

Nobel Prize physicists protest British immigration restrictions on scientists

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20 October 2010

The two physicists who won the Nobel Prize this year have protested against the immigration restrictions that the British coalition government has imposed and their impact on the free global exchange of scientific ideas. Russian-born physicists Konstantin Novoselov and Andre Geim, now based at the University of Manchester, won the prize for their work on a revolutionary new material called graphene.

Geim and Novoselov joined six other Nobel Prize winners in writing to the *Times* of London to protest the cap on immigrants into Britain from outside the European Union. From April next year, the temporary cap of 24,100 per year allowed to live and work in Britain introduced by the Labour government will be replaced by even tighter measures announced by the incoming Conservative Liberal Democrat coalition.

The Nobel scientists write, “The government has seen fit to introduce an exception to the rules for Premier League footballers. It is a sad reflection of our priorities as a nation if we cannot afford the same recognition for elite scientists and engineers”.

They add, “International collaborations underlie 40 percent of the UK’s scientific output, but would become far more difficult if we were to constrict our borders”.

Signatories include the winner of the 2007 Nobel Prize for Chemistry, Sir Martin Evans; Sir Harold Kroto, who shared the 1996 Nobel Prize for Chemistry; and Sir John Sulston, who won the 2002 Nobel Prize for Physiology or Medicine for his work in sequencing the human genome.

In an interview with the BBC, Novoselov said that free movement was “absolutely crucial for our work and for scientific work in general”. He explained that, “We are extremely happy with our home students, but we really rely on the information, knowledge and skills

which are brought by students who have been working in other leading institutions across the world”.

Geim, accompanied by Novoselov, then his PhD student, moved from Russia to the Netherlands, then to Manchester in 2001.

Graphene, like diamond or graphite, is a special form of carbon, but with the atoms arranged in a single layer formed in a honeycomb-shaped lattice. Because it is only one atom thick it is sometimes called a “two-dimensional” material. A stack of three million sheets of graphene would only be one millimetre thick.

It was believed that such materials, though postulated theoretically, would be unstable. Geim and Novoselov succeeded in 2004 in extracting graphene from ordinary graphite used in pencils. They used simple adhesive tape to create a flake of carbon that was one atom thick. Their investigations sparked off an exponential growth of worldwide research into graphene, with thousands of papers now produced on the subject each year.

Far from being unstable, graphene is probably the strongest material ever tested, with a breaking strength 200 times that of steel. It is also a very good electrical conductor and is believed to be a possible replacement for current silicon transistors, enabling computers to be built from atom-sized chips. Already IBM has made graphene transistors that are one atom thick and only 10 atoms wide, with switching properties faster than silicon.

When mixed with plastic, graphene makes a thin but very strong and light material that, as well as conducting electricity, is heat resistant. It is likely to be used in composite materials for aircraft, satellite and automotive manufacture. Furthermore, it is nearly transparent and is suitable for producing touch screens, light panels, and possibly even solar cells.

Developing the full potential of graphene will take

many years. But it is undoubtedly one of the most exciting new materials of the 21st Century. “It has all the potential to change your life in the same way that plastics did”, Geim told the Associated Press.

Geim and Novoselov are very aware of the global development of such scientific research and are insistent that their work depends on the kind of international collaboration the British government is now threatening.

“I am of Russian origin”, Novoselov told the BBC, “and I’ve been on all the news in Russia, trying to explain to the people there that it is not a Russian Prize, and it is not even a British Prize, but it’s [thanks to] a huge international group which has been working together on this project. And it would be very sad if in a few years’ time we’d have to explain the exact same thing here, in this country as well”.

The coalition government of the Conservatives and Liberal Democrats announced the immigration restrictions to “ensure cohesion and protect our public services”. Since most non-EU immigrants are Asian, this was clearly a response to the consistently racist slant of much of the media. It is particularly directed against students and researchers, as scare stories have pointed to the existence of private educational colleges allegedly allowing people with fake qualifications from the Indian subcontinent into the country on payment of large fees. As well as setting up a special “Border Police” force to step up control of immigration, the government statement refers to “new measures” to clamp down on abuses of the system, especially referring to students.

The previous Labour Party government introduced regulations with a Tier 1 and Tier 2 points-based system. Tier 1 is designed for “highly skilled workers, investors and entrepreneurs”. It allows footballers and the financial elite to move in and out of Britain freely. Tier 2 covers “sponsored skilled workers”, which mainly means “people coming to the UK with a skilled job offer to fill a gap in the workforce that cannot be filled by a settled worker”. It is Tier 2 that applies to scientific researchers and has now been tightened even further.

Channel 4 News recently interviewed a researcher, Prasant Jain, an Indian who was refused entry for a postdoctoral post he had been offered at Cambridge University. Jain explained that he had a PhD but was

refused admission because he would be earning less than £25,000 (\$40,000) in his new post, so did not score enough points on the Tier 2 system.

Jain explained that he is an expert in “multiferroic” materials and is part of the team led by Sir Harold “Harry” Kroto. Using experiments and computer models, this international team has found four new crystals with unusual properties that could be used in hydrogen storage as well as in computer memories.

Jain will now join the team working in the same area of research at Florida State University. But his case illustrates the international nature of science and the impossibility of restricting it within national borders. The attitude of the present British government and the Labour government that preceded it is both reactionary and philistine.



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