

Enevate Commercializing New Low Cost Battery Technology Providing Extreme Fast Charging and Long Range for Electric Vehicles

Enevate Licensing its New 4th Generation Technology, Allowing for Gigafactory-scale EV Production

IRVINE, Calif. – January 14, 2020 – [Enevate](#), a pioneer in advanced silicon-dominant lithium-ion (Li-ion) battery technology capable of extreme fast charging for electric vehicles (EVs) announced its new 4th generation technology optimized for high volume commercialization and manufacturing at gigafactory scale. Enevate is providing a solution to a difficult problem for automotive OEMs and EV battery manufacturers – providing extreme fast charging with high energy density and at lower material cost than conventional Li-ion batteries, while being compatible with existing battery fabrication facilities.

The new XFC-Energy™ technology achieves 5-minute charging to 75 percent capacity with 800 Wh/L cell energy density. Today's conventional large-format Li-ion EV cells are at 500-600 Wh/L and typically take over 1 hour to charge.

“Mass EV adoption by consumers and fleet owners will depend to a large degree on advanced battery technology that will remove current barriers to entry such as long charging times and limited range,” said [Christian Noske](#), Chairman of Alliance Ventures (Renault-Nissan-Mitsubishi). “Enevate is a key enabler for electric vehicles that are affordable, easy and quick to charge, and clean.”

[Dr. John Goodenough](#), a recipient of the 2019 Nobel Prize in chemistry for groundbreaking work in the development of lithium-ion batteries and who has served on Enevate's Advisory Board since 2010, added: “I salute the Enevate team for reaching this next important step in fulfilling the company's mission to develop and commercialize innovative battery technologies to accelerate the adoption of electrified mobility.”

Enevate's 4th generation XFC-Energy technology stands to be a game-changer for the EV industry, providing a path to produce extreme fast-charge EV batteries at low cost and high-volume production. Enevate is currently working with multiple automotive OEMs and EV battery manufacturers to commercialize its technology for 2024-2025 model year EVs, utilizing existing manufacturing infrastructure with minimal investment required, a core goal of its development.

Enevate's 4th generation is the latest result of over 74 million hours of battery cell testing by Enevate's scientists, 1 million meters of electrodes produced in the company's R&D pilot line, and 2 billion test datapoints.

Enevate Founder and Chief Technology Officer Dr. Benjamin Park noted that Enevate's XFC-Energy technology has been designed for large-format pouch, prismatic and cylindrical EV cells, utilizing its pure silicon anode paired with nickel-rich NCA, NCM and NCMA advanced cathodes.

“Enevate's extreme fast charge technology enables a future where gas stations become drive-through EV charging stations – a win-win for consumers and the environment as electric vehicles replace those using gasoline,” Dr. Park said. “Enevate's technology will help close the usability gap between today's EVs and gas cars.”

Dr. Park will be discussing Enevate's technology on January 15 at the Advanced Automotive Battery Conference in Weisbaden, Germany, in a presentation titled “Charging Ahead: Commercializing Fast-Charge Si-Dominant Li-ion Cells for EVs.”

XFC-Energy Technology Technical Details

- Cell technology scalable for large-format pouch, prismatic and cylindrical EV cells suitable for various battery module and pack architectures. Achieves 800 Wh/L and 340 Wh/kg in large-format EV cells.
- Pure silicon-dominant anode technology tunable with 10-60µm thickness and 1000-2000mAh/g that can be paired with NCA, NCM811, NCMA, low-cobalt, or other advanced cathode technologies.
- Continuous roll-to-roll anode manufacturing processes designed and capable of achieving over 80 meters per minute electrode production, over 10 GWh per electrode production line, with pure silicon anode rolls greater than 1 meter wide and longer than 5 kilometers in length sufficient for high volume gigafactory production, among other features.
- Lower anode material cost (dollar per kWh) than conventional and synthetic graphite.
- Transformative performance improvement, with five-minute charge to 75 percent of battery capacity, and, when paired with a high-nickel cathode, capable of over 1000 cycles using an EV drive cycle test and operation at -20°C and below temperatures.
- Bottom line: Five-minute extreme fast charging, high energy density, low temperature operation, low cost and superior safety.

ABOUT ENEVATE (www.enevate.com)

Enevate develops and licenses advanced silicon-dominant Li-ion battery technology for electric vehicles (EVs), with a vision to charging EVs as fast as refueling gas cars and accelerating their mass adoption. With a portfolio of more than 200 patents issued and in process, Enevate's pioneering advancements in silicon-dominant anodes and cells have resulted in battery technology that features five-minute extreme fast charging with high energy density, low temperature operation for cold climates, low cost and safety advantages over conventional Li-ion batteries.

Enevate's vision is to develop and propagate EV battery technology that contributes to a clean and sustainable environment. The Irvine, California-based company has raised over \$110 million from investors including Renault-Nissan-Mitsubishi (Alliance Ventures), LG Chem, Samsung, Mission Ventures, Draper Fisher Jurvetson, Tsing Capital, Infinite Potential Technologies, Presidio Ventures – a Sumitomo Corporation company, Lenovo, CEC Capital and Bangchak. Enevate®, the Enevate logo, XFC-Energy™, HD-Energy®, and eBoost® are registered trademarks of Enevate Corporation.

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