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Japan Science and Technology Agency (JST)
5-3, Yonbancho, Chiyoda-ku, Tokyo 102-8666
URL https://www.jst.go.jp/EN

JST is to fund three research projects in the field of Hydrogen Technologies, coordinated by Japan and Germany within the framework of the Strategic International Collaborative Research Program (SICORP)

JST will fund three new international cooperation projects in the field of Hydrogen Technologies (Appendix 1). The projects will operate through the SICORP[*1] program, joint funded by JST and German funder BMBF[*2] following the 2x2 international academia-industry framework.

A joint call for proposals by JST and BMBF was held from June to September in 2021, and received a total of six proposals. Three were selected after evaluation by a panel of experts (Appendix 3). The projects will begin in April 2022, with a predicted research period of three years.

*1) SICORP: https://www.jst.go.jp/inter/english/index.html

*2) Federal Ministry of Education and Research (BMBF):
https://www.bmbf.de/bmbf/en/home/home_node.html

Attachments

Appendix 1: Abstracts of the new projects
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Contact

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Appendix 1: Abstracts of the new projects

	Project Title	Principal Investigator (JST side: Academia) Principal Investigator (JST side: Industry) Principal Investigator (BMBF side: Academia) Principal Investigator (BMBF side: Industry)	Position and Institution	Abstract of Project
1	Durable and Efficient Compound Electrodes for Hydrogen Generation in PEM Electrolysis	MIYAZAKI Kohei	Associate Professor, Graduate School of Engineering, Kyoto University	The objective of this research is to construct a polymer electrolyte membrane (PEM) water electrolysis electrode design with excellent durability and energy efficiency by introducing a new titanium current collector and pore titanium sheet, as well as a cathode using a new electrocatalyst. Specifically, the Japanese team will optimize the particle size distribution
		HORIKAWA Matsuhide	Executive Officer and General Manager, Technical Development Center, Toho Titanium Co., Ltd.,	

		SCHRODER Daniel	Professor, Institute of Energy and Process Systems Engineering, Technische Universität Braunschweig	and chemical composition of titanium powders, optimize the structure of titanium sheets with excellent gas diffusion properties, and increase the activity of the electrocatalyst used in the cathode, while the German team will fabricate a current collector using titanium powder, construct a water electrolysis cell, evaluate its durability and energy efficiency, and analyze it by numerical simulation. Through the joint research by the two teams, it will be possible to carry out the entire process of PEM water electrolysis from material development to performance evaluation in a complementary manner, which is expected to accelerate the speed of research and development for the coming hydrogen society.
		HICKMANN Thorsten	CEO, Eisenhuth GmbH & Co. KG	
2	Sustainable and Hydrogen-Compatible Sealing Materials: Key Element for Ensuring Safety and Diversity of Hydrogen Supply Network	SAWAE Yoshinori	Professor, Faculty of Engineering, Kyushu University	This joint project explores novel, environmentally friendly polymeric and elastomeric sealing materials which show secure sealability with enhanced low-friction and anti-wear characteristics in liquid and gaseous hydrogen for establishing safe,
		HONDA Shigenobu	Manager of technical planning section, NOK Corporation	

		GRADT Thomas	Head of Division “Tribology and Wear Protection”, Federal Institute for Materials Research and Testing (BAM)	efficient and diverse hydrogen supply network. Especially, the project focuses on static and dynamic sealing elements that have a crucial role of ensuring long term safety and efficiency of hydrogen supply network. Candidate materials are provided by the industrial members. Friction and wear tests in high temperature and high-pressure hydrogen gas are conducted in Kyushu University, and tribological behavior in liquid hydrogen under cryogenic conditions are evaluated in BAM. The mechanisms of the processes at tribo-interface are investigated through various surface analyses. By integrating the knowledge obtained for hydrogen in both thermodynamically extreme conditions, the project will establish an advanced sealing technology for hydrogen in various forms, which are supplied to the industrial members for further improvement of materials.
		RÖCKER Thorsten	Scientific Expert, Freudenberg Technology Innovation SE & Co. KG	
3	Green ammonia synthesis and utilization for marine transport by SOC	HORITA Teruhisa	Director, Research Institute for Energy Conservation,	This collaborative research aims to develop a new process for ammonia synthesis and direct utilization of ammonia in fuel cells.

	Technology		National Institute of Advanced Industrial Science and Technology (AIST)	Specifically, the Japanese research team will develop fuel electrodes in Solid Oxide Fuel Cells (SOFC) and clarify their degradation mechanism for the direct utilization of ammonia. The German team will develop a new ammonia synthesis process by utilizing Solid Oxide Electrolysis Cells (SOEC) with high efficiency. Through collaborative and complementary research among two countries, it is expected to propose a new energy loop concept based on green ammonia for energy storage, transport, and utilization, which is suitable for marine application.
		SUMI Hiroshi	Manager, MORIMURA SOFC TECHNOLOGY CO., LTD.	
		MIHAILS Kusnezoff	Head of Department of Materials and Components, Institute for Ceramic Technologies and Systems (IKTS), Fraunhofer Institute	
		MICHAEL Haid	CEO, EDL Anlagenbau Gesellschaft mbH	

Appendix 2: Abstract of the joint call for proposals

Funding agencies:
Japan side: JST
Germany side: BMBF, Federal Ministry of Education and Research
https://www.bmbf.de/bmbf/en/home/home_node.html

Field
Projects must be joint research between the two countries in the field of Hydrogen Technologies

Eligibility
Japan side: any independent researcher personally affiliated with (and actively conducting research at) a domestic Japanese research institution, regardless of nationality, is eligible to apply.

Research period
3 years

Amount of funding
Japan side: up to 54.6 million yen from JST to the researchers (Japan side) per project over 3 years, including overhead costs (30 percent of direct costs).

Evaluation method
Based on evaluation by experts from the two countries and discussion between JST and BMBF.

Evaluation criteria

I. Fulfilment of the formal prerequisites for funding

II. Compliance with “1: Aim and purpose of program” and “2: Object of funding” in the call document

III. Scientific and technological criteria

a. Quality and originality of the project

b. Scientific and technological expertise of the applicant and the German and Japanese partners involved

c. Scientific benefits and prospects for the exploitation of the expected results

IV. Criteria concerning international cooperation

a. Experience of the applicant in international cooperation

b. Establishment of new or consolidation of already existing bilateral/international partnerships

c. Quality of the cooperation and added value for partner institutions

V. Plausibility and feasibility of the project (financing; milestones; time frame)

Appendix 3: Experts for the evaluation (Japan side)

Member Name	Position and Institution
KATO Masako*	Professor, School of Biological and Environmental Sciences, Kwansei Gakuin University
IIYAMA Akihiro	Director, Fuel Cell Nanomaterials Center, University of Yamanashi
ISHITANI Osamu	Professor, School of Science, Tokyo Institute of Technology
EGUCHI Koichi	Professor, Graduate School of Engineering, Kyoto University
KITAGAWA Naomi	Professor, Graduate School of Engineering, Tohoku University

* Program Officer