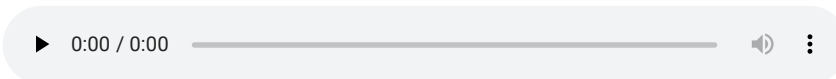




## Why Sila's Next-Generation Si-Anode Material Will Help Drive EV Adoption

By Lynn Walford - May 18, 2022

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Sila is making the next-generation silicon anode material, which it believes will help drive electric vehicle sales. On 17 May, Mercedes-Benz announced that Sila's silicon anode chemistry will optionally be available in the upcoming electric Mercedes-Benz G-Class.

Kurt Kelty, Sila VP of Commercialization, tells Auto Futures how the company plans to improve energy density using green materials and reduce the price of batteries.

Kelty led the battery team at Tesla for over a decade. Gene Berdichevsky, CEO and co-founder of Sila was the seventh employee at Tesla and worked as the battery lead creating the first battery packs. Gleb Yushin, Co-Founder and CTO is also a Professor of Materials Science at the Georgia Institute of Technology.

"We have an excellent team, from semiconductor, energy, automotive, and materials science with great IP that sets us apart," says Kelty.

He describes the Alameda-based Sila as the largest funded battery company ever – with \$925 Million in funding and three hundred employees.

"We have been developing the technology for ten years with 50,000 interactions. We are driven and passionate about getting more EVs on the road. We created a material that enables customers to get a better product. The material enables better energy density and increased range," says Kelty.

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Sila silicon (Si) anodes that can replace graphite increase Li-ion cell energy density and can reduce Li-ion battery costs. A single Si atom can store four lithium atoms. To store the same four lithium atoms, you would need twenty-four carbon atoms in graphite anodes.

Another benefit of a silicon anode is it stores lithium in a much smaller volume. The thinner Si anodes enable much faster charging. Thinner electrodes allow the lithium ions to reach the anode particles much faster and easier.

“We have been shipping since September, from our research facility in Alameda,” says Kelty. He notes that the material works with existing battery manufacturing processes.



## Improving the Carbon Footprint of Vehicles

The WHOOP 4.0 fitness tracker is the first product using Sila materials in its battery.

Sila's Si-anode material enabled the WHOOP 4.0 to have 17% higher energy density, 33% reduction in size, 5-day battery life, upgraded waterproof battery pack and upgraded biometric features.

The company recently bought a 600,000 square feet facility in Moses Lake, Washington on 160 acres to produce their proprietary American-made anode material.

“The factory provides supply validation for larger production of anode material. We are going to mass-produce electric vehicle battery materials in early 2025,” says Kelty.

Mercedes-Benz and BMW are flagship investors. In a press release, Markus Schäfer, Member of the Board of Management of Mercedes-Benz Group AG, Chief Technology Officer responsible for Development and Procurement, says: “We're glad that in Sila we have a leading partner who will help us power our future generation of electric luxury vehicles with their highly innovative anode technology. Delivering such a high

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In a white paper, Sila reports: “Sila’s Si-anode increased energy density allows EV makers to pack more range into the same battery footprint. Sila’s Si-anodes lighten the body of the car and are compatible with fast-charge technology. Higher energy density drives down the cost per kWh. Using less anode material reduces the amount of electrolytes, separator, packaging and other materials needed for cell completion, which further reduces lithium-ion battery costs.”

Sila chose the Moses Lake location because it has cheap green electricity from hydro-power, says Kelty.

Kelty explains that there is pressure on electric automakers to show how green their vehicles are, carbon emissions and the integrity of their supply chains. By using Sila’s anode materials they can improve the carbon footprint of their vehicles.



## Sand is a Source for the Si-anode Material

“The key precure for our technology is silicon, derived from sand and energy. We work with our suppliers to ensure that they comply with our ethical standards and look to source input materials created with clean energy to lower our CO2 footprint,” said Berdichevsky in a statement to Auto Futures.

Sila’s white papers state its next-generation anode, using its novel chemistry and manufacturing process, can boost lithium-Ion energy density by up to 40% and power density by up to 100%.

In a white paper, co-authored by Berdichevsky, the company vision for cheaper, longer-lasting battery cells sourced from green materials is revealed.

“In the next five to ten years, we will see a \$50 per kilowatt-hour (kWh) lithium-ion (Li-ion) battery cell that’s capable of fast charging, 10,000+ cycles, over one-million miles, a 30-year calendar life, and produced with abundant raw materials found all around the world and recycled. The demand for such a battery would reach unprecedented levels,” explained the company.

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