

Curriculum Vitae

Name: Professor Charles Gordon Smith

Nationality: British

h index 38 (Scopus)

Citations 7778

Present appointments:

- Professor of Physics at the University of Cambridge Physics Department (from 2005)
- Founder of Cavendish Kinetics Ltd, a MEMS company which sells digital variable capacitors for mobile phone front end applications (Founder from 1994). The company was purchased by Qorvo Inc. in October 2019.

Qualifications:

- PhD in experimental condensed matter physics from Cavendish Laboratory, Cambridge (1983-1987).
- MA (not completed due to illness in the family) University of Oregon, Eugene Oregon USA. (1982-1983).
- Honours degree in experimental physics. St Andrews University, Scotland (1978-1982)

Previous posts:

- University of Cambridge Physics Department, Lecturer from 1995-2001, Reader (2001-2005), Professor form (2005-present)

Research:

○ Major Achievements:

Gigahertz quantized charge pumping in graphene quantum dots

M. R. Connolly, K. L. Chiu, S. P. Giblin, M. Kataoka, J. D. Fletcher, C. Chua, J. P. Griffiths, G. A. C. Jones, V. I. Fal'ko, C. G. Smith, T. J. B. M. Janssen *Nature Nanotechnology* **8**, 417–420, (2013) [96 citations]

Erasable electrostatic lithography for quantum components R. Crook, A. C. Graham, C. G. Smith, I. Farrer, H. E. Beere, D. A. Ritchie. *NATURE* 424 (6950): 751-754 Aug 14 (2003). [74 citations]

Spin-Valve Effects in Semiconductor Field-Effect Transistors: A Spintronic Device.

Gardellis S., Smith C. G. *et al.* *Phys. Rev. B.* **60**, 7764 (1999). [298 citations]

Measurement of Coulomb Blockade with a Non-Invasive Voltage Probe. Field M, Smith C G, *et al.* *Phys. Rev. Lett.* **70**, 1311, (1993). [721 citations]

The Transition from One-Dimensional to Zero-Dimensional Ballistic Transport. Smith C.G. *et al.* *J. Phys. C.* **21**, L893, (1988). [127 citations]

- **Founder of Cavendish Kinetics Ltd** which employs around 50 people developing CMOS compatible MEMS devices for mobile phone applications. The CMOS based MEMS process was ported to Jazz Semiconductor. The company was spun out of the University of Cambridge physics department and has raised over \$68 million in VC funding and has its chips in millions of mobile phones. <https://www.cam.ac.uk/research/impact/from-lab-to-fab>. In 2019 it was acquired by Qorvo Inc.
- **Founder of Cambridge Lab on Chip Ltd** which was based on a technique developed in my group to pump fluids using AC voltages with no moving parts. The company was not successful, but I learned a lot about the pharmaceutical industry during the process.
- 17 patent application of which 10 have been granted so far.
- 193 publications and 3 invited book chapters publications in peer-reviewed international journals with 7778 citations.
- I have supervised 33 PhD students, 5 Masters students, and 13 Post-doctoral research workers.

Research Prizes: Awarded a £25,000 DTI SMART award for innovation 1997. **Accredited memberships:** **Member of the IEEE. And IOP.**

Current and previous external responsibilities from 2010:

- Trustee of Clare Hall (on college council) 2018 -.
- Chair of the steering group to identify the next president of Clare Hall 2019 -.
- On the Cavendish Board 2018 -.
- On the departmental Finance Committee. 2015-2019
- On the REF2021 sub-panel B review panel.
- Chair of the University of Cambridge Unit 9 REF2021 committee.
- Member of EPSRC Peer Review College.
- Member of the NSERC review panel for funding for scientific research in Canada (2011-2016).
- Review grants for: the European Commission, Swedish Academy of Science, US Naval Research Grants, USA National Science Foundation grants, South African Research Council, Swiss National Science Foundation.
- Reviewer for many scientific journals: *Physical Review Letters*, *Physical Review B*, *Physical Review D*, *Journal of Physics*, *Semiconductor Science and Technology*, *Physica E*, *Journal of Vacuum Science A* and *Science*.
- Invited as External Examiner for the University of Exeter Physics department (2007-2011).
- Director of Cavendish Kinetics BV from (2001-2010).
- Director of Cambridge Lab on Chip Ltd (2005-2012).
- On the management team of the QUES2T quantum technology equipment bid (2016-2019).

Public Understanding of Science (reports in the media)

- BBC World Service, Science in Action, radio interview with Stephen Dunleary
- Physics World, September 2003 p3
- Electronics Weekly, 20/08/2003, p22

Current Funding ID

- PI Multiplexed Quantum Integrated Circuits EP/S019324/1 Approved (**£940,489**)
- CI Non-Ergodic Quantum Manipulation EP/R029075/1 (**£7,032,540**) (Cambridge PI **£1,200,000**)

Previous Funding going back to 2010

- Versatile Quantum Multiplexing EP/M009505/1 (£745,381)
- CI Quantum technology capital: QUES2T (Quantum Engineering of Solid-state Technologies) EP/N015118/1 (**£8,548,965**). Ended 29 March 2019
- CI. Beyond modulation doping. (PI Professor D. Ritchie), EP/J003417/1, (**£858,545**). Ended 30 September 2015.
- CI. Nanoelectronic Based Quantum Physics- Technology and Applications. EP/K004077/1 (**£6,343,125**). Ended 31 August 2017.
- CI. Versatile Quantum Multiplexing. EP/M009505/1 (**£745,381**). Ended 31 July 2018
- CI. Versatile Quantum Multiplexing Equipment and Facility Bid. EP/M022625/1 (**£557502**). Ended 31 July 2018
- PI. Scanning probe microscopy of the quantum Hall effect and charge pumping in graphene for meterological applications. EPSRC EP/I029575/1 (**£349,806**). Ended 30 June 2014.
- CI. Quantum Multiplexer (PI Professor M J Kelley), EPSRC EP/I014268/1, (**£520,899**), Ended 30 June 2014.
- CI. Electron-hole bilayers: Excitonic phases and collective modes. EPSRC EP/H017720/1. (**£985,462**), Ended 31 January 2014.
- CI. Mapping Spin Polarisation in Quasi-One-Dimensional Channels. EP/J00412X/1, (**£219,500**). Ended 31 October 2013.
- EU grant GRAND. Graphene-based Nanoelectronic Devices . Project cost: **3.17 Million Euros**. Ended 30 August 2011.

Invited presentations in since 2011:

1. Frontiers in Nanoscale Science and Technology Workshop Tokyo, Japan. 2011 January 5 (NSEC)
2. Photonics and Electron Transport in Graphene and Carbon Nanotubes work shop 29th August 2011.
3. University of Geneva department of Physics. 1 February 2011.
4. Low Dimensional Semiconductor Physics group, the Department of Physics, University of Sheffield. 9 May 2012.
5. Invited to speak at the Department of Information Science and Electrical Engineering at Zhejiang University, Hangzhou, China (September 2013).
6. University of Exeter, Department of Physics (December 2013)
7. Quantum Technologies Workshop, University of Lancaster (June 2014)
8. Invited to Nanyang Technological University Singapore to give a seminar on low temperature scanning probe work on Graphene (May 2015)
9. Invited to give departmental physics talk at Warwick University (March 2016)
10. SINANO China to discuss single electron detector work and spin out companies (June 2016)
11. Royal Microscopy society to present scanned-gate work (July 2016)
12. University College London Nanotechnology Centre (January 2017)
13. Birmingham University condensed matter theory seminar (November 2018)