

SolidEnergy pushes ahead for better battery life in phones, cars

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SolidEnergy's novel "anode-less" battery prototype offers the same capacity in half the space of existing major battery manufacturers, increasing the volumetric energy density of mobile energy storage by 200 percent.

Innovative mobile device news is everywhere, presenting interesting form factors, from vendors eager to take marketplaces by storm with their information conduits and convenience and good looks—but battery technology to keep these devices running lags. Consumers wonder when good battery ideas as well as good mobile device ideas will translate to breakthroughs ready for primetime. Massachusetts-based SolidEnergy, a spinout of MIT, is eagerly making its mark with a battery design two times the energy density of today's lithium ion batteries.



Last year, they announced a prototype cell offering a volumetric energy density of over 1200 watt hours per liter independently validated by A123 Systems. SolidEnergy defines itself as a "battery materials" company enabling "near anode-less" design, able to deliver "unprecedented energy density" to <u>battery manufacturers</u>. The company's design consists of an ultra-thin metal anode made of thin lithium on copper, which enables ultra-high energy density, and highefficiency electrolyte, which enables high current density at room temperature. In talking about high energy density, the company said that the Solid Polymer Ionic Liquid (SPIL) electrolyte enables the ultra-thin lithium metal anode and improves the cell-level <u>energy density</u> by 50 percent compared to graphite anodes and 30 percent compared to siliconcomposite anodes.

Chris Luo of *South China Morning Post* said that batteries made with SolidEnergy's technology could potentially last twice as long as current batteries of the same <u>size</u> or take up only half the room. Kevin Bullis in *MIT Technology Review* said, "while other prototype batteries can be recharged only a few times, the company says its prototype can be recharged 300 times while <u>retaining</u> 80 percent of its original storage capacity—closer to what you'd need in portable electronics. It also works at room temperature, whereas some other lithium-metal batteries operate at temperatures too hot to be practical."

Commercializing a new <u>battery technology</u> is challenging, said the company, and it is their intention to make materials, not batteries, which are compatible with existing battery manufacturing processes. This model will allow the company to leverage existing economies of scale, reducing infrastructure costs and presenting an accelerated path to commercialization. A recent article about the company in *Forbes* quoted SolidEnergy founder and CEO Dr. Qichao Hu, who has a doctorate in Applied Physics. "A lot of companies around the world know how to make batteries; it's a <u>mature</u> process. Some companies produce batteries



at lower costs, but the real innovation is happening in the materials."

What's next? SolidEnergy is developing a battery for Project Ara. The team said since SolidEnergy's battery is designed specifically for high capacity in a small space, it can provide high capacity within the limited battery space in the Project Ara modular phone, significantly increasing the battery lifetime. Hu said, "Beginning with our partnership with Google and continuing with many others in the pipeline, we hope to be the phoenix that will rise from the ashes of traditional battery companies that have come before us."

Talking about their future plans in the company's video, they said that next year they and their partners will release their first commercial battery for the smartphone and wearable market, enabling thinner longer lasting devices. In 2017, they "will revolutionize the electric car market" by offering a <u>battery</u> providing more than two times the driving range—all powered by SolidEnergy.

More information: — <u>www.solidenergysystems.com/</u>

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