PUBLIC ANNOUNCEMENT

The e-ASIA Joint Research Program (e-ASIA JRP)

Review Results of the 14th Call for Proposals in the Field of Cooperation in Alternative Energy

As of December 15, 2025, the e-ASIA JRP Secretariat together with the participating Member Organizations are delighted to publicly announce the awarded projects from the e-ASIA Joint Research Program (e-ASIA JRP*[1]) in the 14th Call for Proposals in the field of cooperation in Alternative Energy with a focus on the call topics of Hydrogen (Production & Storage; Biohydrogen & Hydrogen from waste), Fuel (Biofuel & Aviation Fuel), and Energy Storage.

This call received a total of 61 proposals, reflecting significant interest and collaboration in this research area. Following a thorough evaluation process, which included joint reviews conducted by six funding organizations from six participating countries*[2], the following five collaborative projects have been selected for support. These projects have been approved by the e-ASIA JRP Board and will receive funding for a duration of three years.

Proposal Number: AE1403

Analysis of Multi-Scale Ion Transport Behaviors and Synergistic Regulation Strategies for Quasi-Solid-State Lithium-Ion Batteries

to be jointly conducted by:

China	**Peng Tan** Professor, University of Science and Technology of China

Singapore	**Derrick Wen Hui Fam** Assistant Professor, Nanyang Technological University
Indonesia	**Anne Zulfia Syahrial** Professor, University of Indonesia

This project focuses on the ion transport and regulation mechanisms in next-generation quasi-solid-state lithium-ion batteries, aiming to enhance both safety and performance. Guided by the chain of "material design – mechanistic analysis – strategy optimization – device integration", this research integrates experiments, modeling, and simulations to conduct multi-scale investigations spanning materials, interfaces, and full-cell architectures. The anticipated outcomes include high-impact publications, invention patents, and comprehensive technical reports, which will advance joint technological breakthroughs and industrial ecosystem development of cutting-edge electrochemical energy storage technologies.

Proposal Number: AE1408

A Novel Integrated Biomass Gasification and Electrochemical Process to Produce High-Purity, Carbon-Negative and Cost-Effective Hydrogen

to be conducted jointly by:

Thailand	**Chularat Wattanakit** Associate Professor, Vidyasirimedhi Institute of Science and Technology
China	**Huanhao Chen** Professor, Nanjing Tech University
Japan	**Shinya Furukawa** Professor, The University of Osaka
Singapore	**Haobo Li** Assistant Professor, Nanyang Technological University

The cooperative innovation (BioGecH2) aims to develop a hybrid thermochemical-electrochemical system for carbon-negative biohydrogen production. The novel system integrates catalytic biomass gasification/reforming (CGR using CO2 as the oxidant) and electrochemical water-gas shift (EWGS) systems, both are underpinned by novel high-entropy alloys (HEAs). The novel technology removes longstanding technical barriers in

thermochemical biomass valorization, such as poor catalyst stability and cost-effectiveness, delivering enhanced operational efficiency and >99.99% pure H2 with negative carbon emissions.

Proposal Number: AE1413

Catalyst and Process Design for Green Selective Oxidation of Renewable Methane to Methanol

to be conducted jointly by:

China	**Wenting Wu** Professor, China University of Petroleum
Japan	**Kei Ohkubo** Professor, The University of Osaka
Indonesia	**Renanto Handogo** Professor, Institut Teknologi Sepuluh Nopember

This cooperative research project aims to selectively oxidize renewable methane (gas) into green methanol (liquid) via photocatalysis under mild conditions, providing a clean and practical technology for low-quality and dispersed methane utilization. We integrate high performance catalysts, the mechanisms study of C-H activation and product desorption, the tail gas treatment process, and optimization of process to improve conversion efficiency and selectivity in gas-solid phase methane conversion. This approach offers a decentralized and distributed solution for renewable methane utilization.

Proposal Number: AE1415

Novel Clathrate-based Hydrogen Storage Towards a Sustainable Hydrogen Economy: Mechanisms and Process Integration

to be conducted jointly by:

China	**Zhenyuan Yin** Associate Professor, Tsinghua Shenzhen International Graduate School

Thailand	**Pramoch Rangsunvigit** Professor, Chulalongkorn University
Singapore	**Praveen Linga** Professor, National University of Singapore

This cooperative research project aims to revolutionize the hydrogen ecosystem by proposing an innovative application of clathrate hydrates for effective hydrogen storage. By integrating multi-scale experimental mechanistic studies, numerical modelling, process simulations, and techno-economic analysis, the project seeks to develop efficient and sustainable hydrogen storage solutions tailored to the multiple hydrogen production scenarios, i.e., offshore wind to H2 for China and biomass to H2 for Southeast Asia nations. This project advances sustainable, cost-effective strategies for hydrogen storage and transportation, strengthening a resilient and integrated hydrogen economy from production to end-use.

Proposal Number: AE1458

Empowering Next-Generation Batteries: A Data-Driven Approach to High-Performance Composite Solid Electrolyte Design

to be conducted jointly by:

Japan	**Hiroshi Kakinuma** Assistant Professor, Tohoku University
China	**Jie Zhao** Associate Professor, Fudan University
Singapore	**Pengfei Ou** Assistant Professor, National University of Singapore
Indonesia	**Sudaryanto** Senior Researcher, National Research and Innovation Agency

This research project unites leading scientists from Japan, China, Singapore, and Indonesia to develop next-generation batteries by integrating data mining, simulations, experimental validation, and iterative refinement with the Dynamic Database of Solid-State Electrolytes (DDSE)—the largest SE database to date—we aim to achieve room-temperature ionic conductivity of 5 mS/cm and electrochemical window of 4.8 V vs. Li/Li^+.

This initiative accelerates (SSE) innovation Asia's carbon neutrality goals and sustainable energy storage advancements.

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*1 **The e-ASIA Joint Research Program (e-ASIA JRP):**

Through the acceleration of science and technology research exchange and collaboration in the East Asian region, the e-ASIA Joint Research Program (e-ASIA JRP) aims to strengthen research and development capabilities towards resolution of shared challenges across the region, including those associated with materials, alternative energy, agriculture, health research, disaster risk reduction and management, advanced interdisciplinary research towards innovation, and environment. As part of that objective, the e-ASIA JRP intends to support the multilateral collaborative research projects, which must consist of three or more countries.

e-ASIA JRP's Homepage: http://www.the-easia.org/jrp/

*2 **The List of 6 Participating Organizations**

In the 14th Joint Call for Proposals in the Field of Cooperation in Alternative Energy:

1) China: National Natural Science Foundation of China (NSFC)
   https://www.nsfc.gov.cn/
2) Indonesia: National Research and Innovation Agency (BRIN)
   https://brin.go.id/
3) Japan: Japan Science and Technology (JST)
   https://www.jst.go.jp/
4) Philippines: Department of Science and Technology, Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD)
   https://pcieerd.dost.gov.ph/
5) Singapore: Agency for Science, Technology and Research (A*STAR)
   https://www.a-star.edu.sg/
6) Thailand: National Research Council of Thailand (NRCT)
   https://www.nrct.go.th/home

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