



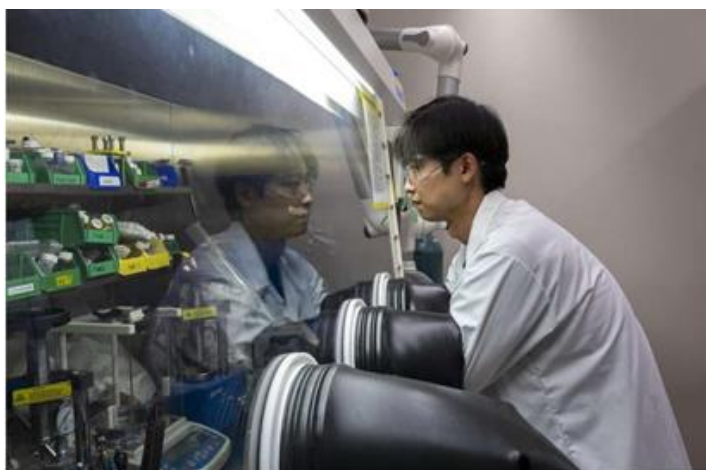
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Lithium-Sodium Solid-State Batteries

July 25, 2025



Sun Geun Yoon works in a glove box in McDowell's laboratory at Georgia Tech.
Credit: Christopher McKenney

A breakthrough in solid-state battery design that pairs lithium metal with sodium to enable operation at lower pressures, reducing bulkiness while maintaining high energy density, faster charging, and improved safety over traditional lithium-ion batteries. This innovation uses sodium's softness to prevent lithium from losing contact with the solid electrolyte, making the batteries more practical for real-world use.

Discussed in a [Tech Xplore article](#) on new metal designs for solid-state batteries, the article reports on researchers from Georgia Tech, led by [Matthew McDowell](#), with findings published in [Science journal](#). The design reduces the need for high-pressure plates that make batteries heavy, enabling lighter batteries. Using lithium-sodium batteries enables EVs with fast charging and ranges of 500+ miles on a charge, and provides extended battery life with applications in consumer electronics, cell phones, electric vehicles, and power grids for a more efficient, carbon-neutral world.

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