

June 19, 2018

Toshiba Infrastructure Systems & Solutions Corporation  
Sojitz Corporation  
Companhia Brasileira de Metalurgia e Mineração

Joint Research and Development Agreement  
on Next-Generation Lithium-ion Battery Material

Toshiba Infrastructure Systems & Solutions Corporation (Representative Director: Shinichiro Akiba; Head Office: Kawasaki-shi, Kanagawa; “Toshiba”), an operating company of Toshiba Corporation, Sojitz Corporation (Representative Director: Masayoshi Fujimoto; Chiyoda-ku, Tokyo; “Sojitz”), and Companhia Brasileira de Metalurgia e Mineração (Representative Director: Eduardo Ribeiro; São Paulo, Brazil; “CBMM”), have concluded a joint agreement on the development of anode material for lithium-ion batteries using Niobium Titanium Oxide (NTO). The three companies will cooperate in the development of a next generation lithium-ion battery material characterized by its high-energy density and ultra-rapid recharging capability required for automotive applications.

Toshiba launched the SCiB™ in 2008 as a safe, long-life, fast-charging lithium-ion battery employing a lithium titanium oxide anode (LTO), and since then, the company has continued to improve energy density of the battery. In 2017, Toshiba succeeded in developing a next-generation SCiB™ using NTO anode instead of the LTO. The new anode material, NTO, achieves double lithium storage capacity volume compared to the graphite-based anode generally used in lithium-ion batteries.

Niobium (Nb) is an important alloy element used as an additive in the production of high-grade steel products, such as high-tensile and stainless steel. It is an indispensable metal especially for its ability to enhance strength yet able to reduce weight namely for automotive applications. CBMM is the top worldwide producer of niobium with a strong technology and product development program. As CBMM’s shareholder and distributing agent in the Japanese market, Sojitz has accumulated the knowledge and capabilities to establish a stable supply system and assist in the development of different applications for niobium.

Through the development and evaluation process, Toshiba aims to establish a cost competitive and stable specification of the new battery electrode, using niobium oxide provided by CBMM and Sojitz. Toshiba also aims to establish a material supply chain and commercialize production of the next generation SCiB™ starting in FY2020.

As applications for electric vehicle-use rechargeable batteries continue to expand and diversify, there is a growing need for batteries with higher energy density and ultra-rapid recharging. Toshiba, CBMM, and Sojitz will accelerate the development of the rechargeable battery business to meet this demand.



[At the Signing Ceremony for the Joint Development Agreement]

From left to right: Toshiba Infrastructure Systems' Director Shun Egusa,  
CBMM's CTO Marcos Stuart, and  
Sojitz EO Masaaki Bito

Related Information:

[Company Overview - Toshiba Infrastructure Systems & Solutions Corporation]

Established	July 1 <sup>st</sup> , 2017
Representative Director	Shinichiro Akiba, President & CEO
Capital	JPY 10 billion
Sales	JPY 124.68 billion

[Company Overview – Sojitz Corporation]

Established	April 1 <sup>st</sup> , 2003
Representative Director	Masayoshi Fujimoto, President & CEO
Capital	JPY 160.339 million
Sales	JPY 420.91 billion

[Company Overview – Companhia Brasileira de Metalurgia e Mineração]

Established	1955
Representative Director	Eduardo Ribeiro

**TOSHIBA**  
Leading Innovation >>>

 **sojitz**  
New way, New value

 **CBMM**

# News Release

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