Arbor’s Drop-In Electrode Technology Enables 10-Minute EV Charging at -10 °C

ANN ARBOR, MI, UNITED STATES, March 28, 2025 /EINPresswire.com/ -- A peer-reviewed study published today in Joule, a leading journal in sustainable energy research, confirms Arbor Battery Innovations’ proprietary 3D electrode platform delivers 10-minute fast charging in high-energy lithium-ion cells even at low temperatures—without compromising safety, cycle life, or compatibility with existing manufacturing processes.

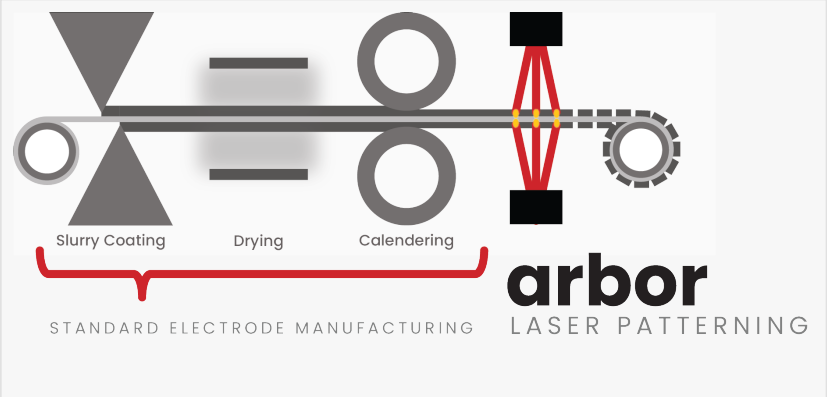
Developed in partnership with the University of Michigan, the breakthrough validates Arbor’s drop-in technology as a scalable, chemistry-agnostic upgrade to today’s lithium-ion batteries. The platform integrates seamlessly into conventional formats and production lines, eliminating the need for new materials, designs, or factory retooling.

“This is fast charging without compromise,” said Dr. Andrew Davis, CEO of Arbor. “We’re not asking battery makers to change chemistries or reconfigure production. Arbor fits into the battery factories of today—and delivers the performance tomorrow demands.”

Key Results from the Joule Study:

- 10-minute charge (6C) at temperatures down to -10 °C
- No lithium plating observed, even under fast-charging and low temperature conditions
- All in commercially relevant pouch cells using rapidly scalable processes that are drop-in compatible with current Li-ion manufacturing.

By enhancing charge uniformity and suppressing lithium plating—common challenges in high-rate cells—Arbor's platform enables step-order performance gains using current battery materials and processes. It is compatible across scales, from R&D to gigafactory, and across use cases from EVs to defense.



Built for the Battery Industry as It Is

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>
> *Dr. Andrew Davis, CEO*

The need for faster, safer, and more efficient batteries continues to grow across sectors—from automotive to aerospace. Arbor's platform meets these demands while preserving manufacturers' existing infrastructure.

"Battery makers have invested billions in their production ecosystems," said Davis. "We built a solution that honors those investments. Arbor drops in and delivers."

The full article is available here.

About Arbor Battery Innovations

Arbor Battery Innovations is redefining lithium-ion performance with its patented 3D electrode architecture and laser-enabled manufacturing process—delivering faster charging, higher energy density, and lower costs without disrupting existing production. Based in Michigan, Arbor's drop-in technology is built for seamless integration into today's battery lines and scalable for tomorrow's gigafactories.

Backed by the U.S. Department of Energy, the Department of Defense, and the State of Michigan, and developed in close partnership with the University of Michigan, Arbor is powering the next generation of energy storage—from electric vehicles and defense to grid-scale storage and portable electronics. Learn more at arborbi.com.

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