Epsilon and Korea's Daejoo join hands to develop Gen-1 Silicon-Graphite composite to boost EV Li-Ion Battery discharge capacity by over 50%

Mumbai, November 7, 2024: Epsilon Advanced Materials (EAM), is a leading global manufacturer of environmentally conscious lithium-ion battery (LiB) anode & cathode materials. Daejoo Electronic Materials (Daejoo) from South Korea is one of the leading global producers of Silicon Anode Materials for lithium-ion battery (LiB).

Epsilon Advanced Materials (EAM) and Daejoo, have announced a joint development program to develop a Silicon-Graphite composite (Graphite-rich) by combining Epsilon's Graphite and Daejoo's Silicon material. The companies aim to develop a product that outperforms current material technology used in LiB, delivering enhanced performance and efficiency. Nagase, a Japanese trading company, played a role developing the partnership between the two companies.

Under the joint program, the companies have set an ambitious target of developing Gen-1 Graphite rich Silicon composite Anode Materials for LiB with capacity of 450 - 600 mAh/g, thereby increasing discharge capacity by 50% and life span by thousands of cycles.

EAM will supply synthetic Graphite, which will be used to create and evaluate SiOx-Graphite composites in Daejoo's laboratories. Conversely, Daejoo will provide samples for the same purpose, allowing EAM to tailor and test SiOx-Graphite composites in its own labs. Both companies aim to qualify the SiOx-Graphite composite materials with their customers to develop innovative products. According to EAM's current schedule, the 1st stage development and evaluation of the SiOx-Graphite composite material are expected to be completed by end of 2024 and then explore the material qualification with cell manufacturers jointly.

Vikram Handa, Managing Director of Epsilon Group said, "We are excited to announce our partnership with one of the world's leading producers of Silicon Anode materials to develop revolutionary battery material technology. This collaboration shows our dedication to accelerating India's & global transition to clean energy and sustainable mobility. Through continuous R&D efforts like these, we are committed to pioneering advancements in battery innovation. Upon successful completion of our rigorous in-house evaluation processes, we will be well-equipped to meet the evolving needs of the mobility industry by providing high-performance, safe battery solutions."

Dae Woon Park, Managing Director of Daejoo Electronic Materials said, "This partnership marks a significant step forward in our mission to innovate and enhance battery performance. Collaborating with EAM, not only strengthens our presence in the rapidly growing Indian market but also aligns with our global strategy of developing advanced materials tailored to the diverse needs of customers and the market. With EAM, we aim to develop cutting-edge battery materials that will drive sustainable progress and deliver unparalleled value to our customers and stakeholders."

Silicon-Graphite battery materials represent a significant advancement in lithium-ion battery technology. By combining the high capacity of silicon with the stability of Graphite, these materials offer a superior alternative to traditional Graphite Anodes, meeting the increasing demands for higher performance, longer life, and fast charging in modern battery applications. This makes them particularly well-suited for the evolving needs of the automobile industry and other high power demand sectors.

About Epsilon Advanced Materials

Epsilon Advanced Materials Pvt. Ltd. (EAMPL), established in 2018 is a subsidiary of Epsilon Carbon Pvt. Ltd., is dedicated to developing sustainable and high-performance battery i.e. anode & cathode active materials for strengthening the domestic & global battery material supply chain. The company has successfully commissioned India's 1st Graphite Anode material customer qualification plant in Bellary, Karnataka with plans to produce 30,000 tons/annum by 2026 which will scale up to 100,000 tons/annum by 2030.

Epsilon Advanced Materials has made strategic investments globally, including a $650 million investment in North Carolina for graphite anode material facility with 60,000 tons capacity by 2030 and a graphite processing plant in Finland, Europe with an investment of Euro 600 million for 60,000 tons capacity by 2030. EAMPL recently forayed into lithium-ion phosphate (LFP) based Cathode Active Material business through a technology center in Germany reflects its commitment to technological advancement in the battery industry. EAM also plans to build India's 1st Cathode Active Material manufacturing facility with 10,000 tons by 2026 to scale up-to 100,000 tons/annum by 2031. These initiatives align with its mission to support the global battery industry and contribute to sustainable development to Energize the World. For more details: www.epsilonam.com

About Daejoo Electronic Materials

Daejoo Electronic Materials, founded in 1981, is a leading South Korean company specializing in advanced materials for the electronics and automotive industries. The company is particularly well-known for its silicon anode materials, which are critical for enhancing the performance of lithium-ion batteries, especially in electric vehicles (EVs). Daejoo was the first company to commercialize high-efficiency silicon anode materials, which offer up to 10 times the energy capacity of traditional graphite-based anodes. This innovation has positioned Daejoo as a key player in improving battery energy density and overall performance.

Currently, Daejoo is the only company successfully mass-producing silicon anode materials and is supplying these materials to three of the top six global battery manufacturers. This further emphasizes the company's leadership in the silicon anode market Major customers include LG Energy Solution, with Daejoo's technology also featured in high-end electric vehicles such as the Porsche Taycan.
To meet the increasing demand in the EV market, Daejoo has steadily expanded its production capabilities, increasing annual silicon anode production from 1,000 tons in 2021 to 3,000 tons by 2024, with plans to reach 100,000 tons by 2030. Daejoo is advancing the development of next-generation silicon anode materials, aiming to achieve greater performance improvements for both EVs and consumer electronics and power tools. The company's strategic focus on production capacity and research and development underscores its leadership in the next-generation battery materials market. For more details: www.daejoo.co.kr

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