February 27, 2025
Idemitsu Kosan Co.,Ltd.

# Idemitsu has decided to construct a large-scale production facility for lithium sulfide, an intermediate raw material for the mass production of all-solid-state battery materials (hereinafter referred to as “solid electrolytes”).

## Promoting the establishment of an integrated value chain with the aim of commercializing all-solid-state batteries in 2027 to 2028

**Idemitsu Kosan Co.,Ltd. (Head Office: Chiyoda-ku, Tokyo; Representative Director, President and Chief Executive Officer: Shunichi Kito; hereinafter referred to as “Idemitsu”) has decided to construct a large-scale production facility for solid electrolytes (hereinafter referred to as “Li2S large-scale facility”), a material used in all-solid-state lithium-ion rechargeable batteries (hereinafter referred to as “all-solid-state batteries”). We will expand our production capacity of lithium sulfide, an important intermediate raw material for solid electrolytes, to the world’s top class level (equivalent to 3 GWh/year of storage batteries) and establish an integrated value chain from raw materials to intermediate materials and products. Idemitsu will steadily meet the needs of automakers and battery manufacturers, aiming to commercialize all-solid-state batteries in 2027 to 28, and thenceforth accelerate the commercialization of solid electrolytes.**

The planned construction site for the Li2S large-scale facility is within the premises of our Chiba Complex (Ichihara City, Chiba Prefecture), with construction scheduled to be completed in June 2027. This initiative has been approved by the Ministry of Economy, Trade and Industry as a “plan for ensuring supply of storage batteries,” and of the total project cost of approximately 21.3 billion yen, approximately 7.1 billion yen is planned as the maximum grant amount. Idemitsu will accelerate mass production of solid electrolytes with lithium sulfide produced by this facility as the base material and widely deliver high-performance solid electrolytes to various customers. This will contribute to the government’s policy of strengthening the storage battery supply chain and improving the competitiveness of Japan’s storage battery industry.

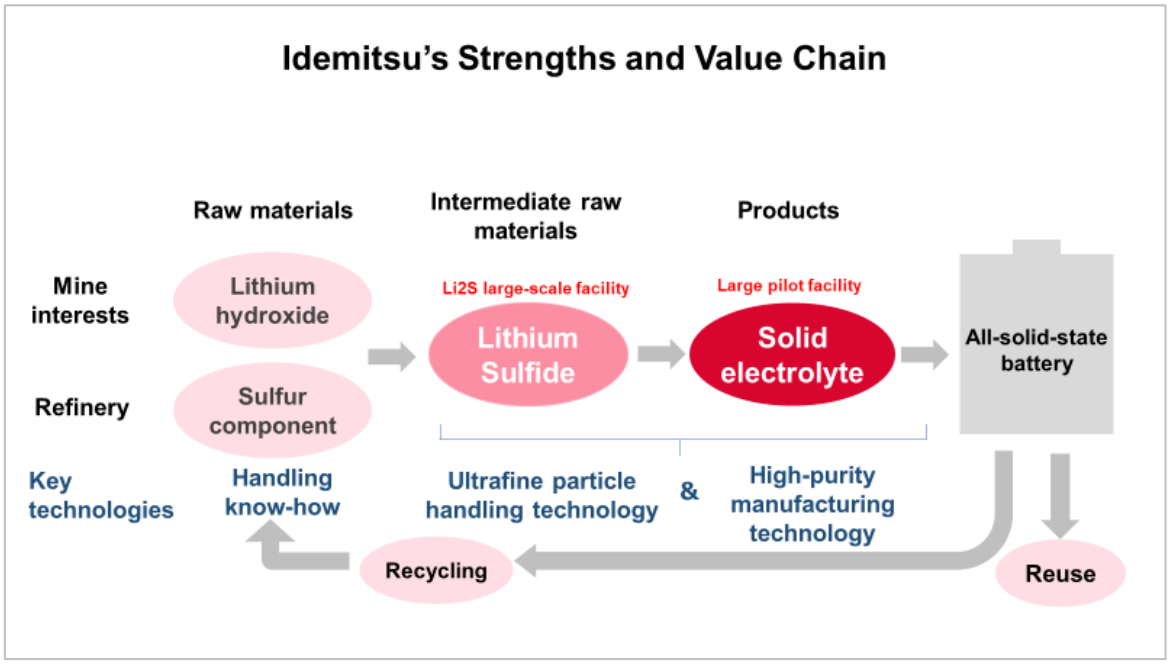


Image of Idemitsu’s value chain centered on solid electrolytes

Compared to conventional liquid batteries, all-solid-state batteries have a solid electrolyte, which allows ions to move faster. Therefore, EVs equipped with all-solid-state batteries are expected to have the potential to further reduce charging time and increase power output. In addition, because they are resistant to high voltage and high temperature, all-solid-state batteries are expected to improve energy density and lengthen service life.

With a view to the commercialization of all-solid-state batteries in 2027 to 28, Idemitsu is promoting the development of solid electrolytes, an essential material for all-solid-state batteries, and the establishment of a mass production system. Currently, two small-scale verification facilities are in operation, and following these, the basic design of a large pilot facility was started in October 2024. The decision to construct an Li2S large-scale facility on this occasion was made because mass production of lithium sulfide, an intermediate raw material, is essential for the mass production of solid electrolytes in the future.

Lithium sulfide is an important intermediate raw material for our solid electrolytes, which are produced from sulfur components generated as a byproduct in the manufacturing process of petroleum products. Among the first to discover the usefulness of the sulfur component, Idemitsu established mass production technology for lithium sulfide in 1994. Taking advantage of our know-how gained through years of handling sulfur components, which are difficult to handle, and our proprietary technology for producing high-purity lithium sulfide, we plan to conduct world top-class mass production using the Li2S large-scale facility.

The mass production of lithium sulfide is a major step toward achieving our goal of commercializing solid electrolytes. By improving the performance of solid electrolyte and accelerating the development of mass production technologies, and steadily building a value chain, we aim to contribute to the social implementation of all-solid-state batteries, which are considered the mainstay of next-generation batteries.

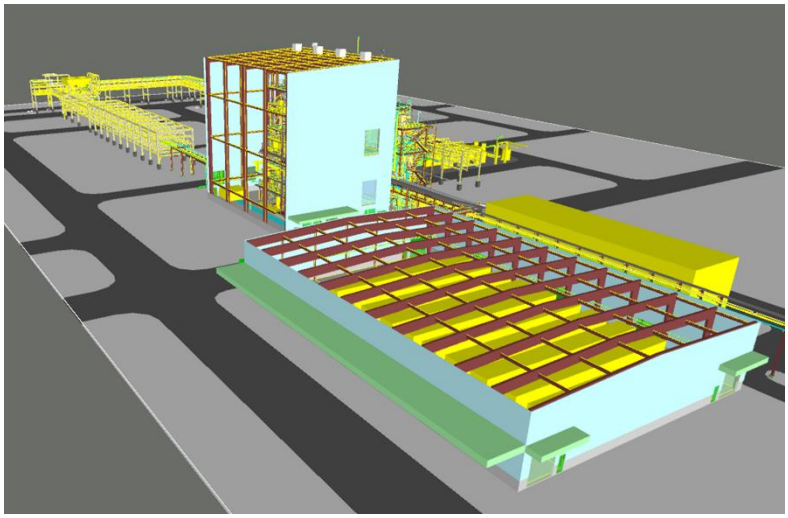

Image of Li2S large-scale facility

Lithium Sulfide

[Reference]
Ministry of Economy, Trade and Industry “Ensuring a Stable Supply of Storage Batteries” (Japanese Only)
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Interview with employees: Passing on the baton of technology and making solid electrolytes the global standard. Thoughts on development and mass production (February 27, 2025)
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Press release: Basic Design of Large Pilot Facility Begins for Commercialization of All-Solid-State Batteries (Solid Electrolytes) (October 28, 2024)
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