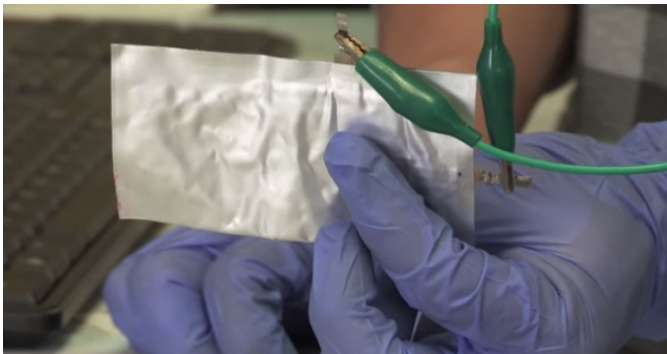


The Stanford Aluminium Battery

Written by Marco Attard
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Stanford University researchers makes unexpected use of a familiar material with a high-performance aluminium battery said to be a faster-charging, longer-lasting and safer alternative for powering mobile devices.



"We have developed a rechargeable aluminum battery that may replace existing storage devices, such as alkaline batteries, which are bad for the environment, and lithium-ion batteries, which occasionally burst into flames," chemistry professor Hongjie Dai says. "Our new battery won't catch fire, even if you drill through it."

In theory aluminium makes an ideal battery material, as has low flammability and a high-charge storage capacity while being low cost. However, in the past researchers have failed to find a materials capable of producing sufficient voltage after repeated charge-discharge cycles-- a problem the Stanford scientists solved by using graphite, the carbon-based wonder material.

Thus, the battery consists of an aluminium anode and a graphite cathode inside a polymer-coated pouch filled with liquid salt (or "ionic liquid electrolyte"). The researchers say the combination is much safer than the lithium-ion batteries found in most mobile devices, offers "unprecedented" charging times and lasts for up to 7500 charge-discharge cycles.

Perhaps predictably, such advantages come with a catch-- the aluminium battery produces just half of the voltage of typical lithium batteries. But the researchers say these are still early days for the technology, they should improve the cathode materials for better voltage and energy density soon enough.

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