

September 24, 2021

Toshiba Corporation
Sojitz Corporation
CBMM

**Toshiba, Sojitz and CBMM Partner to
Commercialize Next-Generation Lithium-ion Batteries**

Toshiba Corporation (President and CEO: Satoshi Tsunakawa; Head Office: Tokyo, Japan; hereinafter “Toshiba”), Sojitz Corporation (President and CEO: Masayoshi Fujimoto; Head Office: Tokyo, Japan; hereinafter “Sojitz”), and CBMM (President and CEO: Eduardo Ribeiro; São Paulo, Brazil), have entered into a joint development agreement for the commercialization of next generation lithium-ion batteries using niobium titanium oxide (NTO) as the anode material.

One of the major requirements for rechargeable battery development is greater energy density and faster charging. NTO has twice the theoretical volume density of the graphite-based anode generally used in lithium-ion batteries, and in June 2018 the three companies entered into a joint agreement to develop NTO’s potential as an anode material. This work, led by Toshiba’s Corporate Research & Development Center, has reached fruition with the development of prototype cells, and the companies have now agreed to extend collaboration for accelerating development of mass production processes and the early commercialization of next-generation lithium-ion batteries.

The three companies aim to commercialize high energy density, quick charging batteries in FY2023, mainly targeting application in commercial e-vehicles. CBMM has contracted with Volkswagen Caminhões e Ônibus*, a pioneer in the development and serial production of electric trucks in Latin America, to further mature this technology in real application. Toshiba and Sojitz will support this project. This time, NTO battery will be installed on new electric vehicle designed by Volkswagen Caminhões e Ônibus as a pilot project and parties will collect the valuable vehicle operation data.

Niobium (Nb), one of the metallic element, is an important additive in the production of high-grade steel alloys, including high-tensile and stainless steel, and its ability to enhance strength while reducing weight has made it indispensable for automotive applications. Brazil-based CBMM is the world’s leading producer of niobium and is well-known for its strong technology and product development programs. As CBMM’s shareholder and distribution agent in the Japanese market, Sojitz has cultivated the knowledge and capabilities needed to establish a stable supply system and assist in the development of different applications for niobium.

Towards commercialization, Toshiba aims to secure stable supply of niobium materials from CBMM and Sojitz, and the three companies will target to gain market share in the

rapidly expanding secondary battery market by utilizing CBMM and Sojitz's global network.

Related Information:

Toshiba Corporation

Established:

July 1, 1875

President and CEO:

Satoshi Tsunakawa

Capital:

JPY 200,558 million (as of March 31, 2021)

Sales:

JPY 3,054.4 billion (FY2020)

Sojitz Corporation

Established:

April 1, 2003

President and CEO:

Masayoshi Fujimoto

Capital:

JPY 160.339 million (as of June 30, 2021)

Sales:

JPY 1,602.5 billion (FY2020)

CBMM

Established:

1955

President and CEO:

Eduardo Ribeiro

Capital:

Undisclosed

Sales:

Undisclosed

* A member of the TRATON Group, Volkswagen Caminhões e Ônibus is the manufacturer of commercial vehicles Volkswagen and MAN, one of the largest manufacturers of trucks and buses in Latin America.



Prototype cell & Niobium Titanium Oxide (NTO)

TOSHIBA



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