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UK scientists share Nobel for Physics

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Professors Andre Geim (left) and Konstantin Novoselov outside Manchester University on Tuesday

London: Two Russian-born scientists based at the University of Manchester in the UK shared the 2010 Nobel Prize on Tuesday for Physics for their "groundbreaking" work on a material with amazing properties.

Andrei Geim, 51, and Konstantin Novoselov, 36, have been announced as the winners of the 900,000 pound (10 million Swedish Kronor) prize for their research on graphene.

Reacting to the news, Dr Geim said: "I'm fine, I slept well. I didn't expect the Nobel Prize this year".

A thin flake of ordinary carbon, just one atom thick, lies behind the prize.

The two experts have shown that carbon in such a flat form has exceptional properties that originate from the remarkable world of quantum physics, a release from the Nobel committee said.

Graphene is a form of carbon. As a material it is completely new — not only the thinnest ever but also the strongest. As a conductor of electricity it performs as well as copper. As a conductor of heat it outperforms all other known materials.

It is almost completely transparent, yet so dense that not even helium, the smallest gas atom, can pass through it.

Carbon, the basis of all known life on earth, has surprised us once again.

Geim and Novoselov extracted the graphene from a piece of graphite such as is found in ordinary pencils.

Using regular adhesive tape they managed to obtain a flake of carbon with a thickness of just one atom. This at a time when many believed it was impossible for such thin crystalline materials to be stable. However, with graphene, physicists can now study a new class of two-dimensional materials with unique properties.

Graphene makes experiments possible that give new twists to the phenomena in quantum physics. Also a vast variety of practical applications now appear possible including the creation of new materials and the manufacture of innovative electronics. Graphene transistors are predicted to be substantially faster than today's silicon transistors and result in more efficient computers.

Since it is practically transparent and a good conductor, it is suitable for producing transparent touch screens, light panels, and maybe even solar cells.

When mixed into plastics, graphene can turn them into conductors of electricity while making them more heat resistant and mechanically robust. This resilience can be utilized in new super strong materials, which are also thin, elastic and lightweight.

In the future, satellites, airplanes, and cars could be manufactured out of the new composite materials. PTI