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EDITORIAL

Dear our valuable reader,

It is a great pleasure to provide you with the first ever issue of Journal of Batteries for Renewable Energy and Electric Vehicles (JBREV), namely Vol. 01 No. 01 (2023). The JBREV is established in 2022 by the National Battery Research Institute (NBRI) in collaboration with the Queen Mary University of London (QMUL), Material Research Society Indonesia (MRS-INA), and International Union of Material Research Societies (IUMRS). The JBREV is devoted to publish new and original research, article review related to battery materials, science & engineering that applicable to renewable energy and electric vehicles. The JBREV is for researchers and technology enthusiasts in all aspects of the science, technology, and applications of battery energy storage for renewable energy and electric vehicles.

The JBREV Vol. 01 No. 01 (2023) contains five articles discussing various aspects and applications of battery technology. There are 17 authors and co-authors in total, of those 5 articles, who come from various institutions (University of Gadjah Mada, Diponegoro University, Parahyangan Catholic University, National Battery Research Institute, National Research and Innovation Agency, University of Sultan Ageng Tirtayasa, University of Indonesia and Queen Mary University of London, UK).

"Reduced Graphene Oxide on Activated Carbon-Manganese Dioxide Composite Materials for High-Performance Supercapacitor Electrodes" was explored by A.C. Fachrudin collaborating with H. Sabarman from Department of Physics, University of Gadjah Mada, Yogyakarta, Indonesia. This study presents the addition of reduced graphene oxide (rGO) on the surface of activated carbon-manganese dioxide ($ACMnO_2$) composite material via high-temperature variations of 350 ºC to 450 °C to increase the specific capacitance of the $ACMnO_2$/rGO composite electrode. The addition of rGO on the surface of the $ACMnO_2$ composite material increased the specific capacitance by about 58% compared to without rGO, showing promises for high-performance supercapacitor electrodes.

"The Potency of Seawater Battery with NiHCF + C Cathode Paired to Wind Turbine for Generating Clean Electricity in Rural Area" was written by F. R. Pratama in collaboration with A. G. Pratama and B. Maisaroh from Department of Mechanical Design Engineering, Vocational School, Diponegoro University, Semarang, Indonesia. This research presents the potential analysis of seawater battery implementation with modified cathode, paired to wind turbine for generating electricity in rural area.

"Analysis Study on Scaling Up Production of Lithium-Ion Batteries (LIB) Cathode Material at National Battery Research Institute" was explored by R. A. F. Ramdhan, H. M. Ekaristianto, and Y. D. Goenawan from Department of Industrial Engineering, Faculty of Industrial Technology, Parahyangan Catholic University, Bandung, Indonesia. While M. W. S. Mubarok and E. Kartini from National Battery Research Institute, Bogor, Indonesia, M. Fakhrudin from Research Center for Advanced Materials, National Research and Innovation Agency, South Tangerang, Indonesia and A. J. Drew from Queen Mary University of London, United Kingdom become co-authors. This paper presents an insight for solving the biggest barrier to increase end-to-end battery production on an industrial scale: complexity of the manufacturing process and the number of machines used. Because the viability of the firm may be impacted by inaccurate calculations regarding the battery production chain. Investigating how to increase battery cathode production from a laboratory to an industrial scale is therefore important. National Battery Research Institute, one of Indonesia's top battery research centers, contributed as the study's subject.

"The Effect of Lithium Excess on NMC-721 using Oxalate Co-precipitation" was studied by R. D. Nanda from Department of Metallurgical Engineering, Faculty of Engineering, University of Sultan Ageng Tirtayasa, Serang, Indonesia. While S. A. Kristianto and E. Kartini from National Battery Research Institute, Bogor, Indonesia as well as M. Fakhrudin from Research Center for Advanced Material, National Research and Innovation Agency, South Tangerang, Indonesia contribute as co-author. This research presents the prospect of NMC-721 cathode for increasing Lithium-ion battery (LIB) performance. This research focused on synthesis NMC-721 precursors with the oxalate co-precipitation.

"Potential Application of Carbon Quantum Dots (CQD) Synthesis from Rice Husk Waste Composite as Advanced Solar Cells to Increase Photon Energy Absorption in Maximizing Solar Panels Power Output Production" was explored by A. H. Wibowo in collaboration with S. E. Andoko from Departmer i Geosciences, Faculty of Mathematics and Natural Sciences, University of Indonesia, Depok, Indonesia as as I. A. Satya from Department of Metallurgical and Material Engineering, Faculty of Engineering, University of Indonesia, Depok, Indonesia. This paper analyzes the Carbon Quantum Dots (CQD) application from rice husk waste for optimizing solar panel output production. Researchers use mixed study that applies literature review methods (as part of the descriptive research aspect) and causal comparative research methods (as part of the quantitative aspect). In addition, the absorption of photon energy that can be done by CQD solar cells has a higher percentage when compared to conventional solar cells.

Hopefully, this first edition of JBREV will give a prominent insight on battery technology development and its application that provide beneficial knowledge for all related stakeholders. On behalf of JBREV, I would like to thanks for all of your contribution and endless support that have enabled JBREV to publish its first issue. This could not have been reached without great efforts and cooperation from the editors, reviewers, management personnel, authors, and readers.

Chief Editor