



## GADGETS (/CATEGORY/GADGETS/)

batteries (/tag/batteries/), battery (/tag/battery/)

# Breakthrough batteries last 20 years, charge 70 percent in two minutes

Over the years, consumer electronics have improved in almost every way, becoming thinner, lighter, and more pixel-packed, all while increasing exponentially in performance. But beating at the heart of many mobile devices and even electric cars is a technology that hasn't kept up with the rapid pace of innovation: batteries. Specifically, lithium-ion batteries.

Battery tech is a limiting factor in the design of many of today's technologies.

Researchers at Nanyang Technology University

(<http://media.ntu.edu.sg/NewsReleases/Pages/newsdetail.aspx?news=809fbb2f-95f0-4995-b5c0-10ae4c50c934>) say they've discovered a way to build a better battery, however—a battery that charges in mere minutes and lasts an amazing 20 years.

**Why this matters:** If these batteries begin trickling into mass production, they could kill two of the biggest irritants in today's mobile electronics: Long charging times and forced obsolescence.

The benefits of fast charging need no explanation, but many of today's smartphones and tablets won't let you remove their batteries, essentially forcing you to buy a new device when the lithium-ion battery inside starts to fade after 500 or so charges. A battery that lasts 20 years could dramatically change how long people hang on to their smartphones, especially with the mobile industry's recent trend of decoupling hardware fees from services subscriptions. Together, the combo could further reduce the two-year upgrade cycle so common in the mobile industry.

## Titanium dioxide nanotubes

Specifically, the NTU researchers claim this new battery technology has a whopping 10,000-cycle lifespan, meaning you can charge a battery 10,000 times before its max charge starts to reduce.



<https://cms-images.idgesg.net/images/article/2014/10/ntu-assoc-prof-chen-xiaodong-with-research-fellow-tang-yuxin-and-phd-student-deng-jiyang-100510022-orig.jpg>

NTA associate professor Chen Xiaodong with research fellow Tang Yuxin and PHD student Deng Jiyang.

Enabling the nifty new tricks doesn't require a full reimagining of how we design batteries, either. The researchers replaced the graphite used in the anode (<http://en.wikipedia.org/wiki/Anode>) of lithium-ion batteries with a gel made from titanium dioxide nanotubes "a thousand times thinner than the diameter of a human hair."

Using tiny titanium dioxide nanotubes rather than graphite also speeds how quickly electrons and ions flow in and out of the battery, by ditching an energy-slowing additive needed in today's batteries. The NTU researchers say their battery charges far faster than traditional lithium-ion batteries, going from empty to a 70 percent charge in just two minutes. *Two minutes!*

NTU associate professor Chen Xiaodong, the inventor of the titanium dioxide gel, says batteries built with it could hit the market within two years, with an unnamed company already licensing the technology. The Nanyang Technology University press release (<http://media.ntu.edu.sg/NewsReleases/Pages/newsdetail.aspx?news=809fbb2f-95f0-4995-b5c0-10ae4c50c934>) has more detail about the technical aspects of the discovery if you're interested.

Via Engadget (<http://www.engadget.com/2014/10/13/fast-long-lived-lithium-ion-batteries>)

## MORE FROM PCWORLD

Google announces a quad-core, 1080p Nexus 7

PCWorld Video | Avoid common PC building

PCWorld Video | Damaged Lithium Ion battery explodes