

New Hitachi Li-ion batteries to last ten years

April 9 2010, by Lin Edwards



左:今回開発したマンガン系正極材料
 右:今回開発したマンガン系正極材料を利用したリチウムイオン電池セル
 (日立と新神戸電機との共同試作品)

Image credit: Hitachi

(PhysOrg.com) -- Hitachi has announced they may be able to double the life of rechargeable lithium-ion (Li-ion) batteries through the development of a new cathode material. The material was developed in conjunction with the company Shin-Kobe Electric Machinery, and while it will not be useful initially for small applications such as laptops, cameras or smartphones, it may be ideal for larger batteries in hybrid or electric vehicles, and for storing excess energy produced by wind farm generators.

The new battery uses more [manganese](#) for the positive electrode and reduces the use of the far more expensive cobalt. Hitachi says the new cathode material is the composite oxide lithium manganese spinel (LiMn_2O_4), a [crystalline material](#) that is much more stable than the previous cathode material. Its stability makes the cathode more resistant to attack by the [electrolyte](#), and inhibits leaching of cathode material into

the electrolyte (both processes that eventually stop the battery holding a charge). The new cathode material extends the life of the battery to ten years from the more usual average working life of five years, and it also boosts the battery's capacity. The battery will also be cheaper than current lithium-ion batteries because of the reduced use of cobalt.

Lead-acid batteries are usually used for large installations because of their longer working life of up to 10 years, and also because of their lower cost. Lithium-ion batteries have about quadruple the power density of the lead-acid batteries, so if their lifetime could be doubled and the cost reduced, they could replace the traditional batteries for the larger applications.

Lithium-ion batteries are found in almost all portable [electronic devices](#) these days, and the new [battery technology](#) may be able to be scaled down for use in these gadgets. The battery is at prototype stage at the moment, but Hitachi expects it to be available for larger scale industrial uses probably early in 2011.

The new battery was produced with the aid of Japan's New Energy and Industrial Technology Development Organization, and Hitachi hopes its concentration on batteries for ecologically sustainable industries such as wind farms and [electric vehicles](#) will help it return to profitability.

More information: Original Hitachi paper (Japanese):
[www.hitachi.co.jp/New/cnews/mo ... h/2010/04/0405a.html](http://www.hitachi.co.jp/New/cnews/mo...h/2010/04/0405a.html)

© 2010 PhysOrg.com

Citation: New Hitachi Li-ion batteries to last ten years (2010, April 9) retrieved 20 September 2024 from <https://phys.org/news/2010-04-hitachi-li-ion-batteries-ten-years.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.