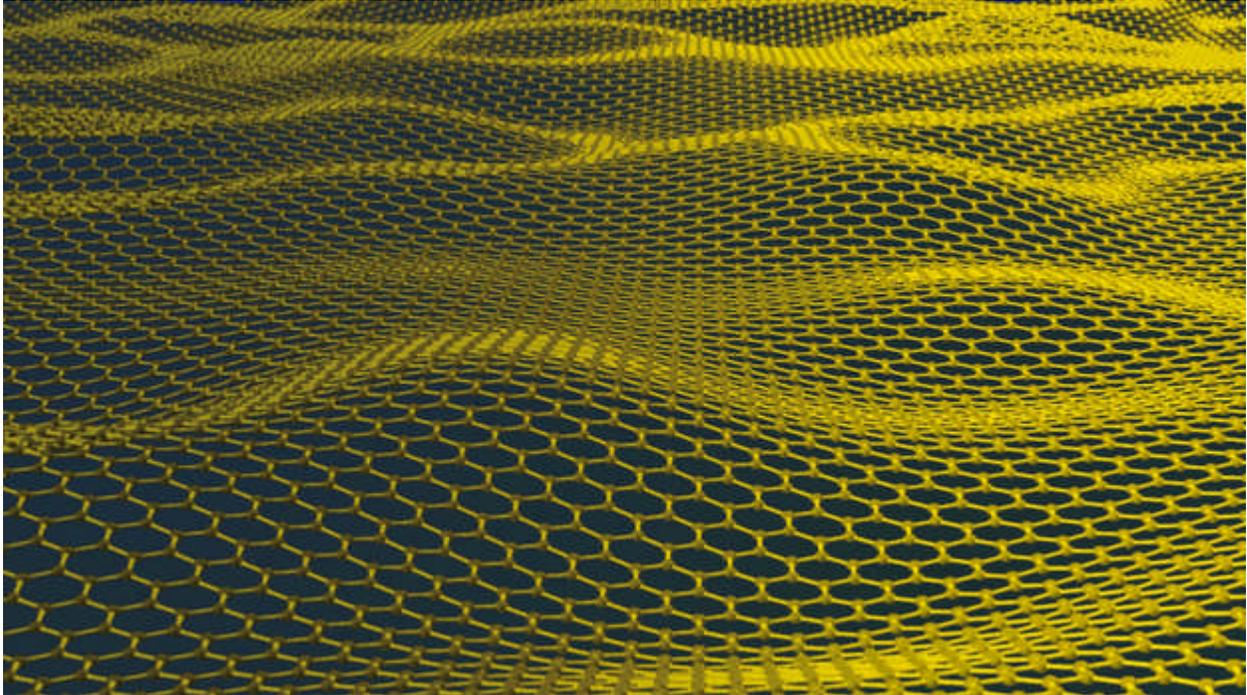


Nobel Awarded For Thin, Versatile Carbon Material

by NPR Staff and Wires



Jannik Meyer/Science via The Royal Swedish Academy of Sciences

Graphene is a one atom-thick layer of ordinary carbon atoms, organized in a flat sheet. It conducts both electricity and heat extremely well.

Heard On "Morning Edition"

October 5, 2010

Geim, Novoselov Win Nobel Prize In Physics

October 5, 2010

Two Russian-born scientists shared the Nobel Prize in physics on Tuesday for "groundbreaking experiments" with the thinnest, strongest material known to mankind, a carbon vital for the creation of faster computers and transparent touch screens.

Andre Geim and Konstantin Novoselov, professors at the University of Manchester in Britain, in 2004 isolated graphene, a form of carbon only one atom thick but more than 100 times stronger than steel, and showed it has exceptional properties, the Royal Swedish Academy of Sciences said.

Experiments with graphene could lead to the development of new superstrong materials to make satellites, airplanes and cars, as well as innovative electronics, the academy said in announcing the 10 million kronor (\$1.5 million) award.

Graphene transistors are predicted to be substantially faster than today's silicon transistors and result in more efficient computers," the academy said in the citation.

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



AFP/Getty Images

Russian-British national Konstantin Novoselov won the 2010 Nobel Physics Prize with Andre Geim.



AFP/Getty Images

Andre Geim's pioneering work on graphene with Novoselov shows "that carbon in such a flat form has exceptional properties that originate from the world of quantum physics," the Nobel jury said.

And researchers at the University of Southern California are using graphene in organic photovoltaic solar cells as a highly transparent material that's also good at conducting electricity. OPV cells are cheaper and more flexible than silicon cells, and researchers say they could be hung as curtains or even made into fabric and worn as power-generating clothing, but they convert sunlight to electricity far less efficiently.

Geim, 51, is a Dutch national while Novoselov, 36, holds British and Russian citizenship. Both are natives of Russia and started their careers in physics there. They first worked together in the Netherlands before moving to Britain.

Novoselov is among the youngest winners of a prize that normally goes to scientists with decades of experience. The youngest Nobel laureate to date is Lawrence Bragg, who was 25 when he shared the physics award with his father William Bragg in 1915.

Geim told The Associated Press he didn't expect to win the prize this year and had forgotten that it was Nobel time when the prize committee called him from Stockholm.

The two scientists used simple Scotch tape as a crucial tool in their experiments, peeling off thin flakes of graphene from a larger piece of graphite, Geim said.

"It's a humble technique. But the hard work came later," he said, comparing the material to plastics in its ability to revolutionize the world.

"It has all the potential to change your life in the same way that plastics did," he said. "It is really exciting."

Geim last year won the prestigious Korber European Science Award for the discovery, the University of Manchester said.

"This was a well-deserved award," said Phillip F. Schewe, spokesman for the American Institute of Physics in College Park, Maryland.

"Graphene is the thinnest material in the world, it's one of the strongest, maybe the strongest material in the world. It's an excellent conductor. Electrons move through it very quickly, which is something you want to make circuits out of," Schewe said.

Web Resources

More from NobelPrize.org

He said graphene may be a good material for making integrated circuits, small chips with millions of transistors that are the backbone of all modern telecommunications. Its properties could also lead to potential uses in construction material, Schewe said, but added it would take a while "before this sort of technology moves into mainstream application."

The 2010 Nobel Prize announcements started Monday with the medicine award going to British researcher Robert Edwards, 85, for work that led to the first test tube baby, an achievement that helped bring 4 million infants into the world and raised challenging new questions about human reproduction.

The chemistry prize will be announced on Wednesday, followed by literature on Thursday, the peace prize on Friday and economics on Monday Oct. 11.

The prestigious awards were created by Swedish industrialist Alfred Nobel and first given out in 1901. The prizes are always handed out on Dec. 10, the anniversary of Nobel's death in 1896.