



NEWS

## Samsung, MIT say their solid-state batteries could last a lifetime

By eliminating liquid electrolytes, the batteries eliminate fire risk

By **Lucas Mearian** | Follow

Senior Reporter, Computerworld AUG 19, 2015 1:45 PM PT



Researchers have developed a new material for a basic battery component that they say will enable almost indefinite power storage.

The new material -- a solid electrolyte -- could not only increase battery life, but also storage capacity and safety, as liquid electrolytes are the leading cause of battery fires.

Today's common lithium-ion batteries use a liquid electrolyte -- an organic solvent that has been responsible for overheating and fires in cars, commercial airliners and cell phones.

With a solid electrolyte, there's no safety problem.

"You could throw it against the wall, drive a nail through it -- there's nothing there to burn," said Gerbrand Ceder, a professor of materials science and engineering at MIT and one of the main researchers.

Additionally, with a solid-state electrolyte, there's virtually no degradation, meaning such batteries could last through "hundreds of thousands of cycles," Ceder added.

Organic electrolytes also have limited electrochemical stability, meaning they lose their ability to produce an electrical charge over time.

Along with MIT, scientists from the Samsung Advanced Institute of Technology, the University of California at San Diego and the University of Maryland conducted the

research.

The researchers, who published their findings in the peer-reviewed journal *Nature Materials*, described the solid-state electrolytes as an improvement over today's lithium-ion batteries.

Electrolytes are one of three main components in a battery, the other two being the terminals -- the anode and the cathode.

A battery's electrolyte component separates the battery's positive cathode and negative anode terminals, and it allows the flow of ions between terminals. A chemical reaction takes place between the two terminals producing an electric current.

A past problem with solid electrolytes is that they could not conduct ions fast enough to be efficient energy producers. The MIT/Samsung team says it overcame that problem.

Another advantage of a solid-state lithium-ion battery is that it can perform under frigid temperatures.

Ceder said solid-state electrolytes could be "a real game-changer" creating "almost a perfect battery."

*To express your thoughts on Computerworld content, visit Computerworld's [Facebook page](#), [LinkedIn page](#) and [Twitter stream](#).*

---

*Senior Reporter Lucas Mearian covers consumer data storage, electronic health IT, renewable energy, 3D printing, and telematics/car tech for Computerworld.*

Follow     

## 7 Wi-Fi vulnerabilities beyond weak passwords

## YOU MIGHT LIKE

Ads by Revcontent

**Coimbatore Boy  
Loses 35kgs in 15  
Days with This 1**

SlimNow

**Coimbatore Girl Gets  
4 Shades Fairer in  
Just 2 Min by Using**

Fit Mom Daily

**Fake? - 16 Pictures  
You Won't Believe Are  
Real**

Viral IQ

**Arnold's IQ Makes No  
Sense**

React Share

**His Net Worth Will  
Leave You Speechless**

React Share

**Clint Eastwood's Net  
Worth Left Us  
Shocked**

React Share

**After first week, A.I.  
system is beating  
human poker players**

**HPE to buy  
SimpliVity for \$650M  
to boost**

**At last, DocuSign  
finds itself a new CEO**

**Generate A  
High-Quality User  
Experience with**

Revcontent

## SHOP TECH PRODUCTS AT AMAZON

---

1. Lyte Balance Electrolyte Concentrate - natural re-hydrating energy boost; Pure, high Potassium + Magnesium formula.  
Easy to mix in favorite beverage. Recover faster, better. \$25.00
2. EMERGEN-C ELECTRO MIX Lemon-Lime, 30 ct, 4.2 oz \$9.06
3. Crystalloid Electrolyte Trace Minerals, 16 ounce - by Eximus Health \$16.99

Ads by Amazon

Copyright © 2017 IDG Communications, Inc.