Professor Konstantin S. Novoselov FRS Curriculum Vitae (UPDATED November 2011)

Occupation Professor of Physics, Royal Society Research Fellow

Affiliation University of Manchester
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Citizenship British, Russian (Date of Birth: Aug 1974)

Research Field Mesoscopic systems and nanostructures

Professional Career

1997	MSc with *cum laude* from the Moscow Physical-Technical University
1997- 1999	Researcher at the Institute for Microelectronics Technology, Chernogolovka
1999- 2001	Researcher at the High Magntic Field Lab., University of Nijmegen, The Netherlands
2001- 2005	Researcher at the University of Manchester, UK
2004	PhD at the High Magntic Field Laboratory, University of Nijmegen, The Netherlands
2005- 2006	Leverhulme Research Fellow at the University of Manchester, UK
since 2007	Royal Society Research Fellow at the University of Manchester, UK
since 2010	Professor of Physics, University of Manchester

Factual Summary

Published over 90 peer-refereed research papers (mainly as the principal/corresponding author), including 9 *Nature* and *Science* articles and more than 15 papers in *Nature Materials, Nature Physics, Nature Nanotechnology, Reviews of Modern Physics, Physical Review Letters, PNAS*. Over 100 invited talks at conferences during the last 5 years.

Honours

2011: Awarded honoray degree of Doctor of Science from the University of Manchester

2011: Elected Fellow of the Royal Society

2011: Elected Honorary Fellow of the Royal Society of Chemistry

2011: Elected Honorary Fellow of the Institute of Physics

2010: Nobel Prize in Physics

2008: Europhysics Prize
"…for discovering and isolating a single free-standing atomic layer of carbon (graphene) and elucidating its remarkable electronic properties."

2008: Technology Review-35 Young Innovator
"Since 1999, the editors of "Technology Review" *have honored the young innovators whose inventions and research they find most exciting"*

2008: International Union of Pure and Applied Science, Young Scientist Prize
"For his contribution in the discovery of graphene and for pioneering studies of its extraordinary properties"

2008: University of Manchester Researcher of the Year

2007: Nicholas Kurti European Prize
"aimed to promote and recognise the novel work of young scientists working in the fields of Low Temperatures and/or High Magnetic Fields"

Awards

2008: European Research Council, Starting Grant
"Physics and Applications of Graphene"

2006: Royal Society Research Fellowship
"The scheme by The Royal Society (UK) aims to provide outstanding scientists, who should have the potential to become leaders in their chosen field, with the opportunity to build an independent research career."

2004: The Leverhulme Trust, Early Career Fellowship

Extras

Novoselov's two papers in *Science* 2004 and *Nature* 2005 are the most cited papers on graphene and *"have opened up a fast moving front"* (according to *ISI's Essential Science Indicators*^{SM}). The *Science* paper has also been acknowledged as *"one of the most cited recent papers in the field of Physics"* (according to the *ISI citation index*).

RÉSUMÉ OF RESEARCH (in chronological order)

- *Mesoscopic Superconductivity*. Novoselov has participated in development of a pioneering technique named ballistic Hall magnetometry, which for the first time allowed magnetisation measurements of individual superconductors of submicron size. This work has led to a number of surprising and counter-intuitive observations, such as giant, fractional and "negative" vortices and the paramagnetic Meissner effect. The work has received significant media attention, including dozens of articles in scientific magazines.

A.K. Geim, S.V. Dubonos, I.V. Grigorieva, *K.S. Novoselov*, F.M. Peeters & V.A. Schweigert. Non-Quantized Penetration of Magnetic Field in the Vortex State of Superconductors, *Nature* **407**, 55-57 (2000).

- *Sub-atomic movements of magnetic domain walls*. Novoselov has exploited the technique of ballistic Hall micromagnetometry to detect sub-nanometre changes in the position of individual domain walls in ferromagnetic materials. In particular, he has succeeded in the first direct observation of a condensed-matter object (a domain wall, in this case) moving between adjacent Peierls valleys and discovered a new unexpected mechanism of its propagation between the valleys.

K.S. Novoselov, A.K. Geim, S.V. Dubonos, E.W. Hill, I.V. Grigorieva. Subatomic Movements of a Domain Wall in the Peierls Potential, *Nature* **426**, 812-816 (2003).

- *Gecko tape*. Novoselov took an active part in demonstration of a new microfabricated adhesive, which is based on the same physics mechanism that underlies the amazing climbing ability of geckos. The work is highly rated among experts as the first proof of concept of dry adhesives based on van der Waals interaction. The research also attracted significant media attention. Several large and well-funded research groups, including labs at DuPont and TESA, now follow our work and have established their own research programmes on gecko tape.

A.K. Geim, S.V. Dubonos, I.V. Grigorieva, *K.S. Novoselov*, A.A. Zhukov, S.Y. Shapoval. Microfabricated Adhesive Mimicking Gecko Foot-Hair, *Nature Materials* **2**, 461-463 (2003).

- *Two-Dimensional Atomic Crystals*. Most recently, Novoselov has reported the discovery of a new class of materials – free-standing two-dimensional crystals – including single layers of graphite, boron-nitride, several dichalcogendes and complex oxides. Unexpectedly, these atomically-thin sheets (essentially gigantic 2D molecules unprotected from the immediate environment) are stable under ambient conditions, exhibit high crystal quality and are continuous on a macroscopic scale. For example, graphene (a monolayer of graphite) can be viewed as a flat fullerene molecule or as millions of carbon nanotubes somehow unrolled and stitched together. There is no doubt about the exceptional new physics that graphene offers. Quasiparticles in graphene behave like massless relativistic fermions described by the Dirac equation rather than the standard Schrödinger equation that is used to describe other materials. Novoselov has proven this in a series of elaborate experiments that led to a new paradigm of "relativistic-like condensed matter" where quantum relativistic phenomena can now be studied in bench-top nanoscience experiments. He also demonstrated first electronic devices based on graphene, which significantly improved prospects of carbon-based electronics beyond the Si age. One-atom-thick membranes made by Novoselov and co-workers group opened up new horizons in many technological areas.
For review, see A.K. Geim, *K.S. Novoselov*. The rise of graphene. *Nature Materials* **6**, 183-191 (2007).

K.S. Novoselov, A.K. Geim, S.V. Morozov, D. Jiang, Y. Zhang, S.V. Dubonos, I.V. Grigorieva, & A.A. Firsov. Electric Field Effect in Atomically Thin Carbon Films, *Science* **306**, 666-669 (2004).

K.S. Novoselov, D. Jiang, T. Booth, V.V. Khotkevich, S. V. Morozov, & A.K. Geim. Two Dimensional Atomic Crystals. *PNAS* **102**, 10451-10453 (2005).

K.S. Novoselov, A.K. Geim, S. V. Morozov, M.I. Katsnelson, I.V. Grigorieva, S.V. Dubonos, & A.A. Firsov. Two Dimensional Gas of Massless Dirac Fermions in Graphene, *Nature* **438**, 197-200 (2005).

K.S. Novoselov, E. McCann, S.V. Morozov, V.I. Fal'ko, M.I. Katsnelson, U. Zeitler, D. Jiang, F. Schedin, & A.K. Geim. Unconventional quantum Hall effect and Berry's phase of 2π in bilayer graphene, *Nature Phys.* **2**, 177-180 (2006).

K.S. Novoselov, Z. Jiang, Y. Zhang, S.V. Morozov, H.L Stormer, U. Zeitler, J.C. Maan, G.S. Boebinger, P. Kim, & A.K. Geim. Room-temperature quantum hall effect in graphene, *Science* **315**, 1379 (2007).

J.C. Meyer, A.K. Geim, M.I. Katsnelson, *K.S. Novoselov*, T.J. Booth, & S. Roth. The structure of suspended graphene sheets, *Nature* **446**, 60-63 (2007).

L. A. Ponomarenko, F. Schedin, M. I. Katsnelson, R. Yang, E. W. Hill, *K. S. Novoselov*, & A. K. Geim. Chaotic Dirac Billiard in Graphene Quantum Dots, *Science* **320**, 356-358 (2008).

D. C. Elias, R. R. Nair, T. M. G. Mohiuddin, S. V. Morozov, P. Blake, M. P. Halsall, A. C. Ferrari, D. W. Boukhvalov, M. I. Katsnelson, A. K. Geim, & *K. S. Novoselov*. Control of Graphene's Properties by Reversible Hydrogenation: Evidence for Graphane, *Science* **323**, 610-613 (2009).

A. S. Mayorov, D. C. Elias, M. Mucha-Kruczynski, R. V. Gorbachev, T. Tudorovskiy, A. Zhukov, S. V. Morozov, M. I. Katsnelson, V. I. Fal'ko, A. K. Geim, & K. S. Novoselov. Interaction-Driven Spectrum Reconstruction in Bilayer Graphene, *Science* **333**(6044), 860-63 (2011).

D. A. Abanin, S. V. Morozov, L. A. Ponomarenko, R. V. Gorbachev, A. S. Mayorov, M. I. Katsnelson, K. Watanabe, T. Taniguchi, K. S. Novoselov, L. S. Levitov, & A. K. Geim. Giant Nonlocality Near the Dirac Point in Graphene *Science* **332**(6027), 328-30 (2011).