



KYOTO UNIVERSITY



March 18, 2020

Kyoto University
Sumitomo Chemical Co., Ltd.

Kyoto University and Sumitomo Chemical to Start Joint R&D of Solid-Type Batteries for Practical Implementation

Kyoto University and Sumitomo Chemical Co., Ltd., agreed to jointly develop materials and component technologies that can lead to the practical implementation of solid-type batteries, which have drawn attention as a next-generation rechargeable battery technology. Based on this agreement, Professor Takeshi Abe of the Graduate School of Engineering and Faculty of Engineering at Kyoto University, along with his colleagues, with the support of Sumitomo Chemical, will hold a course focused on joint research between industry and academia. The course will be allocated laboratory-scale manufacturing facilities and battery performance evaluation devices, and will be held on Katsura Campus, Kyoto University, starting April 1, 2020.

Solid-type batteries contain a solid electrolyte instead of the liquid electrolyte that is used in conventional lithium-ion rechargeable batteries. As solid-type batteries use no flammable electrolyte, they are safer than the current mainstream lithium-ion rechargeable batteries, and are expected to achieve higher battery capacity, longer cycle life, and quicker charging. With these features, solid-type batteries are likely to be applied in a wide range of fields, such as small consumer batteries for information devices, wearable devices, and medical use, which are indispensable to our daily lives. They are also likely to be used as the next-generation batteries for electric vehicles, which require higher energy density and high output to achieve better cruising range and charging time.

Professor Takeshi Abe stated the following: “Solid-type batteries are the ultimate form of batteries, but they have not yet been mass-produced as medium- and large-sized batteries, such as those used in automobiles, because of high resistance at the interface between the active material and the solid electrolyte, among many other issues. In this course, we aim to develop a unique material for a further evolved type of solid-type battery to overcome such issues. To undertake fundamental research on materials for positive and negative electrodes, solid electrolytes, and the components that make up the interface, we will gather knowledge of inorganic, organic, polymer, electrochemical, and computational chemistry. In this joint effort between industry and academia, we will engage in thorough and deep discussions to clarify the nano interface phenomenon, optimally design a solid-type battery system, and aim to build a new solid-type battery that makes both safety and high energy density possible.”

Kyoto University will utilize this joint research between industry and academia to lead the world in the energy storage field from the basic research level, making the best use of ideas based on its over 120 years history and traditions, as well as its flexible future-oriented ideas for the next generation. In the meantime, the university will foster human resources to become drivers of the materials field, and take on the challenge of delivering world-first research results, which will become new innovations.

Hiroshi Ueda, Executive Vice President of Sumitomo Chemical said the following: “Sumitomo Chemical has set forth contributing to mitigating impacts on the environment as one of the essential material issues to be tackled by management. Combining Kyoto University’s extensive and in-depth basic research skills with our experience and expertise in commercializing various materials and the manufacturing capability we have cultivated to date by learning from a number of failures, we will develop solid-type batteries and contribute to the building of a sustainable society.”

As part of its Corporate Business Plan, Sumitomo Chemical has been building its own innovation ecosystem to create new businesses in four key areas: mitigating impact on the environment, healthcare, food, and ICT. Through open innovation with academia and startups, the company will pursue research and development from a long-term perspective. Using the innovative technologies obtained as a result, the company will work on the development of high-performance materials, which may bring new solutions in various industrial fields.

Outline of the course on joint research between industry and academia

Name of the Course:

Solid-type Battery System Design

Course Representative:

Professor Takeshi Abe, Graduate School of Engineering and Faculty of Engineering, Kyoto University

Participating Professors:

Professor Hiroshi Kageyama, Graduate School of Engineering and Faculty of Engineering, Kyoto University

Professor Makoto Ouchi, Graduate School of Engineering and Faculty of Engineering, Kyoto University

Associate Professor Kazuhiko Matsumoto, Graduate School of Energy Science, Kyoto University

Note:

Members from Sumitomo Chemical will participate as a specially appointed professor, specially appointed associate professors, and researchers.

Course period:

From April 1, 2020 to March 31, 2023 (3 years)

Contact

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