

More Powerful Batteries via Lithium-Sulfur?

Written by Frederick Douglas
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Researchers at Monash University claim to be on the brink of creating the "world's most efficient" lithium-sulfur (Li-S) battery, one able to power a smartphone for days or an electric vehicle for over 1000km without need for recharging.



A study published in Science Advances on January 2020 describes technology using the same materials as standard lithium-ion batteries, only with redesigned sulphur cathodes able to accommodate higher stress without drops in overall capacity or performance. Interestingly, the design is inspired by a "unique bridging architecture" found in processing detergent powders, leading to a method to create bonds between particles to accommodate stress and deliver unprecedented levels of stability in a battery.

As well as impressive performance, the researchers say the battery uses abundant materials, and should bring about lower manufacturing costs, ease of processing and a reduced environmental footprint. Actually making the battery is both easy and low-cost, with water-based processes leading to "significant" reductions in hazardous waste.

The German Fraunhofer Institute for Material and Beam Technology is already building batteries based on the Monash University design, before tests take place in Australia in early 2020. Furthermore, European and Chinese lithium battery makers are already interested in upscaling production.

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