

Lithium-ion battery is fast-charged in minutes

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(Phys.org) -- A lithium-ion battery that can charge 120 times faster than normal is reportedly the work of scientists from Korea at the Ulsan National Institute of Science and Technology (UNIST) The scientists lay claim to a technology that enables a recharge 30 to 120 times faster than conventional li-ion batteries, according to the Korean news agency, Yonhap.

The scientists in [South Korea](#) believe their process will cut the time down to a matter of minutes—tackling head-on a key issue with rechargeable batteries, the time they take to recharge. Their method makes use of cathode material, standard lithium manganese oxide (LMO), soaked in a solution containing graphite.

By carbonizing the graphite-soaked LMO, the graphite turns into a network of conductive traces that run throughout the cathode. These carbonized graphite networks allow all parts of the [battery](#) to recharge at the same time. Therein lies the speed-up. The cathode is packaged with an electrolyte and graphite anode to create the fast-charging battery.

The key feature is that all energy-holding particles of the new battery start recharging simultaneously, in contrast to what takes place in conventional batteries, with the same particles recharging in order from the outermost particles to the innermost.

Their work has been praised in its implications for hoped-for EV adoptions. “The development of such a battery could significantly raise the popularity of electric vehicles whose lithium-ion batteries currently take hours to recharge,” according to the Ministry of Education, Science and Technology.

Although electric vehicles promise more efficiency than gasoline and diesel-powered cars, the idea of spending two hours recharging a [lithium ion battery](#) has been seen as an inconvenience, and the time factor claimed by the scientists will obviously be seen with interest.

All the same, cost will remain another barrier. According to observers, the time convenience does not address the pricetag inconvenience. Lithium battery packs are expensive; the carbonized LMO battery developed by the researchers is not expected to carry a much lower price than what is available now.

The researchers’ paper, “Carbon-Coated Single-Crystal LiMn_2O_4 Nanoparticle Clusters as Cathode Material for High-Energy and High-Power Lithium-Ion Batteries,” was published earlier this month in *Angewandte Chemie*. Authors are Sanghan Lee, Yonghyun Cho, Prof. Hyun-Kon Song, Prof. Kyu Tae Lee, and Prof. Jaephil Cho. The

researchers were supported by the Converging Research Center Program through the Ministry of Education, Science and Technology.

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