

# New batteries charge 70 percent in 2 minutes

Using a titanium dioxide gel, researchers make a battery that could one day allow electric cars to fuel up as fast as their gas-guzzling cousins.

by [Michael Franco](#) @writermfranco / October 13, 2014 3:00 PM PDT

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He's got the power! Professor Chen showing off the new ultra-fast rechargeable batteries.

Nanyang Technological University

The freedom to hold computers in our hands, pop wireless headphones in our ears and pilot drones through our backyards is all brought to us by batteries -- especially rechargeable lithium ion batteries. The portable powerhouses are a critical component of our march toward tech mobility, yet most require hours of being plugged in to wall outlets to achieve a full charge.

A brand-new kind of battery to come out of the labs of scientists at Singapore's Nanyang Technological University (NTU) is set to change that. They've created a lithium ion battery that can get up to a 70 percent charge in just 2 minutes and can allegedly last up to 20 years.

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The difference between their battery and the standard lithium ion type has to do with the substance used for the anode -- the negative terminal.

Current lithium ion batteries have graphite anodes. Instead of graphite, the team at NTU used a titanium dioxide gel they developed that dramatically speeds up the chemical reaction that

**Power Brick battery**  
**charges phones, clicks with**  
**Lego pieces**

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takes place in the battery, meaning it can charge much faster.

To achieve this effect, they found a way of forming the titanium dioxide, which is normally spherical in shape, into tiny nanotubes -- small rods thousands of times smaller than a human hair. Unlike in typical lithium ion batteries, additives aren't needed to bind the electrodes to the anode, so reactions take place faster.

The researchers see the technology as especially valuable in improving the use of electric **cars**. "This next generation of lithium ion batteries will enable electric vehicles to charge 20 times faster than the current technology," said **a Science Daily report** about the **research**. "With it, electric vehicles will also be able to do away with frequent battery replacements. The new battery will be able to endure more than 10,000 charging cycles -- 20 times more than the current 500 cycles of today's batteries."

"With our nanotechnology, electric cars would be able to increase their range dramatically with just 5 minutes of charging, which is on par with the time needed to pump petrol for current cars," added the inventor of the titanium dioxide gel, NTU Singapore Associate Professor **Chen Xiaodong**.

The researchers, whose work was just published in the journal **Advanced Materials**, are now seeking a grant that will allow them to build a larger-scale prototype and figure out just how much power they can pack into their new ultra-fast-charging battery.

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