

Designing the clean-tech cars of the future

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After 10 hours of charging, the 2013 Holden Volt can only travel 87km. Nano-engineer, Prof. Zaiping Guo, hopes her novel Germanium-based batteries might one day be adopted by car manufacturers to help improve electric vehicle efficiency. Credit: GM Corp

Ditching petrol for a clean-tech electric car sounds like an earth-saving move in theory. But if your charge is going to run out half way through your journey, it's not very practical to make the switch.

Nano-engineer, Professor Zaiping Guo, is working on improving lithium-

ion (Li-ion) batteries for use in [electric vehicles](#), as well as portable devices like mobile phones, and her team has just had a breakthrough.

They have developed a new Germanium (Ge)-based material with 5 times more [energy storage](#) and the potential to go at least 2 times farther on a charge than current electric vehicles.

Professor Guo, who is an ARC QEII Fellow, said the development of this inexpensive manufacturing technique is a breakthrough that will provide a significant improvement in [battery technology](#), which can be used to power the next generation of clean-tech [electric cars](#).

"The novel anode materials are very simple to synthesize and cost-effective."

"They can be fabricated in large-scale by industry, therefore have great commercial potential, Professor Guo said, noting that while the price of Ge is still high compared to other candidate materials at the moment, mass production may bring the price down.

Professor Guo said independent tests also showed significant reduction in charging time for the Ge-based batteries, which she noted could also be used for consumer electronics, like mobile phones and laptops, as well as grid-scale energy storage.

"We're truly excited about this breakthrough and are looking forward to transitioning this technology to the commercial marketplace," she said.

The research was recently published in, [Nano Letters](#) and [Angewandte Chemie](#).

More information: Professor Guo will talk about this breakthrough at the UOW Big Ideas Festival on Wednesday 8 May. To register for this

free, public event, visit www.uow.edu.au/research/news/bigideas

Provided by University of Wollongong

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