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CARBON CHAMP: Prof Peter Ho led the team that won the Temasek Young Investigator Award with their graphenes, which turn what they coat into electrical conductors.

Scientists win prize with the thinnest of sheets

RESEARCHERS here have struck "black gold". A team from the National University of Singapore (NUS) won a prestigious award and a \$500,000 research grant yesterday for discovering a way to make ultra-thin sheets of black carbon that are just $1/1,000$ the width of a human hair.

Invisible from the side, the sheets can be used to coat anything from glass to plastic. The discovery has been hailed as a breakthrough as the sheets, which are made from graphite – the material found in pencils – could eventually be used as high-tech plastic electronics, officials said.

Still a new field, plastic electronics are microchips with the same flexibility and function as a sheet of plastic.

The discovery earned Assistant Professor Peter Ho and his 12-member team from NUS the prestigious Temasek Young Investigator Award.

Established in 2002 by NUS and the Defence Science and Technology Agency, their prize is a \$500,000, three-year research grant.

According to Prof Ho, who is also

the director of the NUS Organic Nano Device Laboratory, the project was a gamble. Little research had been done on the subject before this.

"We had no idea if it would be a waste of time," said the 37-year-old.

After several trials, the team finally discovered a way to stabilise the fragile sheets and prevent them from clumping together. They used a complex chemical process to split the graphite into layers one atom thick.

Suspended in a black solution, the sheets, known as graphenes, turn what they coat into effective electrical conductors, said Prof Ho.

The team will now focus on transforming the metal-like conductor into a semiconductor. Graphenes could, in the long run, be used to create lightweight solar cells.

It is still too early to tell. "Sometimes theories don't always translate into practical success," said Prof Ho. "I worry about how we're going to accomplish that. But it's a good kind of worry. I always enjoy a challenge."