Wonder carbon pioneers win Nobel Physics Prize (Update 4)

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The Swedish Academy of Sciences in Stockholm announces the winner of the Nobel Physics Prize.

Two Russian-born scientists, Andre Geim and Konstantin Novoselov, won the 2010 Nobel Physics Prize Tuesday for pioneering work on graphene, touted as the wonder material of the 21st century.

Both laureates began their careers as physicists in Russia but now work at the University of Manchester in Britain. Geim holds Dutch nationality and Novoselov is both a British and Russian national.

The Royal Swedish Academy of Sciences hailed graphene, a form of carbon isolated only six years ago, for its glittering potential in computers, home gadgets and transport.

It lauded Geim, 51, and Novoselov, 36, for having "shown that carbon in such a flat form has exceptional properties that originate from the remarkable world of quantum physics."

Graphene is a novel form of carbon that comprises a single layer of atoms arranged in a honeycomb-shaped lattice.

Just one atom thick, graphene it is the world's thinnest and strongest nano-material, almost transparent and able to conduct electricity and heat.

As a result, graphene is described as the candidate material to replace silicon semi-conductors.

Graphene transistors would in theory be able to run at faster speeds and cope with higher temperatures than today's classic computer chips.

That would resolve a fast-growing problem facing chip engineers who want to boost power and shrink semiconductor size but without raising temperatures, the bugbear of computing.

Its transparency means it could potentially be used in touch screens and even solar cells, and when mixed with plastics would provide light but super-strong composite materials for next-generation satellites, planes and cars.

The academy said it was "interesting to consider that everyone who has used an ordinary pencil has probably produced graphene-like structures without knowing it."

The Nobel jury acknowledged that most of the practical applications of graphene "exist only in our fantasies, but many are already being tested."

Geim said last year as he accepted an honour at Britain's prestigious Royal Society that the list of uses was "long and (was) yet to be completed."

"Graphene has become known as a wonder material," he said.

Professor Konstantin Novoselov was awarded the 2010 Nobel Physics Prize for pioneering work on graphene, a form of carbon which conducts electricity. Novoselov and fellow Russian-born scientist Andre Geim were jointly given the prize for their work on graphene, which the Nobel jury touted as the wonder material of the 21st century.