

Address: Department of Physics
University of Warwick
Coventry CV4 7AL
United Kingdom

Current appointment: Reader in Physics

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Education and qualifications: *MA Natural Sciences, University of Cambridge, 1993*
PhD Physics, University of Warwick, 1997

Appointments held: *Research Associate*
Imperial College London, June 1997 to Sept. 1999
Ramsay Memorial Research Fellow
Imperial College London, Oct. 1999 to Dec. 2001
Royal Society University Research Fellow
University of Warwick, Jan. 2002 to Sept. 2009
Associate Professor
University of Warwick, Oct. 2009 to Sept. 2015

Research focus

Materials physics, applied to semiconductors, epitaxial topological materials, thermoelectrics and photocathodes. Themes: surfaces, interfaces and thin films, molecular beam epitaxy, synchrotron radiation and neutron studies, UV sensors. Techniques: RHEED, LEED, XPS, ARPES, IPES, XRD, SXRD, XRR, PNR, SEM, TEM, STM, AFM. Winner of British Vacuum Council's C.R. Burch Prize (2005), from the for "outstanding work in the field of vacuum science, surface science [and] thin films".

Professional membership, committees and responsibilities

Senior Fellow of the Higher Education Academy
Fellow of the Royal Microscopical Society
Member of the Institute of Physics and Chartered Physicist
Diamond Light Source User Committee, *Structures & Surfaces* representative
Research proposal reviewer for Royal Society & EPSRC (UK), ANR (France)
Reviewer for international journals such as *Physical Review*, *2D Materials* and *Advanced Electronic Materials* (58 verified reviews for 20 journals listed on Publons)
Work Group Leader for COST Action 20116 *European Network for Innovative and Advanced Epitaxy*
Editor of Elsevier international journal *Solid State Communications* (2019-2021)

Conference and event organisation

SemiconNano (co-founder in 2006, programme or organising committee 2009-2021)
Led Institute of Physics *Experimental Techniques of Semiconductor Research* (2004-08)
Symposium organiser for:
Royal Microscopical Society: *MICROSCIENCE* (2010, 2012) and UKSPM (2005)
European Materials Research Society (2018, 2022)
International Programme Committee member for *ICMBE*, *ICSOS*, *CSW-IPRM*

Recent research grants

Awarded	Title	Duration	Funder	Awarded sum
Sept. 2013	Half-metallic ferromagnets: materials fundamentals for next-generation spintronics	4 years	EPSRC	£628,580 (total £1,191,641)
Oct. 2013	Epitaxy, Interface Control & Surface Modification of Novel Spin-functional Materials	3.5 years	Diamond Light Source	£41,346
Nov. 2016	A New Sensor Technology for Ubiquitous Water Quality Monitoring	6 months	WIF	£24,368
Jan. 2017	Warwick EPP Capital Equipment 2016 (Mantis "Qube" thin film deposition system)	33 months	STFC	£48,018
Feb. 2017	A New Sensor Technology for UV Short-range Communications	6 months	WIF	£24,963
June 2017	UVDyne - focus on Water Monitoring UV Sensor	6 months	STFC (impact accelerator)	£17,500
Dec. 2017	A new ultra-high vacuum system for Materials Physics	1 year	RDF	£7500 (total £29,400)
April 2018	UV sensor technology for environmental and terrain monitoring	1 year	STFC	£88,682
Sept. 2018	Deployable UV Sensors for Water Quality Monitoring: Consultation on Design and Manufacture (Phase 2)	4 months	STFC (impact accelerator)	£17,000
Oct. 2018	Ultra-thin oxide film photocathodes for accelerators and sensors	3.5 years	STFC	£35,940
Mar. 2019	UV Sensing for Off-Road Self Driving Vehicles	4 months	HEIF Industrial Strategy	£25,000
Oct. 2019	Deployment and testing of UV sensor technology in aquatic industrial settings	6 months	STFC (impact accelerator)	£47,527
Jan. 2021	Efficient sensors for underwater communications	27 months	STFC	£263,706
Aug. 2021	Optical control of the Dirac node in an epitaxial topological semimetal	2 years	Royal Society	£12,000

Recent and pending facility time allocations

Year	Facility	Country	Beamline	Type	Number of days
2014	ILL	France	D17	Neutron	5
2014	ISIS	UK	Polref	Neutron	4
2014	ESRF	France	SpLine	X-ray	4
2014	SOLEIL	France	Antares	X-ray	6
2014	SPring-8	Japan	BL11XU	X-ray	4
2015-19	Diamond Light Source	UK	I05, I07, I09	X-ray	46 total
2023	Diamond Light Source	UK	I05, I07	X-ray	2 + 6

Teaching and related activities

Current Duties:	Module leader: <i>Quantum Mechanics and Its Applications</i> (year 2 Physics) Head of lab: Electronics Workshop (year 1 Physics) Contributor and project mentor: <i>Science of Music</i> (IATL UG interdisciplinary) Mentor: <i>Physics Group Project</i> (year 4) and <i>Presentation Skills</i> (year 2) Personal and Academic Tutor: years 1-4 Physics Research student supervision: 4 PhD and 1 MSc Final year project supervision: 2 MPhys and 2 BSc Midlands Physics Alliance Graduate School modules: <i>Nano/Surface I</i> and <i>Hands-on Vacuum Science</i>
T&L Fellowships:	WIHEA Fellowship (2017/18 to 19/20) IATL Academic Fellowship <i>Science, Maths and Music</i> (2014-15) IATL Academic Fellowship <i>Vacuum Science</i> (2019-20)
Quality Assurance:	Examination checking and second-marking (Physics) Peer observation (Physics) Module approval (IATL) Ph.D. Examiner at 10 UK universities (including 13 Warwick PhD + 5 MSc)
Working Groups:	Management and Education Committee (IATL) PG SSLC (Physics) Gender Taskforce (University) Interdisciplinarity Learning Circle Co-chair (WIHEA)
Outreach:	Activities include schools work (e.g. RMS Microscopes for Schools scheme), British Science Festival musical performance and talk, university open days, Science Galas, Physics Café, Pint of Science.
Previous Duties:	Module leader <i>Geophysics</i> (year 2 Physics) Physics 2 nd year lab coordinator for two experiments Physics Postgraduate Admissions Tutor Physics Welfare and Communication Group Undergraduate Research Scholarship Scheme Review Board Midlands Physics Alliance Graduate School Academic Coordinator Supervised 11 successful PhD and 5 successful MSc research students

Selected recent publications

1. *Cubic MnSb: epitaxial growth of a predicted room-temperature half-metal*

J.D. Aldous, C.W. Burrows, I. Maskery, M. dos Santos Dias, M.K. Bradley, A.M. Sánchez, R. Beanland, J.B. Staunton and G.R. Bell
Physical Review B Rapid Communications (2012), vol. 85, article no. 060403

2. *Weak mismatch epitaxy and structural feedback in graphene growth on copper foil*

N.R. Wilson, A.J. Marsden, M. Saghir, C.J. Bromley, R. Schaub, G. Costantini, T.W. White, C. Partridge, A. Barinov, P. Dudin, A.M. Sanchez, J.J. Mudd, M. Walker and G.R. Bell
Nano Research (2013), vol. 6, p. 99

3. *van der Waals epitaxy of monolayer hexagonal boron nitride on copper foil: growth, crystallography and electronic band structure*

G.E. Wood, A.J. Marsden, J.J. Mudd, M. Walker, M. Asensio, J. Avila, K. Chen, G.R. Bell and N.R. Wilson
2D Materials (2015), vol. 2, art. no. 025003

4. *Realisation of magnetically and atomically abrupt half-metal/semiconductor interface:*

Co₂FeSi_{0.5}Al_{0.5}/Ge(111)

Z. Nedelokoski, B. Kuerbanjiang, S.E. Glover, A.M. Sánchez, D. Kepaptsoglou, A. Ghasemi, C.W. Burrows, S. Yamada, K. Hamaya, Q.M. Ramasse, P.J. Hasnip, T. Hase, G.R. Bell, A. Hirohata and V.K. Lazarov
Scientific Reports (2016), vol. 6, art. no. 37282

5. *Depth sensitive X-ray diffraction as a probe of buried half-metallic inclusions*

C.W. Burrows, T.P.A. Hase, M.J. Ashwin, P.J. Mousley and G.R. Bell
Physica Status Solidi B (2017), vol. 254, p. art. no. 1600503

6. *Photoelectric Solar Power Revisited*

G.R. Bell and Y.A. Ramachers
Joule (2017), vol. 1, p. 639

7. *Correlation between spin transport signal and Heusler / semiconductor interface quality in lateral spin-valve devices*

B. Kuerbanjiang, Y. Fujita, M. Yamada, S. Yamada, A.M. Sánchez, P.J. Hasnip, A. Ghasemi, D. Kepeptsoglou, G. Bell, K. Hamaya and V.K. Lazarov
Physical Review B (2018), vol. 98, art. no. 115304

8. *Work function of GaAs(hkl) and its modification using PEI: mechanisms and substrate dependence*

S.D. Seddon, C. Benjamin, J.I. Bryant, C.W. Burrows, M. Walker, G. Matheson, J. Herranz, L. Geelhar and G.R. Bell
Physical Chemistry Chemical Physics (2019), vol. 21, p. 24666

9. *Ultraviolet absorption of contaminants in water*

M. Spangenberg, J.I. Bryant, S.J. Gibson, P.J. Mousley, Y. Ramachers and G.R. Bell
Scientific Reports (2021), vol. 11, p. 3682

10. *Structure of Strained Low-Dimensional Sb by In Situ Surface X-Ray Diffraction*

P.J. Mousley, C.W. Burrows, C. Nicklin and G.R. Bell
Physica Status Solidi B (2022), vol. 259, art. no. 2100432