyan Rafi Setopratama	Extraction of Cellulose Bamboo Rope (Gigantochloa apus) as A Sustainable Lithium-Ion Battery Technology Material	Institute Technology of Sepuluh Nopember, Indonesia
		SC	10’	Muharom Bagaskara	PVDF/Sulfonated Chitosan for High-Performance PEMFC Membrane	Sebelas Maret University, Indonesia
		SC	10’	Rifky Adhia Pratama	ZnO Superstructure: Recent Synthesis Strategy and Investigation of Their Morphological Effect on Photoelectrochemical Water Splitting Performance for Further Development	University of Padjajaran, Indonesia
		SC	10’	Kreshna Mukti Wibawa	Implementation of Numerical Methods (Pruned Exact Linear Time-Based Change Point Algorithm) for Creating Internal Corroded Pipeline Segments Under In-Line Inspection	Institute Technology of Bandung, Indonesia
		SC	10’	Adinandra Caesar Fachrudin	Activated Carbon, Manganese Dioxide, and Reduced Graphene Oxide Composite Materials as Supercapacitor Electrodes	University of Gadjah Mada, Indonesia
		SC	10’	Humaiera	Utilization of Coconut Shell as Carbon Anode for Lithium- Ion Battery Through Self-Sustained Brick Carbonization Method	Institute Technology of Sepuluh Nopember, Indonesia
	12.30-13.30	**Break Session**				
Afternoon Session (GMT+7)	13.30-14.15	PL	50’	Prof. Alan J Drew	Using photomusr to probe excitons in organic semiconductors	Co-founder of NBRI and Director of the Materials Research Institute, Queen Mary University of London (QMUL)
	14.15-15.30	PL	75’	Prof. Rodrigo Martins	Green Energy: A Future Global Challenge	President of International Union of Material Research Societies (IUMRS) and Director of European Academy of Science (EurASc), Portugal
	15.30-15.35	**Room Transition**				
	15.35-17.20	**Polymer, Bio, and Soft Materials**				
		KN	35’	Prof. Sean Giblin	Measurement of Isolated Susceptibility	Joint Director of International Condensed Matter and Photonics Group, Cardiff University, United Kingdom
		INV	25’	Dian Subekti Rahayu, Yuni Kusumastuti, Widi Astuti and Istihanah Nurul Eskani	Synthesis and Characterization of Zinc Oxide from Electric Arc Furnace Dust (EAFD) as a Drug Carrier	Universitas Gadjah Mada, National Research and Innovation Agency (BRIN), Center for Handicraft and Batik, Ministry of Industry, Indonesia

		OR	15’	Saeful Rohman, Nuning Aisah, Rina Mayasari, Eryanti Kalembang, Seto Roseno, Aghni Ulma, Masmui M and Dwi Gustiono	Comparative Study on Mechanical Properties of Polyurethane and Expanded Polystyrene Cores Filled Sandwich-Structured GFRP Composites	National Research and Innovation Agency (BRIN), Indonesia
		OR	15’	Nila Tanyela Berghuis and Nurul Fitri Novianti	Isolation of Lignin from Sugarcane Bagasse and Synthesis of Aminated Lignin as an Adsorbent for Chromium Metal Ion	University of Pertamina, Indonesia
		OR	15’	Veni Dayu Putri, Sri Yanti, Fitri Dyna, Saryono Sikumbang and Ismawati Ismawati	Extraction and Characterization of Inulin from Dahlia Tubers (Dahlia Variabilis)	STIKes Payung Negeri Pekanbaru, Universitas Riau, Indonesia
		Nano Science and Technology				
		INV	25’	Astra Agus Pramana, Izza Nafia Pinem, Nila Tanyela Berghuis and Osaliana Budiarto	Experiment and Analysis of the Effect of Nano Coatings on Carbon Steel Pipes on Wax Precipitation	Pertamina University, Indonesia
		KN	35’	Dr. Sulalit Bandyopadhyay	Controlling Particle Formation at the Nano-scale for Advanced Biomedical Applications	Associate Professor of the Department of Chemical Engineering, Faculty of Natural Sciences, Norwegian University of Science and Technology (NTNU), Norway
		OR	15’	Putri Zulva Silvia, Siti Nurul Aisyiyah Jenie and Himawan T.B.M Petrus	Tunable Particle Size Synthesis of Nanoclay from Sidoarjo Geothermal Mud via Ultrasonic Method	Universitas Gadjah Mada, National Research and Innovation Agency (BRIN), Indonesia
		OR	15’	Nirwan Syarif, Dedi Rohendi, Ade Dwi Nanda, M. Try Sandi and Delima Sukma Wati Br Sihombing	Gas Diffusion Layer from Nano Micro Dots Carbon and Its Electrochemical Properties for Supporting Electrocatalyst in Fuelcell	University of Sriwijaya, Indonesia
		OR	15’	Cylia Khelifi	Electrochemical detection of caffeine molecules using reduced graphene oxide/silver composite modified carbon paste electrode (CPE) using plant extract	University of Bejaia, Algeria

OP= Opening Remarks
PL= Plenary Session
KN= Keynote Session
INV= Invited Speaker
OR= Oral Contributor
SC= Student Competition

Day-2 (Wednesday, December 15th 2021)

Session	Time	Code	Estimation	Speaker	Topic	Affiliation
Morning Session (GMT+7)	08.20-08.30	Opening by Master of Ceremony				
	08.30-09.20	PL	50’	Prof. Osvaldo Novais de Oliveira Junior	On the use of machine learning for analyzing sensing and biosensing data	Vice President of International Union of Material Research Societies (IUMRS), Brazil
	09.20-10.10	PL	50’	Prof. Satish Patil	Chemistry for Redox Flow Battery	Indian Institute of Science, India
	10.10-11.00	PL	50’	Dr. Adisorn Tuantranont	Graphene Technologies for Energy Storage Applications	Thailand National Outstanding Researcher Award 2021, Thailand
	11.00-11.05	Room Transition				
	11.05-12.30	Energy and Environment Materials				
		KN	35’	Prof. Pooi See Lee	Flexible and Stretchable Energy Storage Devices for Wearable Technology	Professor of Nanyang Technological University (NTU), Singapore
		INV	25’	Memoria Rosi, M. Nanang Ziad Fatmizal, Indra Wahyudhin Fathona and Abrar Ismardi	Hydrogel Neutral Electrolyte of PVA/HEC for Flexible Supercapacitor	Telkom University, Indonesia
		OR	15’	Aprillia Dwi Ardianti and Pelangi Eka Yuwita	Characterization of Salak Wedi Activated Carbon Structure using Activator Materials as Materials for Making Supercapacitor Electrodes	Universitas Nahdlatul Ulama Sunan Giri, Indonesia
		OR	15’	Muhammad Fakhrudin, Evvy Kartini	La Incorporated NMC 811 for Lithium-ion Batteries	National Research and Innovation Agency (BRIN), National Battery Research Institute, Indonesia
		OR	15’	Moh. Wahyu Syafi'ul Mubarok, Muhammad Fakhrudin, Evvy Kartini	Ce-Doped NMC 811 Synthesis as the Cathode Material	National Battery Research Institute, Indonesia
		OR	15’	Rina Dewi Mayasari, Yuwana Pradana, Aditya Eka Mulyono, Masmui, Nendar Herdianto, Jarot Raharjo and Ratno Nuryadi	Capacity Fading of Lithium-Ion Battery Pack in High C-Rates	National Research and Innovation Agency (BRIN), Indonesia
		Polymer, Bio, and Soft Materials				
		KN	35’	Dr. Pakorn Opaprakasit, PhD	Green Polyurethanes with Self-Healing and Shape Memory Properties Derived from Chemical Recycling Products of Polylactide	Associate Professor of Sirindhorn International Institute of Technology (SIIT), Thammasat University,Thailand
		INV	25’	Mazlee Bin Mazalan, Anas Mohd Noor, Yufridin Wahab and Wan Safwani Wan Kamarul Zaman	A Numerical Study of Collective Cell Migration in a PDMS Microchannel Driven by Surface Acoustic Wave (SAW) Device	Universiti Malaysia Perlis, Universiti Malaya, Malaysia
		OR	15’	Muryanto, Roni Maryana, Yanni Sudiyani and Misri Gozan	Furfural Production using Aqueous Deep Eutectic Solvent	Chemical Engineering Department, Faculty of Engineering, University of Indonesia, Research Centre for Chemistry, National Research and Innovation Agency, Indonesia

		OR	15’	Nila Tanyela Berghuis, Deva Yanti Panjaitan, Astra Agus Pramana and Osaliana Budiarto	Synthesis of Polyethylene Glycol Esters from Oleic, Stearic, and Palmitic Acids and Their Characterization	Universitas Pertamina, Indonesia
		OR	15’	Yuni Rosita and Ahmad Tawfiequrrahman Y	Characterization the Red Fruit Biochar	University of Gadjah Mada, Indonesia
		OR	15’	Ahmad Riduan, Rainiyati Rainiyati, Sarah Fiebrina Heraningsih and Badariah	Batik Wastewater Treatment Using Palm Oil Fuel Ash (POFA) as an Environmentally Friendly Low-Cost Adsorbent Alternative	Universitas Jambi, UIN Sulthan Thaha Saifuddin Jambi, Indonesia
	12.30-13.30	**Break Session**				
Afternoon Session (GMT+7)	13.30-14.20	PL	50’	Dr. rer. nat. Margarita Russina	What happens in pores – a neutron scattering insight	Senior Researcher of Time-of-flight neutron spectroscopy, Helmholtz Zentrum Berlin für Energie und Materialien, Germany
	14.20-15.10	PL	50’	Dr. Eddie Cussen	Development of Lithium Conducting Oxides from Crystal Chemistry to Solid-State Batteries	Reader in Functional Materials, Department of Materials Science and Engineering, The University of Sheffield, United Kingdom
	15.10-15.15	**Room Transition**				
	15.15-17.15	**Nano Science and Technology**				
		KN	35’	Dr. Christian B. Nielsen	Organic Materials for Bioelectronic Applications	Senior Researcher of Queen Mary University of London, United Kingdom
		INV	25’	Lakhdar Sek	Treatment of graphene in Noncommutative geometry	University of Biskra-Algeria
		INV	25’	Abdul Floranda, Doli Bonardo, Ida Vaeruza Alabadi'Ah, Marhaposan Situmorang and Kerista Tarigan	Design and Construction of High Voltage Electrospinning with Flyback Based Power Supply for Nanofibers Manufacturing Applications	Universitas Sumatera Utara, Universitas Negeri Malang, Indonesia
		OR	15’	Kurnia Trinopiawan, Riesna Prassanti, Aditya Widian Putra, Budi Yuli Ani, Rachmat Fauzi Hidayat, Erlan Dewita, Rommy and Kurnia Setiawan Widana	Uranium Separation from Bangka Monazite by Solvent Extraction Method Using Tri Octyl Amine (TOA)	National Research and Innovation Agency (BRIN), Indonesia
		OR	15’	Aniq Khojinatul Karomah and Dani Gustaman Syarif	The Effect of Polyacrylic Acid (PAA) Dispersant Addition on The Characteristics of Heat Transfer Nanofluids of Al2O3 Synthesized From Bauxite	Jenderal Achmad Yani University, Center for Applied Nuclear Science and Technology (PSTNT)-BATAN
		Energy and Environment Materials				
		KN	35’	Afriyanti Sumboja, PhD	Li-ion batteries with nanostructured silicon anode	The Winner of LIPI Young Scientist Award 2020, Indonesia
		INV	25’	Evvy Kartini, Anne Zulfia, Muhammad Fakhrudin, Moh. Wahyu Syafi'ul Mubarok, Ahmad Subhan, Muhammad Ridho Nugraha	Study of the structural and electrochemical properties of layered Li[Ni1/3Co1/3Mn1/3]O2 as cathode material for lithium-ion battery	National Research Innovation Agency, National Battery Research Institute, Universitas Indonesia, and National Research and Innovation Agency, Indonesia

		INV	25’	Anisa Maulidia, Widi Astuti and Himawan T.B.M Petrus	Lithium Recovery from Sidoarjo Mud (LUSI) through Leaching Process Using Sulfuric Acid	Universitas Gadjah Mada, National Research and Innovation Agency, Indonesia
		OR	15’	Nirwan Syarif and Dwi Indrawati	Hydrothermal Preparation of Na3MnCO3PO4 and Sodium Perchlorate – Propilen Carbonate Electrolyte for Sodium Ion Battery	Universitas Sriwijaya, The National Agency for Drug and Food Control of Indonesia
		OR	15’	Dhika Faiz, Evvy Kartini, Muhammad Fakhrudin and Moh. Wahyu Syafiul Mubarok	Effect of Stirring Time Condition on Structural Properties of Li[Ni4Mn4Co4]O2 Prepared Via Carbonate Co – Precipitation Method	UIN Syarif Hidayatullah Jakarta, BRIN, NBRI, Indonesia
		OR	15’	Muhammad Ridho Nugraha, Evvy Kartini	Analyzing the Performance of 48V 15Ah Li-ion Battery Pack for Folding Electric Bike	National Battery Research Institute, Indonesia

PL= Plenary Session
KN= Keynote Session
INV= Invited Speaker
OR= Oral Contributor

Day-3 (Thursday, December 16th 2021)

Session	Time	Code	Estimation	Speaker	Topic	Affiliation
Morning Session (GMT+7)	08.20-08.30	**Opening by Master of Ceremony**				
	08.30-09.20	PL	50’	Andri Budhiman Firmanto, M.Eng.	The Role of Mineral Extraction for Materials Technology	Deputy Director for Mineral Exploration Supervision, The Ministry of Energy and Mineral Resources, Indonesia
	09.20-10.10	PL	50’	Prof. DongFeng Chen	Investigation on Energy and Environment Materials by Using CARR Neutron Facilities.	President of Asia-Oceania Neutron Scattering Association (AONSA), China
	10.10-11.00	PL	50’	Prof. Dr. rer. nat. Evvy Kartini	Synthesize of nickel rich cathode material Li[Ni0.8Co0.1Mn0.1]O2 by novel co-precipitation method based on the local mineral resources	Founder of National Battery Research Institute, President of MRS-INA and INSS
	11.00-11.05	**Room Transition**				
	11.05-12.30	**Computational Materials, Modelling, and Simulation**				
		KN	35’	Dr. Kedar Hippalgaonkar	Materials Nanoscale Thermoelectrics	Assistant Professor of Nanyang Technological University (NTU), Singapore
		INV	25’	El Berbri Ayyoub	Optimization of COMPACT BRANCH-LINE COUPLER USING MICROSTRIP NONUNIFORM TRANSMISSION LINE	Moulay Ismail University, Meknes, Morocco
		OR	15’	Tri Wida Amaliya, Putu Artama Wiguna	Analysis of Building Permit Mismatch: A Case Study of Building Permits in the City of Surabaya, Indonesia	Institute Technology of Sepuluh Nopember, Indonesia
		OR	15’	Astra Agus Pramana and Umar Muammar Thaib	Digital Core Analysis for Absolute Permeability of Shale	Pertamina University, Indonesia
		Advanced Functional and Structural Materials				
		KN	35’	Prof. Neeraj Sharma	The Chemistry of Batteries	Associate Professor of University of New South Wales (UNSW), Australia
		INV	25’	Mas Ayu Elita Hafizah, Maykel Manawan, Sovian Aritonang and Djoko Navalino	Study of Oxidation Level of Inorganic Oxidation Agent to Atom Position in Solid Single Base Propellant	Republic of Indonesia Defense University, Indonesia
		OR	15’	Djoko Hadi Prajitno	Synthesis ternary Zr-Sn-Nb and Zr-Sn-Nb-Y zircalloy for SMR structural cladding material	PRTNT-National Research and Innovation Agency (BRIN), Indonesia
		OR	15’	Jihan Anavisha, Arini Fitria Gunawan, Dini Alfanny, Wanda Rhisma Tiana, Lia Yuliantini, Julia Angel, Diyan Parwatiningtyas and Muhammad Redo Ramadhan	The electronic structure dependence of Silicon composition in SiGe alloy: A DFT Study on meta-GGA level	Republic of Indonesia Defense University, Indonesia
	12.30-13.30	**Break Session**				
	13.30-14.20	PL	50’	Prof. Yun Liu	Characterization of key functional materials using neutron scattering technology	Australian Research Council (ARC) Georgina Sweet Australian Laureate

						Fellow and Professor at the Australian National University, Australia
	14.20-15.10	PL	50’	Prof. Kostya Trachenko	Atomistic modelling of resistance to amorphisation by radiation damage	Top 10 Physics Breakthrough in 2020, Queen Mary University of London, United Kingdom
	15.10-15.15	**Room Transition**				
Afternoon Session (GMT+7)	15.15-17.15	**Materials Processing and Characterization**				
		KN	35’	Prof. Nurul Taufiqu Rochman	Nanotechnology Development and Commercialization in Indonesia Based on Natural Resources: “From Lab to The Industry”	Acting Director of Pusat Riset Metalurgi dan Material, OR IPT, National Research and Innovation Agency (BRIN), Indonesia
		INV	25’	Sandip Ghosh, Binita Kundu, Debasis Ghosh, Kaushal Saha and Pallab Roy	Mechanical Characterization of PVC Coated Fabrics	JIS College of Engineering, Budge Budge Institute of Technology, India
		INV	25’	Astra Agus Pramana, Arsalan Umar and Ardian Nengkoda	Analysis of the Effect of Tubing Material and External Insulation to Wax Deposition Formation in Vertical Waxy Oil Well	Pertamina University, Saudi Aramco
		OR	15’	Musyarofah Musyarofah, Eka Fatma Damanik, Husain Husain, Gatut Yudoyono, Zakiah Mohamed, Yingyot Poo-Arporn and Budi Prayitno	Local Structure Studies of Magnesium Titanate Powders Using Time-Resolved X-ray Absorption Spectroscopy (TRXAS) Measurements	Institut Teknologi Kalimantan, Universitas Negeri Makassar, Universiti Teknologi MARA, Synchrotron Light Research Institute, STKIP PGRI Banjarmasin
		OR	15’	Astra Agus Pramana	Design Casing for Heavy Oil Well Using Negative Thermal Expansion Material	Pertamina University, Indonesia
		Nuclear Science and Technology Application, Other Related Topic				
		KN	35’	Dr. S. M. Yusuf	Physics of Magnetization Reversal and its Relevance in Magnetic Storage Devices	Outstanding Scientist and Head of Solid State Physics Division of BARC, , India
		INV	25’	Lady Margaret Panggabean, Neny Kurniawati, Made Dirgantara and Budi Hariyanto	Crystallite Size Estimation of TiO2 Powders Using X-Ray Diffraction Techniques: Comparison of Scherer, Modified Scherer, Williamson-Hall and Size-Strain Plot Methods	Departement of Physics, Faculty Of Mathematics and Natural Science, Universitas Palangka Raya
		OR	15’	Ruly Gumilar, Pujo Widodo and Mas Ayu Elita Hafizah	Simulation of Increasing the Tactical Vehicle Protection Capability from Nuclear Radiation	Department of Weaponry Technology, Faculty of Defense Technology, Republic of Indonesia Defense University, Indonesia
		OR	15’	Mochamad Subhan Alkyana, Shinta Widyaningrum, and Evvy Kartini	Glasgow Climate Pact: a new phase of Indonesia’s Climate Diplomacy	National Battery Research Institute
		OR	15’	Muhammad Subhan Alkyana, Shinta Widyaningrum, and Evvy Kartini	Glasgow Climate Pact: a new phase of Indonesia’s Climate Diplomacy	National Battery Research Institute
	17.15-17.30	**Closing Remarks**				

PL= Plenary Session, KN= Keynote Session, INV= Invited Speaker, OR= Oral Contributor

SPEAKERS

Opening Remarks

Prof. Dr. rer. nat. Evvy Kartini

(Founder of NBRI, President of MRS-INA, and President of INSS, Indonesia)

"The National Battery Research Institute Introduction"

Ir. Budi Susanto, MT.

(Director of Metal Industry, The Ministry of Industry, Indonesia)

"Accelerating Battery Electric Vehicles (BEV) in Indonesia through materials technology"

Prof. B.V.R. Chowdari

(Director of Head Officer of IUMRS, Singapore)

"Strengthening science collaboration amidst the COVID-19 pandemic"

Prof. Alan J Drew

(Co-Founder of National Battery Research Institute (NBRI) and Director of the Materials Research Institute, Queen Mary University of London (QMUL), UK)

"From Vision to Reality"

Plenary Speakers

Prof. Zhichuan J. Xu

(Professor of Nanyang Technological University (NTU), Singapore)

"Oxygen Evolution Catalysis on Magnetic Oxides"

Prof. Hiroshi Amano

(Nobel Prize Winner in Physics 2014, Japan)

"Message to the Young Researchers"

Prof. Alan J Drew

(Co-founder of NBRI and Director of the Materials Research Institute, Queen Mary University of London (QMUL))

"Using Photomusr to Probe Excitons in Organic Semiconductor"

Prof. Rodrigo Martins

(President of International Union of Material Research Societies (IUMRS) and Director of European Academy of Science (EurASc), Portugal)

"Green Energy: A Future Global Challenge"

Prof. Osvaldo Novais de Oliveira Junior

(Vice President of International Union of Material Research Societies (IUMRS), Brazil)

"On the use of machine learning for analyzing sensing and biosensing data"

Prof. Satish Patil

(Professor of Solid State and Structural Chemistry Unit Indian Institute of Science, India)

"On the use of machine learning for analyzing sensing and biosensing data"

Dr. Adisorn Tuantranont

(Thailand National Outstanding Researcher Award 2021, Thailand)

"Graphene Technologies for Energy Storage Applications"

Dr. rer. nat. Margarita Russina

(Senior Researcher of Time-of-flight neutron spectroscopy, Helmholtz Zentrum Berlin für Energie und Materialien, Germany)

"What happens in pores – a neutron scattering insight"

Dr. Eddie Cussen

(Reader in Functional Materials, Department of Materials Science and Engineering, The University of Sheffield, United Kingdom)

"Development of Lithium Conducting Oxides from Crystal Chemistry to Solid-State Batteries"

Andri Budhiman Firmanto, M.Eng.

(Deputy Director for Mineral Exploration Supervision, The Ministry of Energy and Mineral Resources, Indonesia)

"The Role of Mineral Extraction for Materials Technology"

Prof. DongFeng Chen

(President of Asia-Oceania Neutron Scattering Association (AONSA), China)

"Investigation on Energy and Environment Materials by Using CARR Neutron Facilities"

Prof. Dr. rer. nat. Evvy Kartini

(Founder of National Battery Research Institute, President of MRS-INA and INSS)

"Synthesize of nickel rich cathode material Li[Ni0.8Co0.1Mn0.1]O2 by novel co-precipitation method based on the local mineral resources"

Prof. Yun Liu

(Australian Research Council (ARC) Georgina Sweet Australian Laureate Fellow and Professor at the Australian National University, Australia)

"Characterization of key functional materials using neutron scattering technology"

Prof. Kostya Trachenko

(Top 10 Physics Breakthrough in 2020, Queen Mary University of London, United Kingdom)

"Atomistic modelling of resistance to amorphisation by radiation damage"

Keynote Speakers

Prof. Takashi Kamiyama

(Senior researcher of Spallation Neutron Source, China)

"High Resolution Neutron Diffraction for the Study of Functional Materials"

Dr. Khay W See

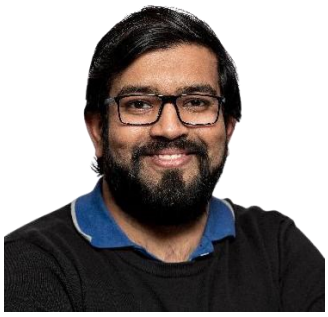
(Senior Research Fellow at the Australian Institute of Innovative Materials at University of Wollongong, Australia)

"Battery Management System and Safety Implementation for Large-Scale Lithium-Ion Pack"

Prof. Sean Giblin

(Joint Director of International Condensed Matter and Photonics Group, Cardiff University, United Kingdom)

"Measurement of Isolated Susceptibility"



Dr. Sulalit Bandyopadhyay

(Associate Professor of the Department of Chemical Engineering, Faculty of Natural Sciences, Norwegian University of Science and Technology (NTNU), Norway)

"Controlling Particle Formation at the Nano-scale for Advanced Biomedical Applications"

Prof. Pooi See Lee

(Professor of Nanyang Technological University (NTU), Singapore)

"Flexible and Stretchable Energy Storage Devices for Wearable Technology"

Dr. Pakorn Opaprakasit, PhD

(Associate Professor of Sirindhorn International Institute of Technology (SIIT), Thammasat University, Thailand)

"Green Polyurethanes with Self-Healing and Shape Memory Properties Derived from Chemical Recycling Products of Polylactide"

Dr. Christian B. Nielsen

(Senior Researcher of Queen Mary University of London, United Kingdom)

"Organic Materials for Bioelectronic Applications "

Afriyanti Sumboja, PhD

(The Winner of LIPI Young Scientist Award 2020, Indonesia)

"Li-ion batteries with nanostructured silicon anode"

Dr. Kedar Hippalgaonkar

(Assistant Professor of Nanyang Technological University (NTU), Singapore)

"Materials Nanoscale Thermoelectric"

Prof. Neeraj Sharma

(Associate Professor of University of New South Wales (UNSW), Australia)

"The Chemistry of Batteries"

Prof. Nurul Taufiqu Rochman

(Acting Director of Pusat Riset Metalurgi dan Material, OR IPT, National Research and Innovation Agency (BRIN), Indonesia)

"Nanotechnology Development and Commercialization in Indonesia Based on Natural Resources: From Lab to The Industry"

Dr. S. M. Yusuf

(Outstanding Scientist and Head of Solid-State Physics Division of BARC, India)

"Physics of Magnetization Reversal and its Relevance in Magnetic Storage Devices"

ORGANIZATION

Steering Committee

Prof. Dr. rer. nat. Evvy Kartini	Founder of National Battery Research Institute (NBRI), President of Material Research Society Indonesia (MRS-INA), and President of Indonesian Neutron Scattering Society (INSS), Indonesia
Prof. Alan J Drew	Co-Founder of National Battery Research Institute (NBRI) and Director of the Materials Research Institute, Queen Mary University of London (QMUL), United Kingdom
Prof. Rodrigo Martins	President of International Union of Material Research Societies (IUMRS) and Director of European Academy of Science (EurASc), Portugal
Prof. Ir. Muhammad Nizam, ST., MT.	Coordinator of National Research Priority Mandatory on Energy Storage

International Advisory Boards

Prof. Rodrigo Martins	President of International Union of Material Research Societies (IUMRS)
Prof. Dr. rer. nat. Evvy Kartini	President of Material Research Society Indonesia (MRS-INA)
Prof. B.V.R. Chowdary	IUMRS HO Officer, Singapore
Prof. Yuan Ping Feng	IUMRS Officer, Singapore
Prof. Hideo Hosono	MRS-Japan
Prof. Jow-Lay Huang	MRS-Taiwan
Prof. Woo-Gwang Jung	MRS-Korea
Prof. Soo Whon Lee	IUMRS Officer, Korea
Prof. Santi Maensiri	MRS-Thailand
Prof. Alan J Drew	Queen Mary University of London, UK
Dr. Christian Nielsen	Queen Mary University of London, UK
Dr. Ana Jorge Sobrido	Queen Mary University of London, UK
Dr. Alexey Glushenkov	Australia National University (ANU), Australia
Prof. Pooi See Lee	Nanyang Technological University (NTU), Singapore
Prof. Tim J. White	Nanyang Technological University (NTU), Singapore

Organizing Committee

Chair	Prof. Dr. rer. nat. Evvy Kartini
Vice Chair	Prof. Alan J Drew
Secretary	Shinta Widyaningrum, S.Sos.
Treasury	Adit Triwiguno, SE. Noeraida
Coordinator of Conference	Moh. Wahyu Syafi'ul Mubarok, S.Si.

Chairman	Ir. Chairul Hudaya, PhD
	Dr. Indri Badria Adillina
	Muhammad Fakhrudin, ST.
	Dr. Wisnu Ari Adi
	Prof. Andika Pramono
	Achmad Subhan, MT.
	Dr. Mas Ayu Elita Hafizah
	Dr. Ferensa Oemry
	Moh. Wahyu Syafi'ul Mubarok, S.Si.
	Dr. Widi Astuti
	Adit Tri Wiguno, SE.
Coordinator of Journal Publication	Dr. Nofrijon Sofyan and Moh. Wahyu Syafi'ul Mubarok, S.Si.
Paper Referees	Prof. Dr. rer. nat. Evvy Kartini
	Dr. Nofrijon Sofyan
	Prof. Andika Widya Pramono
	Dr. Julwan Hendry Purba, ST., M. App.IT.
Coordinator of International School on Battery and Electric Vehicles (ISBEV) 2021	Mohammad Ridho Nugraha, ST.
Coordinator of International Workshop on Material and Advanced Characterization (IMAC) 2021	Dr. Indri Badria Adilina
Coordinator of International Workshop on Solar Rooftop Residential and Utilities Scale (ISRUS) 2021	Cipta Panghegar Supriadi, MT.
International and National Relation	Muhammad Firmansyah, SE.
Press Conference	Mochamad Subhan Alkyana, S.IP.
IT Design and Social Media	Shafira Ramadhani and Eueggalion
	Jonathan Ambarita, S.Kom.
Volunteer	Rafi Ramadhan Seba
	Dhika Faiz Fadrian
	Fitriyah Saraswati
	Haris Amaldi
	Ida Ayu Gayatri
	Immanuella Natasha Girsang
	Muhamad Farhan Tri Apriansyah
	Norma Rahayu

GENERAL REPORT

Figure 1. The Committee of ICAMT 2021

The International Conference on Advanced Material and Technology (ICAMT) 2021 has been successfully conducted on December, 14th – 16th, 2021. The ICAMT 2021 has been managed fully online due to the covid-19 pandemic situation. This international event has been prepared less five weeks with a solid team. Amidst the ICAMT 2021, at the first day of the conference, it also has been conducted the final presentation of NBRI-YIC paper competition 2021. Figure 1 represents part of the people behind ICAMT 2021 which separates in Steering Committee, Organizing Committee, and Volunteer with 16 persons in total. The name as follows:

- **Steering Committee**
    1. Prof. Dr. rer. nat. Evvy Kartini
    2. Prof. Alan J Drew
    3. Muhammad Firmansyah, SE.
    4. Adit Tri Wiguno, SE.
- **Organizing Committee**
    1. Shinta Widyaningrum, S.Sos.
    2. Moh. Wahyu Syafi'ul Mubarok, S.Si.
    3. Mochamad Subhan Alkyana, S.IP.
    4. Mohammad Ridho Nugraha, ST.
    5. Muhammad Fakhrudin, ST.
    6. Shafira Ramadhani
    7. Euaggelion Jonathan Ambarita, S.Kom.
- **Volunteer**
    1. Rafi Ramadhan Seba

2. Dhika Faiz Fadrian
3. Fitriyah Saraswati
4. Haris Amaldi
5. Ida Ayu Gayatri
6. Immanuella Natasha Girsang
7. Muhamad Farhan Tri Apriansyah
8. Norma Rahayu

We also thanks to several sponsors that have supported in the ICAMT 2021. International Union of Material Research Societies (IUMRS), PT. Surveyor Indonesia, Material Research Society (MRS) Thailand, and PT. Chandra Asri Petrochemical as bronze sponsors. Queen Mary University of London (QMUL), PT. Infiniti Energi Indonesia, KGC Saintifik, Material Research Society Indonesia (MRS-INA), Indonesian Neutron Scattering Society (INSS), and Asia-Oceania Neutron Scattering Association (AONSA) as supported sponsors. All sponsors logo is shown in figure 2.

Figure 2. The sponsors of ICAMT 2021

The total of attendances in three days has reached 228 participants (more than 40 attendances in every session) from 15 countries. Most of them are from Indonesia (197 participants) followed by United Kingdom (6 participants), India (6 participants), Singapore (4 participants), Australia (3 participants), Thailand (2 participants) and Algeria (2 participants). Also, a person from Portugal, Norway, Germany, Brazil, China, Malaysia, Japan, and Morocco. Figure 3 shows the country participants demographic and figure 4 identifies the country participants exclude Indonesia.

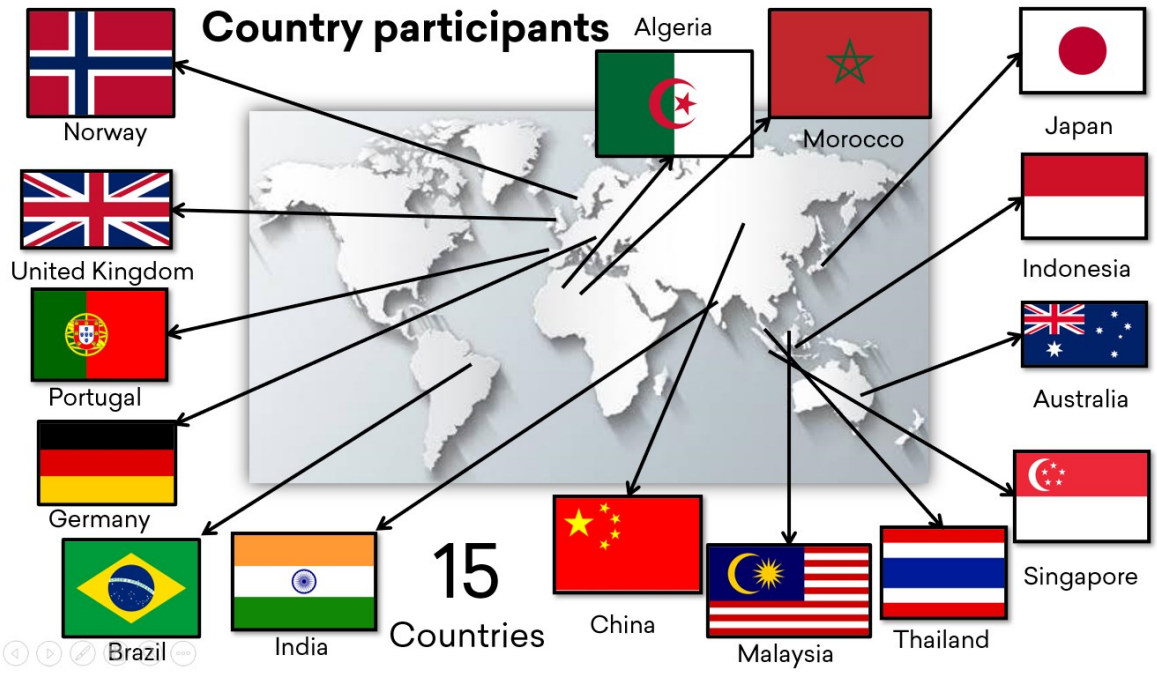


Figure 3. The demographic data of ICAMT 2021 participants

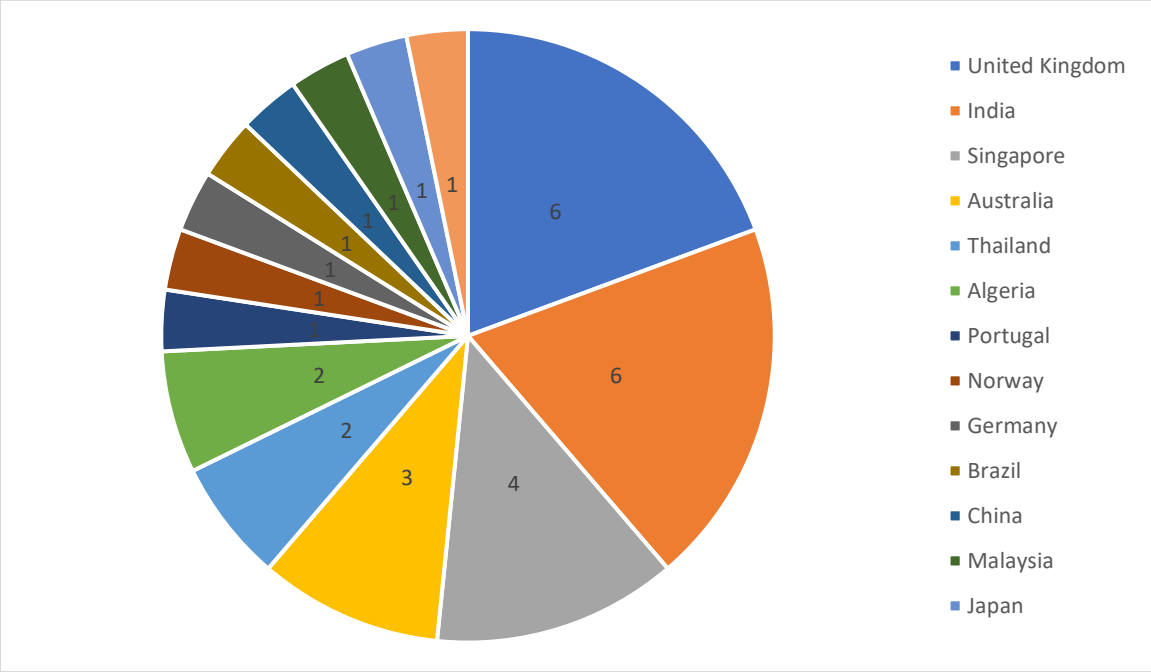


Figure 4. The demographic data of ICAMT 2021 participants exclude Indonesia

According to institution background, the participants have come from Research Center, Industry, Press and Media, Government, and University which 66 institutions in total. Figure 5 shows each number specifically. And by occupation, ICAMT 2021 has covered Indonesian participant, International participant, Indonesian student, and International Student. Figure 6 shows the amount of participant in every occupation.

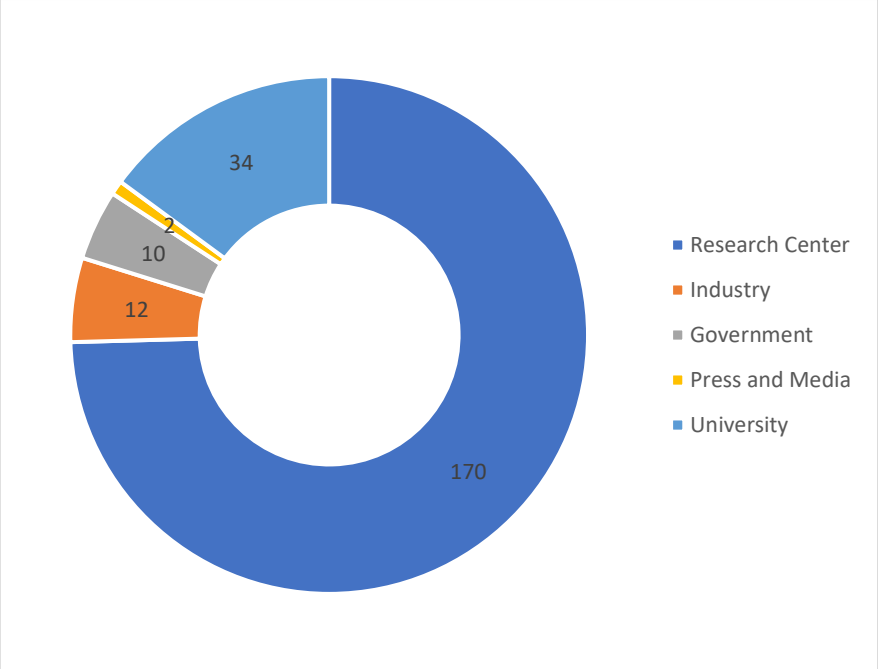


Figure 5. Institution background of ICAMT 2021 participants

The list of institutions are as follows:

University of Biskra, Algeria	Institute Technology of Kalimantan, Indonesia	Synchrotron Light Research Institute, Thailand
University of Bejaia, Algeria	State University of Makassar, Indonesia	STKIP PGRI Banjarmasin, Indonesia
Chemical Engineering Department, Faculty of Engineering, University of Indonesia	Department of Weaponry Technology, Faculty of Defense Technology, Republic of Indonesia Defense University	Departement of Physics, Faculty of Mathematics and Natural Science, Universitas Palangka Raya
Jenderal Achmad Yani University, Indonesia	Institute Technology of Sepuluh Nopember, Indonesia	STIKes Payung Negeri Pekanbaru, Indonesia
Center for Applied Nuclear Science and Technology (PSTNT), BRIN, Indonesia	Universiti Teknologi Mara, Malaysia	University of Riau, Indonesia
Telkom University, Indonesia	University of Pertamina, Indonesia	Republic of Indonesia Defense University, Indonesia
University of Nahdlatul Ulama Sunan Giri, Indonesia	National Research and Innovation Agency (BRIN), Indonesia	Center for Handicraft and Batik, Ministry of Industry, Indonesia
Politeknik Negeri Bali, Indonesia	University of Gadjah Mada	JIS College of Engineering, India

Budge Institute of Technology, Indonesia	University of Malaysia Perlis, Malaysia	University of Malaya, Malaysia
Center for Applied Research and Technology (PRTNT), BRIN	University of Jambi, Indonesia	UIN Sulthan Thaha Saifuddin Jambi, Indonesia
UIN Syarif Hidayatullah, Indonesia	Saudi Aramco	Engineering Physics, Telkom University, Indonesia
Department of Physics, Faculty of Mathematics and Natural Science, University of Indonesia	Moulay Ismail University, Meknes, Morocco	National Electronic and Computer Technology Center (NECTEC), Thailand
Politeknik Industri Logam Morowali, Indonesia	Universitas Sumatera Utara, Indonesia	State University of Malang, Indonesia
National Battery Research Institute, Indonesia	Material Research Society of Indonesia (MRS-INA), Indonesia	Indonesian Neutron Scattering Society (INSS), Indonesia
International Union of Material Research Societies (IUMRS)	The Ministry of Industry, Indonesia	Nanyang Technological University (NTU), Singapore
Spallation Neutron Source, China	University of Wollongong, Australia	Queen Mary University of London (QMUL), United Kingdom
European Academy of Science, (EurASc), Portugal	Cardiff University, United Kingdom	Material Research Society (MRS) Brazil
Indian Institute of Science, India	Norwegian University of Science and Technology (NTNU), Norway	Thammasat University, Thailand
Helmholtz Zentrum Berlin, Germany	Sheffield University, United Kingdom	Institute Technology of Bandung, Indonesia
The Ministry of Energy and Mineral Resources, Indonesia	Asia-Oceania Neutron Scattering Association (AONSA)	University of New South Wales, Australia
The Australian National University, Australia	Bhabha Atomic Research Center, India	Genial (Generasi Millenial)
Media Nikel Indonesia	MRS Thailand	PT Surveyor Indonesia

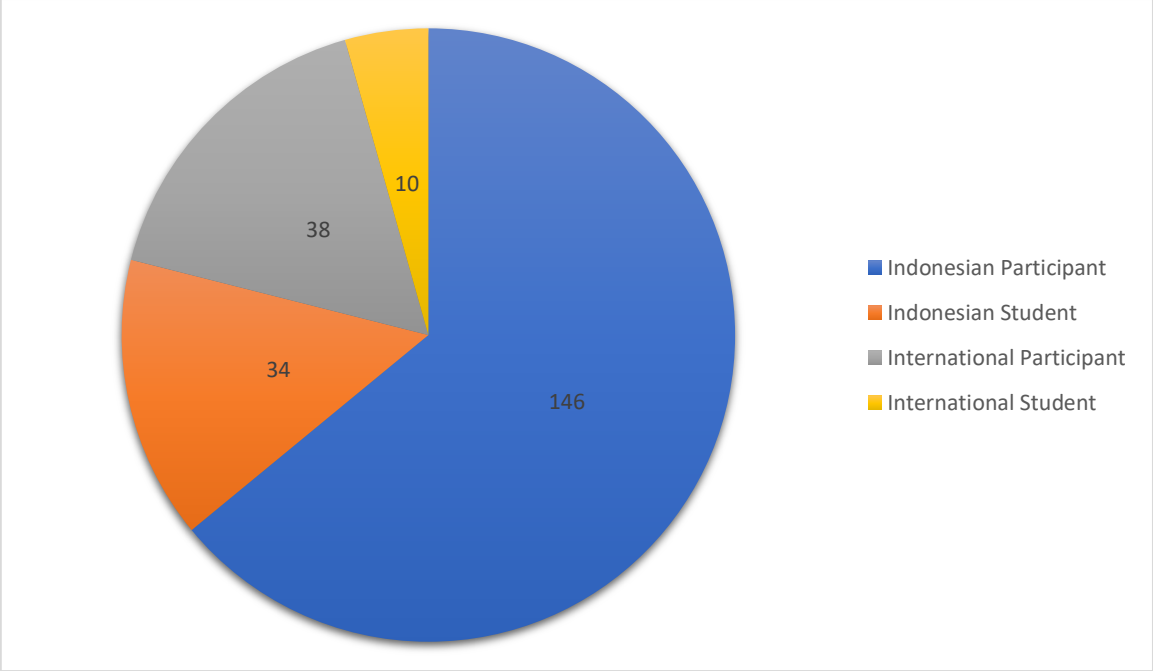


Figure 6. The occupation of ICAMT 2021 participants

Furthermore, the ICAMT 2021 has presented 77 distinguished speakers which separates in four opening remarks, 14 plenary speakers, 12 keynote speakers, 10 invited speakers, and 37 oral contributors. The number of papers submitted reached to 50 manuscripts in eight topics; Advanced Functional and Structural Materials, Energy and Environment Materials, Nuclear Science and Technology Application, Materials Processing and Characterization, Other Related Topic, Nano Science and Technology, Computational Materials, Modelling, and Simulation & Polymer, bio, and soft materials. Figure 7 shows the speakers topics in percentage.

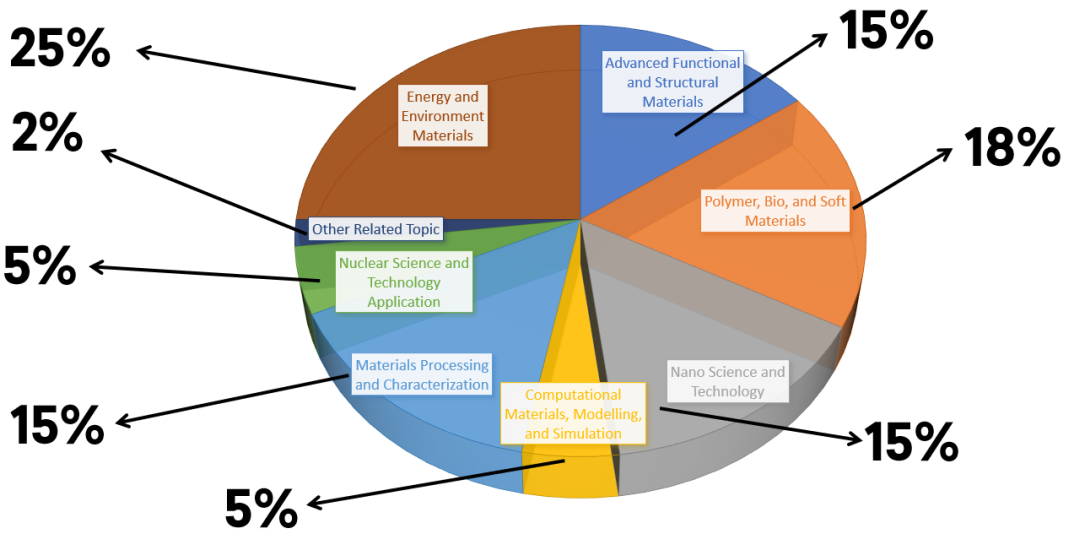


Figure 7. Speakers topics of ICAMT 2021

In addition, the ICAMT 2021 has been covered by several mainstream media. Such as Pontianak Times, Newscafe Online, and Cara Pandang.

https://pontianak-times.co.id/nbri-sukses-garap-konferensi-energi/

https://newscafe-online.com/index.php/2021/12/19/nbri-dan-mrs-ina-sukses-konferensi-energi/

https://carapandang.com/read-news/nbri-gelar-international-conference-on-advanced-material-and-technology-2021-icamt-2021

The Committee also conducted the satisfaction survey in each session of ICAMT 2021. According to the result, participants strongly agree that the event is excellently delivered, gives a new insight, and impactful. There are more than 84% of participants chose 5 out of 5 rating scale in each assessment item. And speaking about the participants feedback, the ICAMT 2021 received several positive impressions. Some people comment that the event is good enough for the online conference. Some of them also mentioned about well-prepared event, means that the ICAMT 2021 is organized well.

In addition, here are several written impressions and feedbacks along the ICAMT 2021 event:

"Keep up the good work, it is a privilege to know what other researchers do"

"Thanks for the chance"

"Can't wait for the next NBRI conference"

"It will be better if each distinguished speaker has more time to speech and discussion"

"The notification for abstract acceptance must be improved. The early submitter should be notified sooner if their abstract is accepted"

"It was a pleasure and honor to take part in ICAMT 2021" - ***Prof. Osvaldo Novais de Oliveira Junior***

"I appreciate team's effort in organizing the conference. I have enjoyed the conference very much" - ***Prof. Zhichuan J. Xu***

"Congratulation for the successful ICAMT 2021" - ***Prof. Yun Liu***

"It's a great program!" - ***Dr. Eddie Cussen***

"Congratulations for a great beginning of the conference. I enjoyed participating in the entire opening session. I will continue to enjoy by attending more sessions."
- Prof. B.V.R. Chowdari

SUBSTANTIAL REPORT

The ICAMT 2021 is opened by Prof. Dr. rer. nat. Evvy Kartini. She represented a founder of National Battery Research Institute, President of Material Research Society Indonesia (MRS-INA), and President of Indonesian Neutron Scattering Society (INSS). Professor Evvy reported the ICAMT 2021 event and introduced the history of NBRI and the role of MRS-INA through that platform during her opening remarks.


Certificate of Membership

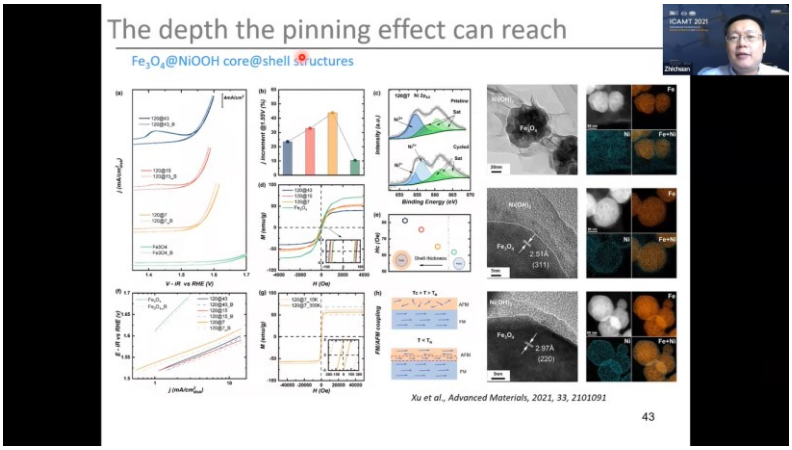
This document is to certify that

The Materials Research Society of Indonesia (Ina)
is a
Full Member
of
The International Union of Materials Research Societies

Soo Wohn Lee
President, IUMRS
27 August, 2017

Afterward, the Director of Metal Industry, Directorate General of ILMATE, The Ministry of Industry, Indonesia, Ir. Budi Susanto, MT., took the virtual stage to present the opening remarks. Ir. Budi talked about accelerating battery electric vehicles (BEV) in Indonesia through materials technology.

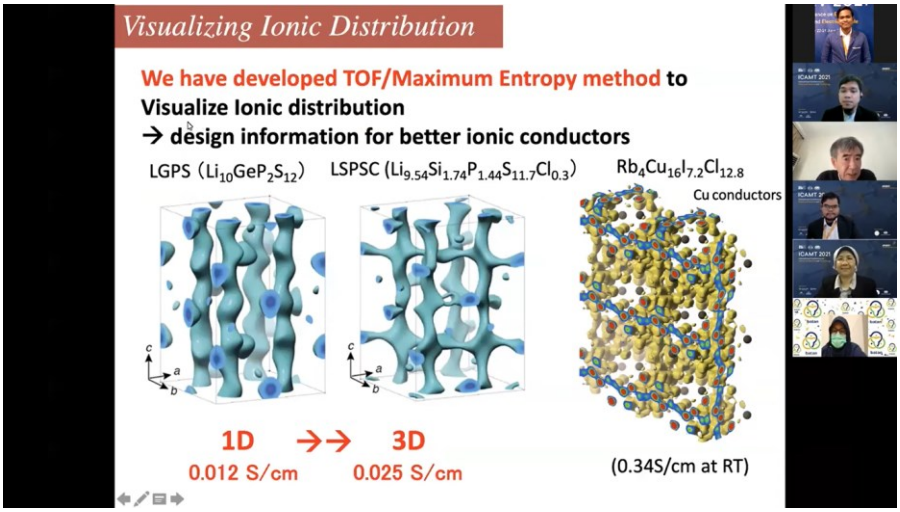
Before the next plenary session, the Director of Head Officer of International Union of Material Research Societies (IUMRS), Professor B.V.R. Chowdari from Singapore, spread his message on strengthening science collaboration amidst the COVID-19 pandemic. Then, Prof. Zhichuan J. Xu delivered his insightful plenary speech. He is a professor of Nanyang Technological University (NTU), Singapore. Prof. Zhichuan explained about Oxygen Evolution Catalysis on Magnetic Oxides.



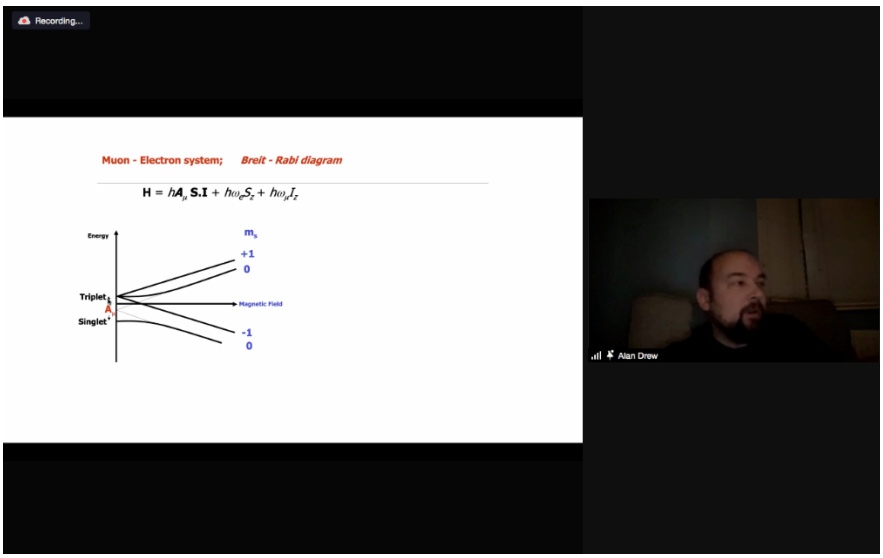
After Prof. Zhichuan words, the ICAMT 2021 had a special stage for the Nobel Prize Winner 2014 in Physics. The Committee strove for less than five weeks to contact Prof. Hiroshi Amano. Unfortunately, its confirmed by their secretary that he unable to involve in the ICAMT 2021 directly due to the limit time. So, the committee presented the stage of honor for Prof. Hiroshi Amano with his inspiring lecture. Prof. Dr. rer. nat. Evvy Kartini, as a person who has meet Prof. Amano in Singapore during the ICMAT 2019. Prof. Evvy led the session with full of powerful message about young scientist to do more in research for elevating humankind to the next level of age. The morning session in first day of ICAMT 2021 was moderated by distinguished chairman, Ir. Chairul Hudaya, PhD from University of Technology Sumbawa.

The following agenda was the keynote session. There were two rooms in morning sessions, Advanced Functional & Structural Materials and Student Competition. Prof. Takashi Kamiyama from Spallation Neutron Source, China presented his keynote speech on High Resolution Neutron Diffraction for the Study of Functional Materials. The distinguished chairman for the room was Mr. Muhammad Fakhrudin, ST. from National Research and Innovation Agency (BRIN). On the other side, Dr. Khay W See from Australian Institute of Innovative Materials University of Wollongong, Australia became the keynote speaker for

student competition room. He talked about Battery Management System and Safety Implementation for Large-Scale Lithium-Ion Pack. Doctor Khay also as a distinguished judge for the final presentation of student paper competition with Dr. Wisnu Ari Adi (He also a distinguished chairman on the keynote session) and also Prof. Dr. rer. nat. Evvy Kartini.

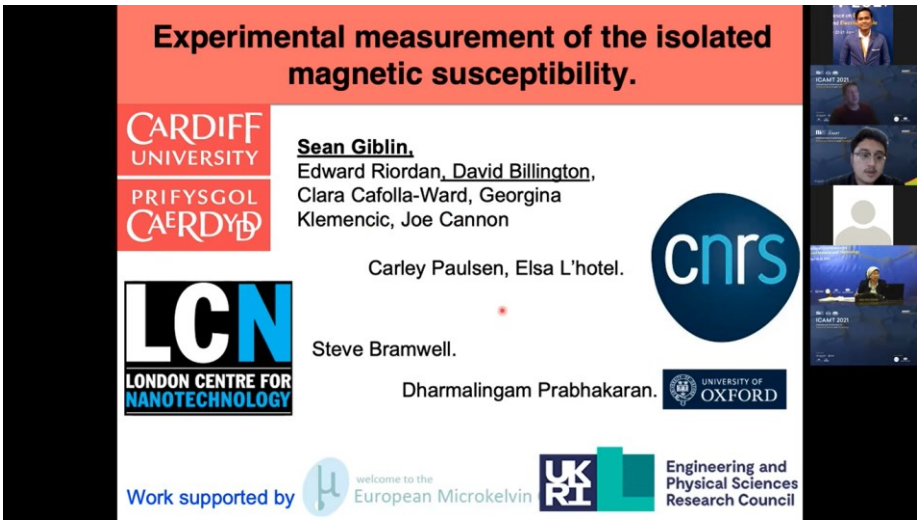


Afternoon session is opened by distinguished chairman, Prof. Dr. rer. nat. Evvy Kartini. As a co-founder of National Battery Research Institute and Director of the Materials Research Institute, Queen Mary University of London (QMUL), Professor Alan J Drew delivered the opening remarks and then continued with his plenary session about the Using Photomusr to Probe Excitons in Organic Semiconductors.



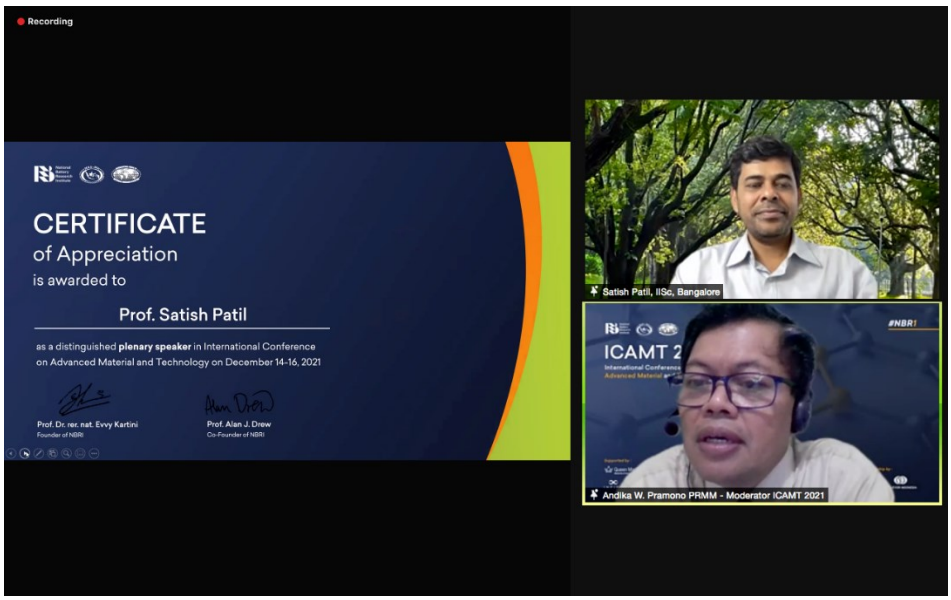
Subsequently, Prof. Rodrigo Martins as President of International Union of Material Research Societies (IUMRS) and Director of European Academy of Science (EurASc) from Portugal delivered his insightful plenary speech. Professor Rodrigo bring the broad view on Green Energy: A Future Global Challenge.

After informative plenary discussion, the ICAMT 2021 agenda continued to keynote session. There were two breakout rooms; Polymer, Bio, and Soft Materials room and Nano Science and Technology room. Professor Sean Giblin as Joint Director of International Condensed Matter and Photonic Group from Cardiff University, United Kingdom presented at the Polymer, Bio, and Soft Materials stage. He explained about Measurement of Isolated Susceptibility. The distinguished chairman on that room was Prof. Alan J Drew. In Nano Science and Technology room, there was Dr. Sulalit Bandyopadhyay as Associate Professor of the Department of Chemical Engineering, Faculty of Natural Sciences, Norwegian University of Science and Technology (NTNU), Norway. Doctor Sulalit talked about Controlling Particle Formation at the Nano-scale for Advanced Biomedical Application. The distinguished keynote chairman of that room was Dr. Widi Astuti from the Agency of Applied Mineral Research (BPTM), BRIN.



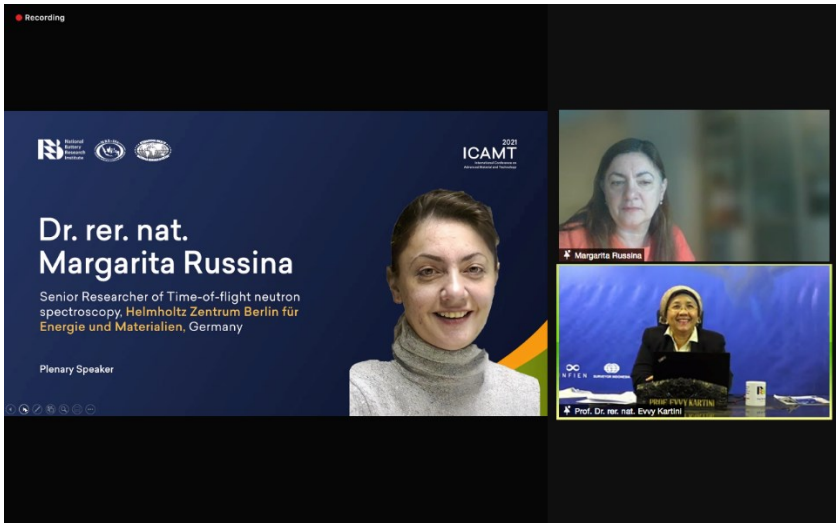
The second day of ICAMT 2021. The distinguished chairman was Prof. Andika Widya Pramono as senior researcher of National Research and Innovation Agency. Professor Osvaldo Novais de Oliveira Junior from Material Research Society Brazil took a stage for first plenary session in the day two. He is also a Vice President of International Union of Material Research Societies (IUMRS) and explained about On the Use of Machine Leaning for Analyzing Sensing and Biosensing Data.

Afterward, the session belonged to senior researcher of Indian Institute of Science India, Professor Satish Patil. The title of his presentation was Chemistry for Redox Flow Battery. It is insightful perspective for giving a future option for energy storage and battery technology development.

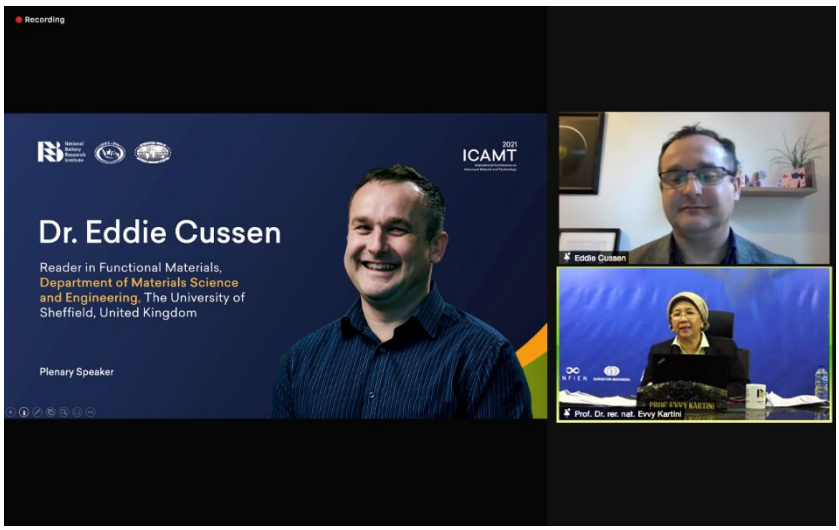


The third plenary speaker in the morning session was Dr. Adisorn Tuantranont from National Electronic and Computer Technology Center (NECTEC), Thailand. He honored as the Thailand National Outstanding Researcher Award 2021. Doctor Adisorn talked about Graphene Technologies for Energy Storage Applications. After an insightful discussion, the agenda was followed by keynote session. There were two rooms; Energy and Environment Materials room and Polymer, Bio, and Soft Materials. The distinguished keynote speaker of first parallel room was Prof. Pooi See Lee. She is professor of Nanyang Technological University, Singapore and shared about Flexible and Stretchable Energy Storage Devices for Wearable Technology. The chairman of this room was Mr. Achmad Subhan, MT. And for the other room was belong to Dr. Pakorn Opaprakasit, PhD. He is an Associate Professor of Sirindhorn International Institute of Technology (SIIT), Thammasat University, Thailand with the keynote speech title Green Polyuretahnes with Slef-Healing and Shape Memory Properties Derived from Chemical Recycling Products of Polylactide. The session was chaired by Dr. Mas Ayu Elita Hafizah.

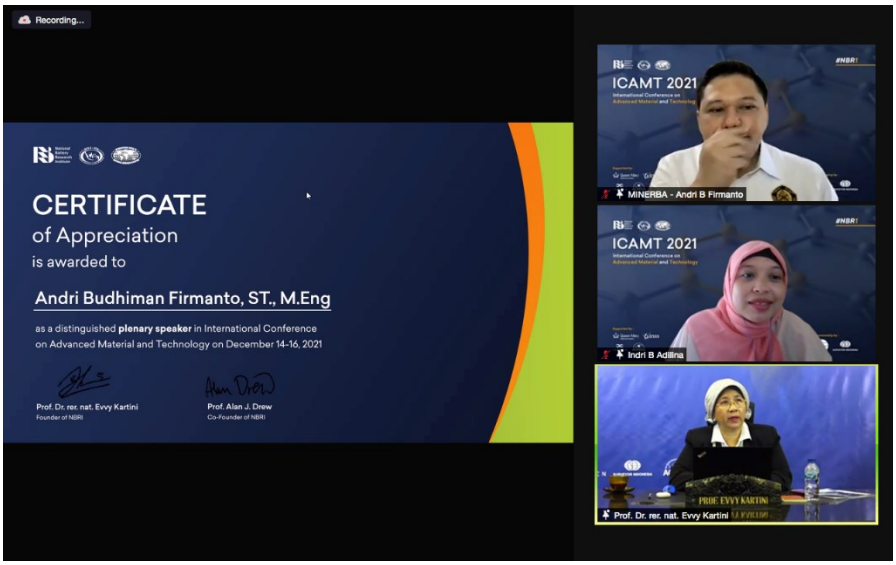
In afternoon session, the ICAMT 2021 had Prof. Dr. rer. nat. Evvy Kartini as distinguished chairman. She moderated the afternoon plenary agenda. First plenary speaker was Dr. rer. nat. Margarita Russina as Senior Researcher of Time-of-Flight Neutron Spectroscopy, Helmholtz Zentrum Berlin für Energie und Materialien, Germany. Although there was a technical issue during the session, Doctor Rita completely shared the plenary topic on What Happens in Pores-a Neutron Scattering Insight.



Afterward, the next session was Dr. Eddie Cussen as Reader in Functional Materials, Department of Materials Science and Engineering, The University of Sheffield, United Kingdom. He presented about Development of Lithium Conducting Oxides from Crystal Chemistry to Solid-State Batteries. The second day of ICAMT 2021 was closed by the keynote session and oral presentation separated in two rooms. The first room was Nano Science and Technology with the distinguished keynote speaker Dr. Christian B. Nielsen from Queen Mary University of London (QMUL), United Kingdom. He presented about the Organic Materials for Bioelectronic Applications. The keynote chairman of this session was Mr. Moh. Wahyu Syafi'ul Mubarok, S.Si. On the other room, belong to Energy and Environment Materials topic. The distinguished keynote speaker on this room was Dr. Afriyanti Sumboja, the Winner of LIPI Young Scientist Award 2020, Indonesia. Doctor Afri explained about Li-ion Batteries with Nanostructured Silicon Anode. The chairman for this session was Mr. Achmad Subhan, MT.

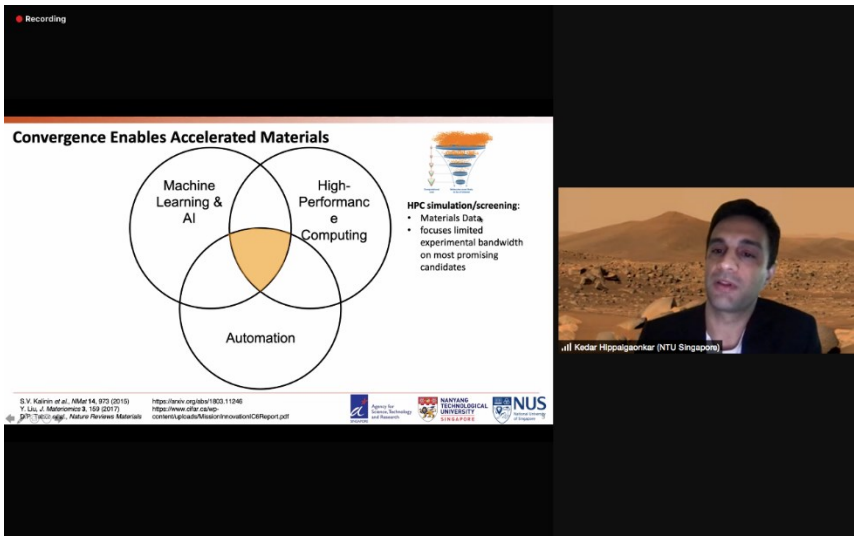


The last day of International Conference on Advanced Material and Technology (ICAMT) 2021 had the distinguished chairman, Dr. Indri Badria Adilina from National Research and Innovation Agency (BRIN). Doctor Indri moderated many great plenary speakers. Started with Mr. Andri Budhiman Firmanto, M.Eng. as Deputy Director for Mineral Exploration Supervision, The Ministry of Energy and Mineral Resources, Indonesia. He represented Dr. Ir. Ridwan Djamaluddin, Msc. As General Director of MINERBA. He presented the Role of Mineral Extraction for Materials Technology topic from the government perspective.

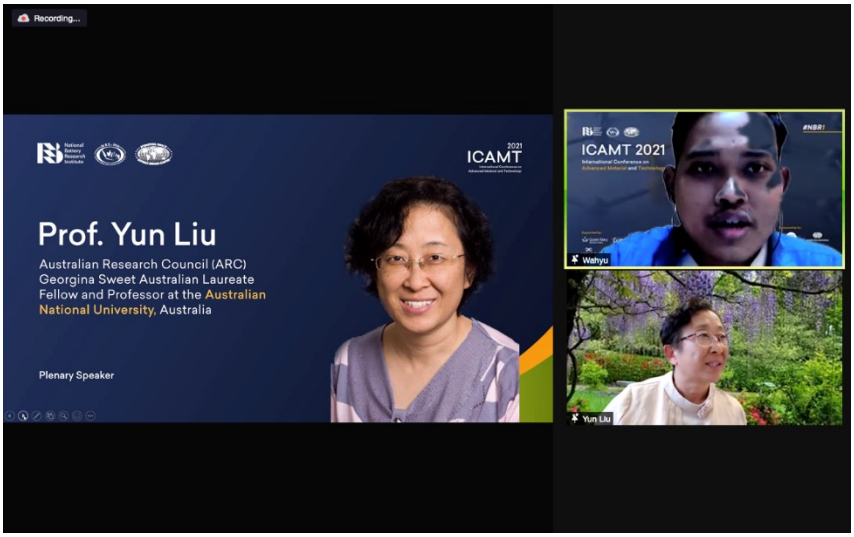


Subsequently, the second plenary speaker for morning session was Prof. DongFeng Chen as President of Asia-Oceania Neutron Scattering Association (AONSA) from China. Professor Chen delivered an insightful speech on Investigation on Energy and Environment Materials by using CARR Neutron Facilities.

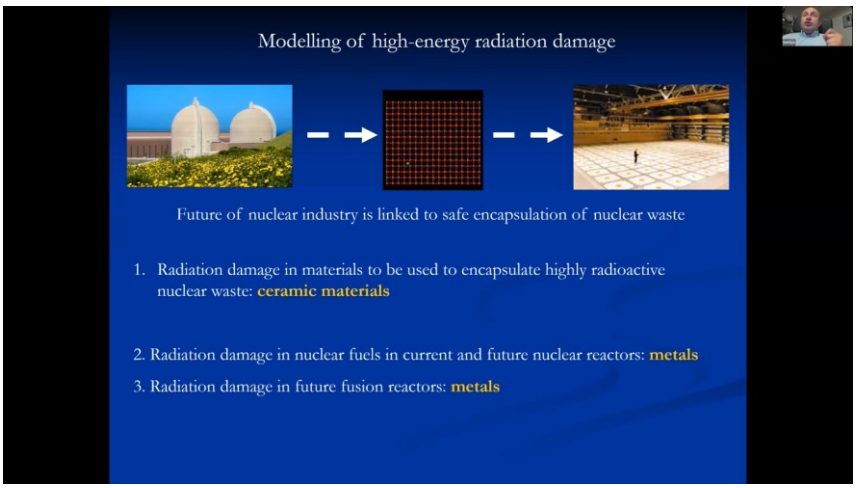
The last plenary speaker for morning session as Prof. Dr. rer. nat. Evvy Kartini. Chief Scientist at National Nuclear Energy Agency (BATAN) Indonesia, Founder of National Battery Research Institute, President of Material Research Society Indonesia (MRS-INA), and President of Indonesian Neutron Scattering Society (INSS). She also the Coordinator WBS3 of National Research Priority Mandatory on Energy Storage. Professor Evvy explained about Synthesize of nickel rich cathode material Li $[Ni_{0.8}Co_{0.1}Mn_{0.1}]$ O_2 by novel co-precipitation method based on the local mineral resources. Afterward, there were keynote session for two rooms; Computational Materials, Modelling, and Simulation room with the distinguished keynote speaker Dr. Kedar Hippalgaonkar as Assistant Professor of Nanyang Technological University (NTU), Singapore. Doctor Kedar presented his promising current research on Materials Nanoscale Thermoelectric under Computational Perspective. The distinguished chairman for those session was Dr. Ferensa Oemry from National Research and Innovation Agency. The other is Advanced Functional and Structural Materials room with Prof. Neeraj Sharma as an outstanding keynote speaker. He is Associate Professor of University of New South Wales (UNSW), Australia and talked about The Chemistry of Batteries. This session was chaired by Mr. Adit Tri Wiguno, SE.



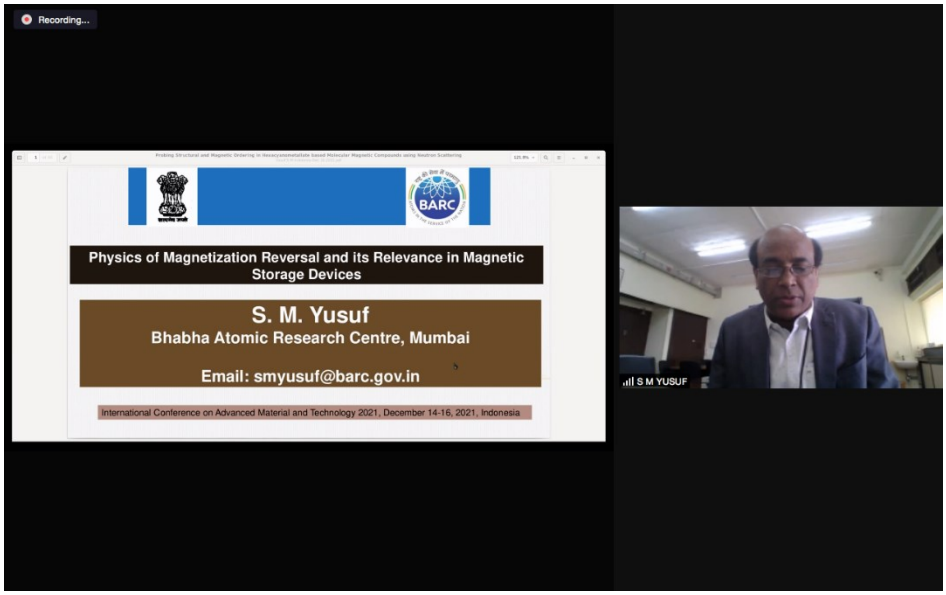
In afternoon session, the ICAMT 2021 still brought two great plenary speakers from Australia and United Kingdom. The last session was moderated by Mr. Moh. Wahyu Syafi'ul Mubarok, S.Si as distinguished chairman from the National Battery Research Institute (NBRI). The first session was Prof. Yun Liu as Australian Research Council (ARC) Georgina Sweet Australian Laureate Fellow and Professor at the Australian National University, Australia. Professor Yun talked about Characterization of Key Functional Materials using Neutron Scattering Technology.



The second session was Prof. Kostya Trachenko as Top 10 Physics Breakthrough in 2020, Deputy head of CCMP (Computational Condensed Matter Physics), Professor of Physics, and Director of Graduate Studies at School of Physical and Chemical Sciences, Queen Mary University of London, United Kingdom. Professor Kostya presented the Atomistic Modelling of Resistance to Amorphization by Radiation Damage.



Then, the agenda is followed by keynote session which separated in two rooms; Materials Processing and Characterization room and Nuclear Science and Technology Application, Other Related Topic room. The first room is covered by distinguished keynote speaker, Prof. Nurul Taufiqu Rochman. Professor Nurul is an Acting Director of *Pusat Riset Metalurgi dan Material*, OR IPT, National Research and Innovation Agency (BRIN) and one of the most outstanding Indonesian scientists. He delivered an insightful speech on Nanotechnology Development and Commercialization in Indonesia Based on Natural Resources: "From Lab to the Industry." This session was chaired by Mr. Adit Tri Wiguno.



On the other room, there was Dr. S. M. Yusuf as Outstanding Scientist and Head of Solid-State Physics Division of Bhabha Atomic Research Center (BARC), India. He talked about Physics of Magnetization Reversal and Its Relevance in Magnetic Storage Devices. This insightful session was chaired by Mr. Muhammad Fakhrudin, ST.

Finally, the ICAMT 2021 officially closed by Pro. Dr. rer. nat. Evvy Kartini with her memorable closing remarks.

NBRI YOUTH IDEAS COMPETITION REPORT

The post-event report of NBRI-YIC 2021 aims to be a reference for future reference that documents all the end-to-end event process (planning, execution, and closing) and to be improved upon. The NBRI-YIC 2021, consisted of paper and microblog competition that was initiated on the 1st of November 2021 and registration opened on the 17th of November 2021 the 17th of December 2021.The main emphasis of the report is on the evaluation of the event, which includes the feedback from participants, organizing committee, and NBRI alongside with the problems, solutions, and lessons learned. Event planning and execution were briefly mentioned with the details in the appendix.

From the paper and microblog competition, a total of 45 participants joined from 20 registrants (9 paper and 11 microblog) achieving 40% of the initial target registrant of 50. The target was not achieved possibly due to the limited registration time, competition being brand new, limited publication format, and limited direct approach to student organization or directorate of student's affairs from each university. The paper competition received a 71.4% satisfaction rate, with 84.8% recommending joining, and 100% would join the event again. Main room for improvement includes, tardiness of the presentation event, stricter rules, a presentation time of longer than 5 minutes, and a clearer guidebook. For the microblog competition, satisfaction rate was 83%, with 89% recommending joining, and 99% would join the event again, the cumulative post reached 9.562 followers with 4.359 likes. Main room improvements include, transparency of evaluation, more microblog samples, and more publication of the event. The distinguished judges for the paper competition, Prof. Dr. rer. nat Evvy Kartini (Founder of NBRI), Dr. Wisnu Ari Adi (PTSBM-BATAN) also as a moderator, and Dr. Khay W. See (University of Wollongong, Australia). For the microblog competition, thank you for the distinguished judges, Shafira Ramadhani Busono (NBRI), M. Ridho Nugraha (NBRI), and Egi Jonathan Ambarita (PT. Infiniti Energi & National Battery Research Institute).

The topic of this competition is based on the ICAMT 2021 theme and aims the participants to research and spread awareness through design and paper related to sustainable development goals and climate change. Summary of Paper competition result consists of many innovations and research namely: Superstructure, Supercapacitor, Fuel cells, Green Extraction or new utilization for Li-Ion Battery and numerical methods. For microblog competition, the content consists of the importance of renewable, battery potential materials, smart energy systems and Indonesia potentials for the future. Based on the findings, future NBRI-YIC

prioritize the following 4 suggestions, to increase the chance of success. First, a longer registration period of at least a month. Secondly, a comprehensive and rigorous marketing plan. Thirdly, direct approach to student organizations and university's directorate of student's affairs. Lastly, organizing a pre-event to increase the reach and hype of the event.

- **Agenda and Timeline**

Table 1. Overall Event Timeline (Microblog)

No.	Duration	Extension	Start Date	End Date	Stages
1.	1 Month	2 Weeks	17 November	17 December	1. Open Registration 2. Abstract Submission due date 3. Selected Abstract Announce 4. Full Paper/Presentation Due date 5. Presentation Day

Table 2. Overall Event Timeline (Paper)

No.	Duration	Extension	Start Date	End Date	Stages
1.	1 Month	2 Weeks	17 November	17 December	1. Open Registration 2. Microblog Submission due Date 3. Recap Likes 4. Presentation Day

Table 3. Event D-Day Presentation

No.	Duration	Lateness	Start Time	End Time	Description
1.	2 Hours	40 - 50 Minute	10.50	12.50	1. Late start due to previous agenda being late 2. 8 minutes lateness due to too short time presentation

- **Event Output**

The paper competition received a 71.4% satisfaction rate, with 84.8% recommending joining, and 100% would join the event again. Main room for improvement includes, tardiness of the presentation event, stricter rules, a presentation time of longer than 5 minutes, and a clearer guidebook. For the microblog competition, satisfaction rate was 83%, with 89% recommending joining, and 99% would join the event again. Main room improvements include, transparency of evaluation, more microblog samples, and more publication of the event. The topic of this competition is based on the ICAMT 2021 theme and aims the participants to research and spread awareness through design and paper related to sustainable development goals and climate change. Summary of Paper competition result consists of many innovations and research namely: Superstructure, Supercapacitor, Fuel cells, Green Extraction or new utilization for Li-Ion Battery and numerical methods. For microblog competition, the content consists of the importance of renewable, battery potential materials, smart energy system and Indonesia potentials for the future.

- **Paper Competition**

A total of 9 teams for paper competition. For the paper competition participants university in table 4 and study majors in table 5.

Table 4. Participants Universities

University	**Number of Participants**
Institut Teknologi Sepuluh Nopember	9
Institut Teknologi Bandung	6
Universitas Sebelas Maret	6
Universitas Padjadjaran	3
Universitas Gadjah Mada	3
Total	**27**

Table 5. Study Majors

Study Majors
Chemical, materials & metallurgical engineering
Engineering Physics
Chemistry
Biology
Physics

- **Microblog Competition**

A total of 11 teams for microblog competition with details in Table 6, 7, and 8.

Table 6. Microblog Participants Universities

University	Number of Participants
Universitas Gadjah Mada	9
Universitas Indonesia	4
Brawijaya University	1
President University	2
Jember University	2
Sepuluh Nopember Institute of Technology	2
Total	**20**

Table 7. Microblog Participants Study Majors

Study Majors
Agriculture
Electrical Engineering
Nuclear Physics
Economy
Physics

Table 8. Microblog Social Media Reach

Social Media Reach	**Number**
Followers	9.562
Likes	4.359

- **Participants Feedback**

1. Paper Competition

Overall feedback from the paper competition participants is that the satisfaction rate is 71.4%, with 84.8% would recommend the paper competition to others, and 100% would join the event again. With the priority of joining as follows: 1. Competition topic & theme 2. Internship possibility, 3. Prize.

There are 4 rooms for improvement on the event:

1. Tardiness of the event rundown for the presentation and awarding.
2. Presentation time being too short.
3. Guidebook being unclear in some of the instructions.
   Inconsistency in the rules leading to changes.

2. Microblog Competition

Overall feedback from microblog competition participants is that the satisfaction rate is 83%, 89% would recommend the microblog competition to others, and 99% would join the event again. With the priority of joining as the follows: 1. Competition Theme 2. Competition Topic 3. Competition Prize

There are 3 room for improvements on the event:

1. Transparency of the likes recap
2. More Microblog Samples
3. More Announcement in NBRI's Instagram

- **Conclusion**

The NBRI-YIC 2021 was conducted successfully, and finished on 17th of December 2021, participated by 9 teams for paper competition and 11 teams for microblog competitions or 45 total participants from universities background of Institut Teknologi Sepuluh Nopember, Institut Teknologi Bandung, Universitas Sebelas Maret, Universitas Padjadjaran, Universitas Gadjah Mada, Universitas Indonesia, Brawijaya University, President University, and Jember University with major studies of Chemical, Materials & Metallurgical engineering, Engineering Physics, Chemistry, Biology, Physics Agriculture, Electrical Engineering, Nuclear Physics, and Economy. Participant target was not reached, with only 40% or 20 out of 50 total participants, possibly due to the limited registration time, brand new event, limited publication form of only post and story with no reels and limited direct approach to student organization or directorate of student's affairs from each university.

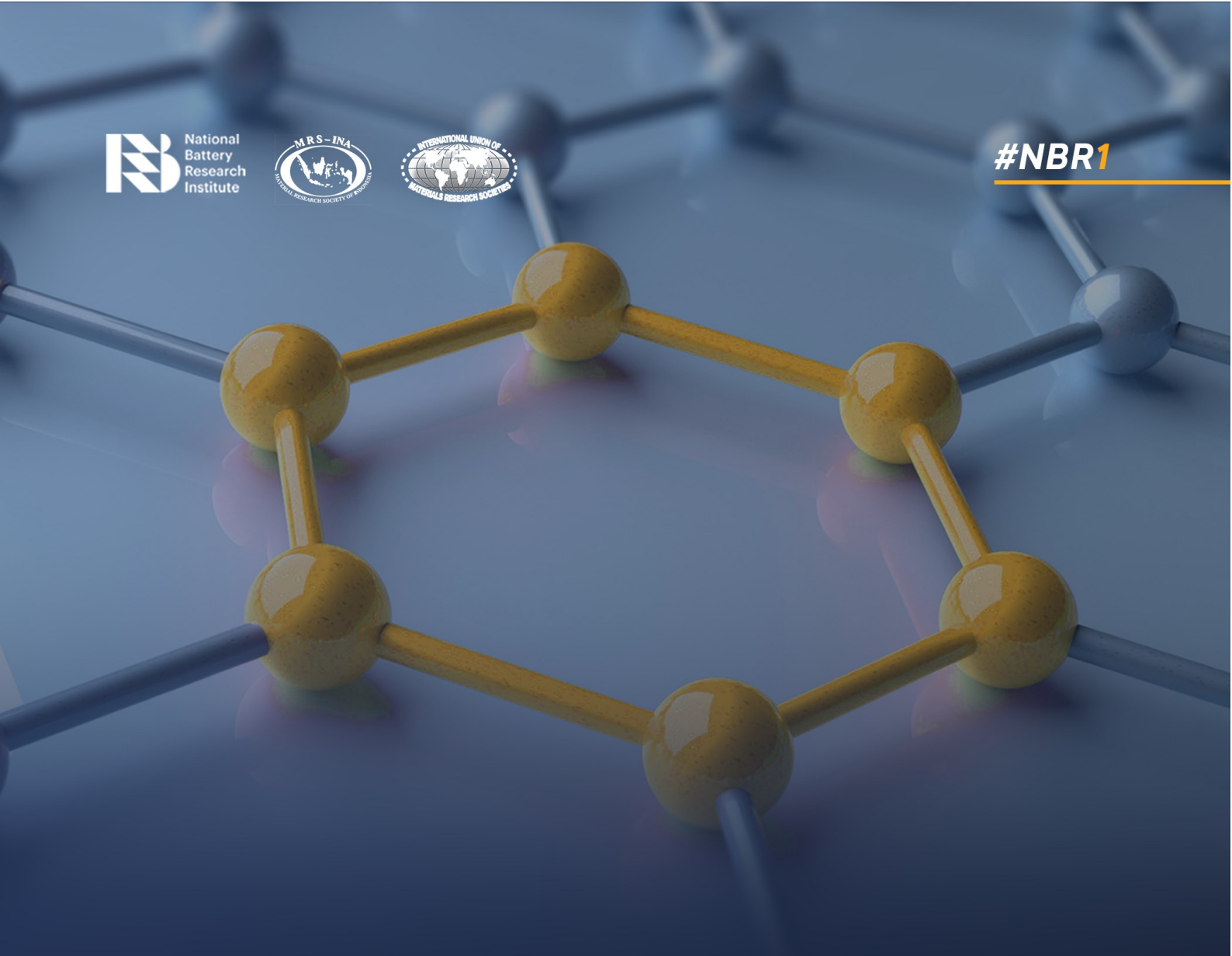
The paper competition received 71.4% of satisfaction rate, with 84.8% recommending joining, and 100% would join the event again. Major room for improvements includes, tardiness of the event, strict rules, longer presentation time, and clearer guidebook.

The microblog competition received 83% of satisfaction rate, with 89% recommending joining, and 99% would join the event again. Major room for improvements includes, transparency of evaluation, more microblog samples, and more publication.

The achievements serve as sufficient foundation for future NBRI-YIC to be organized, with a more meticulous planning and consideration for the event.

National Battery Research Institute

#NBR1



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