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Fast-charging batteries will power your gadgets for 20 years



by Jon Fingas | @jonfingas | 10 hrs ago

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Fast-charging batteries are all nice and good, but the lifespan matters, too -- why should you have to replace power packs (or entire devices) every couple of years ? You may not have to give up performance or longevity if researchers at Nanyang Technology University have their way. They've developed new lithium ion batteries that can reach a 70 percent charge in two minutes, but should also last for over 20 years -- several times longer than the cells in your current laptop or smartphone. The trick is using titanium dioxide nanotubes for the anode (the negative pole) instead of graphite; they both speed up the battery's chemical reactions while offering 10,000 charging cycles instead of the usual 500.

There's no definite timetable for when upgraded batteries could reach shipping products, but the mini titanium tubes are both easy to make and relatively inexpensive. They could make a big impact on the technology world when they arrive, though. On a basic level,

they could eliminate forced obsolescence for some devices -- you might only replace them when they no longer meet your needs, not because they can't hold a charge. They could have a particularly large impact on electric cars -- you could top up your battery in minutes, not hours, and avoid replacing a very expensive component before you're ready to replace the vehicle itself.

SOURCE: [Nanyang Technological University](#)

MORE COVERAGE: [Channel NewsAsia](#), [AsiaOne Singapore](#)

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This is fine and all but we need to think about a revolution in the systems for charging such batteries.

To put things in perspective:

Lets use the included image of some 3000 mAh battery. Lets assume a conservative chemistry of 3.6v for that cell. So we are looking at ~10.8 Wh of stored power. Now lets take that 70% in 2 minutes figure and turn it into a practical #. In a magical world where all power conversion is done at 100% efficiency and batteries absorb power in a linear manner. We are talking about pushing 7.56 Wh over a cable in 2 minutes. So take our capacity figure of 7.56Wh total storage and multiply it by 30, that gives us the charge rate from a wall. So in order to charge a 3000 mAh battery to 70% in 2 minutes we need to draw power from the wall at a rate of 226.8 watts/hr for 2 minutes to get our 70% charge.

You CAN NOT do this with a simple tiny cable. Pushing 226.8 watts at 5V = 45.36 amps (keep in mind we are still living in our magical world where power conversion is 100%