WA's Talga Resources hopes to capitalise on graphene boom for batteries

By Kathryn Diss

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Ever imagined charging your smartphone in seconds or your electric car in minutes?

That could soon become reality, thanks to the discovery of the new "wonder" material, graphene.

Lithium ion batteries transformed energy storage when Sony first released them in the market in 1991.

They have since become smaller, lighter and cheaper, but still unable to charge at a super rapid rate.

Now graphene, the most conductive material on Earth, is being touted as the next big thing in batteries and is tipped to play a big role in upgrading their performance.

Graphene is a single layer of graphite, and is tipped to change the way we produce things like computers, mobile phones and aviation materials.

It was only discovered a decade ago, when two scientists used sticky tape to peel layers off a block of graphite.

Perth-based Talga Resources owns a high-grade, low-cost graphite mine in Sweden and is aiming to capitalise on graphene's potential.

"Graphene has been shown to improve the performance of batteries in some cases by a 160 per cent or more in standard technologies," managing director Mark Thompson said.

Talga Resource in talks to produce fast-charging battery

He said the company was now producing graphene samples at its plant in Germany to give to potential customers.

"Our rocks are so high grade and so pure that it actually conducts electricity all by itself," he said.

Talga is talking to manufacturers with the hope of tapping into the fast-growing solar power market to produce batteries which are more efficient, last longer and can charge within minutes.

"For better batteries - ones that charge faster and last longer and are much cheaper to use in things like solar or green energy processing - you need a better performing battery, that is more conductive, lighter and cheaper, graphene achieves that," Mr Thompson said.

"The first stage is to make current technology better from well understood technology and well understood chemistry, and then to make really high-performance, next-generation batteries.

"So we are working with battery manufacturers to produce new materials to make batteries charge faster, last longer and be cheaper as well."

Power supply could become wearable: sustainability expert

More efficient batteries also allows what is called energy mobility, where power can be shared between cars and homes.

Sustainability expert Ray Wills said power supply would become mobile.

"The car will be integrated with the home and the home storage system and the solar panels on the roof," he said.

"Pretty much from next decade on, we should expect most homes will be exporting energy not importing energy."

But Professor Wills said graphene's use would not be limited to batteries.

"We could turn graphene into clothing, it is very, very adaptable, so one day we might see a jacket that is a solar panel as well, that charges your smart phone while it is in your pocket," Mr Wills said.

While graphene offers big opportunities, developing it into a battery is still in the laboratory.

Professor Wills said in the meantime, lithium ion batteries will supply the market and become much cheaper as manufacturers start to produce the product en masse.

"We will hybridise from lithium to lithium graphene batteries and ultimately in 10 years' time move straight onto graphene," he said.

US energy giant Tesla will next year open a factory near Nevada in the US which is expected to produce more lithium ion batteries than the entire global supply in 2013.

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