

## **“All Polymer Battery” Startup APB Closes JPY8Bn Financing**

APB Corporation (“APB”), a pioneer in development of next-generation lithium-ion batteries called “All Polymer Battery,” has raised approx. JPY 8 Bn (approx. USD 80 Mn) from a group of investors including JFE Chemical Corporation, JXTG Innovation Partners Godo Kaisha (a corporate venture capital of JXTG Holdings, Inc.), Keio Innovation Initiative, Nagase & Co., Ltd., Obayashi Corporation, Teijin Limited, and Yokogawa Electric Corporation (in alphabetical order).

APB is a startup developing and manufacturing the first large scale bipolar lithium-ion battery modules called All Polymer Battery, which was co-developed by Hideaki Horie, current CEO of APB, and Sanyo Chemical Industries, Ltd. (“Sanyo Chemical”). To realize high-quality batteries, we have developed a bipolar structure where current flows across the cell interfaces perpendicular to the electrode plane, and polymer as a basic material. The electrode material of All Polymer Battery is wrapped with gel-like polymer containing an electrolytic solution, which is realized by surface activity control technology of Sanyo Chemical. Through the adoption of such technologies, our All Polymer Battery is characterized by such features as high reliability, high energy density, and innovative manufacturing processes at the same time. With fewer parts needed thanks to bipolar structure and polymer-based constituent material, All Polymer Battery has high flexibility in size and shape of the cells, which will help us to create thicker electrodes and larger cells.

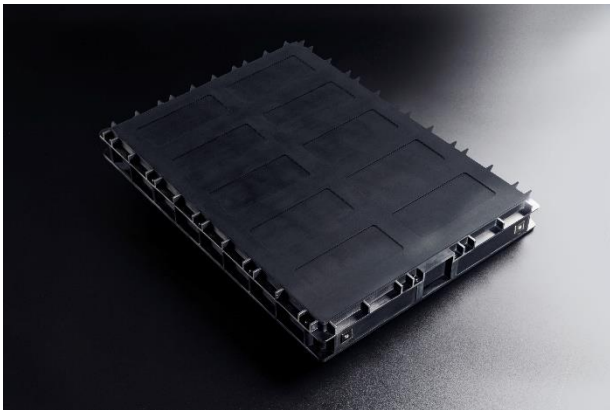
The raised funds will mainly be used for building a new mass-production plant of All Polymer Battery. The funding will also help us establish mass-production technology, and start manufacturing and sales of the batteries. By welcoming a new group of leading companies in each field as investors, we will accelerate our expansion and growth.

“Traditionally, people have thought that current collectors should be made from metal, in order to minimize internal resistance of the batteries. We have developed a bipolar structure where current flows across the cell interfaces perpendicular to the electrode plane, and polymer as basic material for the first time in the world. With the strong support of existing and new investors, we will implement the manufacturing process of All Polymer Battery in our new plant and put into effect this technology in our society,” said Hideaki Horie, founder and CEO of APB.

“The importance of batteries and energy storage system is continuing to grow, as they will meet the various needs such as private power generation, storage, electricity liberalization, renewable energy, the upgrade of power infrastructure with IoT technology, and disaster response. All Polymer Battery, which is characterized by no fire, even when it is fully charged and damaged by drilling or cutting, high flexibility in size and shape, and low-cost manufacturing,



will improve our life and contribute to creating sustainable society. As a shareholder of APB, Sanyo Chemical will support commercialization of All Polymer Battery, together with existing and new business partners. After the merger with Nippon Shokubai Co., Ltd. scheduled on October 2020, we will continue to devote our management resources to the All Polymer Battery business and support APB," said Takao Ando, President and CEO of Sanyo Chemical, one of the largest investors of APB



All Polymer Battery module  
(Approx. 550 x 400 x 50 mm)



Inner structure  
Bipolarly connects 40 battery cells in series

### **About APB Corporation**

Since: October 2018

CEO : Hideaki Horie

Business Area: R&D, production and sales of lithium ion batteries

Head Office Location: 4-12 Kanda Iwamotocho, Chiyoda-ku, Tokyo



### **About Sanyo Chemical Industries, Ltd.**

Since: November 1949

President & CEO: Takao Ando

Business Area: Development, manufacture and sales of performance chemicals

Head Office Location: Ikkyo Nomotocho, Higashiyama-ku, Kyoto



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