

Prof. / Dr Robert G W Brown BSc, PhD, MAE, FIEE, FInstP

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PROFESSIONAL EXPERIENCE & PERSONAL RESPONSIBILITIES

3/09 – date **Principal Sensor Scientist, Rockwell Collins - Advanced Technology Center,**

also UCI Adjunct Professor, as below. [Rockwell Collins is a \$5-Billion US Aerospace/Defence Co.]

- Nano-plasmonic detectors for UV, VIS, all IR and THz regions; extraordinary Responsivity etc.
- Nano-plasmonic ultra-fast computing scheme invented. Ultra-high-index nano-plasmonic glasses.
- 8 new Patents filed in 2011-2012. 5 additional IP Disclosures filed - now being filed as Patents.
- Collaboration/contractual with US Gov't: Air Force Research Lab, Night Vision Labs & DARPA.
- Cleared to S level.

7/09 – date **Adjunct Professor (part-time) at the University of California, Irvine (UCI).**

Beckman Laser Institute and Medical Center - & Department of Computer Science:

- researching: micro/nano-miniaturized 3D-hyperspectral imaging; scaleable high-res 3D-displays (no glasses) - and quantitative 3D-surround video-endoscopy for internal-passage observation etc.
- 4 new White Papers / Research Proposals created & submitted to Agencies in the DC area.

4/06 – 7/09 **Chief Technology Officer, Ostendo Technologies Inc, Carlsbad, California**

- Directing creation of novel projection displays & novel multi-color InGaN MQW diode lasers.
- 6 Patents filed. 6 research papers published in APL, JAP etc.
- Collaborations with UC Irvine Department of Computer Science - and UCSB Engineering Dep't.
- Visiting Scientist, University of California, Irvine; Dep't of Information and Computer Science.
- Research leader: DARPA \$6.8M contract awarded July 2008 - for novel LED/Laser Diode arrays.

7/05 – 4/06 **Consultant (transition year) – for various UK companies based in the US and UK**

- 7/05 emigrated to USA, to be married in California in Sept 2005 - so a transition year was needed.
- Consultancies - awaiting Green Card and Social Security Number, post-emigration.

2004 – 2005 **Director of Nanotech Northern Ireland (NI), from Queen's University Belfast**

- **Director of Nanotech NI - 2 year contract; (leader of multi-million dollar NI Nanotech)**
- **Full Professor at Queen's University Belfast and University of Ulster (simultaneously)**
 - Responsible for research direction and strategy - involving 163 staff, funding etc.
 - Strategy/Business Plans for Nano in NI & bids for new Nano R&D centres completed.
 - Leading two NI sci/tech delegations to Beijing & Tokyo, Taipei & Seoul, Oct-Nov 2004...
...achieving successful international nano-research collaborations and inward investment.

1998 – 2003 **International and Editorial Director, Institute of Physics, Bristol and London**

- Executive Director: Editor-in-Chief of 37 physics research Journals. \$32M+ business.
- Executive Director of EuroPhysics Letters.
- Created two new research Journals – 'Quantitative Finance', 2001 - and 'Physical Biology', 2003.
- Created the IoP/IoPP 5-year 'International Strategy'.
- Created new Business Centers for IoP/IoPP in Moscow, Beijing, Philadelphia and Tokyo.
- Hosted 2 national delegations from Beijing in Bristol – Ministry of Science and NSF-China, 2002.
- Invited Lecture tours of 12 UK and 14 German top University physics Departments, 1999-2001.
- Invited lecture: 'Future e-publishing' - at Dutch Royal Society and Chinese Phys Soc, 2001.

- Prestigious UK ‘Queen’s Award for Enterprise’ to my team in 2000.
- Lectures in 2002 at Stanford, UCLA, Harvard, MIT, UCSB, Seoul National Uni, Bangalore, IOP-CAS in Beijing, Lebedev Institute in Moscow, Tokyo Inst of Technology etc.
- Creator and co-Editor-in-Chief of the ‘Handbook of Opto-electronics’, for CRC Press, May 2006.
- Elected to Membership of Academia Europaea, July 2002. (‘...for sustained academic excellence’)

1990 - 1998

**Head of Opto-electronics Research and General Manager
Sharp Laboratories of Europe, Oxford, UK**

- Creation of a new European R&D lab for Sharp Corporation, the 3rd largest electronics company.
- Optoelectronics R&D direction, definition, implementation, lab design/construction and success.
- PhD recruitment x30, team-building for various different Opto-electronics research projects.
- Initiated and directed R&D in LC display improvements, diffractive LC panels, projection TV, semiconductor nanostructures, GaN materials, opto-neural nets, wireless IR telecoms, MMDL and SHG lasers, spatial light modulators.
- Eleven keynote/plenary lectures at International Conferences (Houston, San Francisco, Hawaii’98, Belfast, Ghent, Washington DC, Dublin, Manchester, Krakow, The Hague and Tuscon).
- Special (Full) Professor at University of Nottingham, Dept of Electrical / Electronic Engineering.
- External contracts with Universities of Nottingham, UCL, Oxford, Cardiff, Sheffield and Exeter.

1989-1990

Research Director, Defence Technology Enterprises, Malvern, UK

- Exploitation of miniaturised, modular photon-correlation technologies I created during 1984-1989.
- Leading various ‘spin-out’ companies to profit from my inventions.

1977-1989

Principal Scientist, MoD, Royal Signals and Radar Establishment, Malvern, UK

- R&D in photon correlation spectroscopy and velocimetry
- Special emphasis on measuring turbulent fluids in MoD applications, transonics, submarines etc.
- Four years pioneering and directing novel development and applications of semiconductor laser diodes, single-mode optical fiber and APD technologies for photon correlation applications:
- First to explore higher photon-statistics of semiconductor laser diodes, now widely used.
- First to demonstrate photon-correlation properties of avalanche photodiodes, now used globally.
- Patented single-mode optical-fibre dynamic light scattering, now used world-wide.
- Above 3 technologies adopted by NASA in 1988 and flown on the Space Shuttle, 1995, 1997 and 1998.
- Development of these experimental techniques at PHLS Porton Down for bio-applications.
- Invented Combined Doppler Transform Laser Anemometry.
- 100 MHz Digital Photon Correlator construction (1979) - fastest at that time.
- > 75 peer-reviewed publications in this period.

EDUCATION

Ph.D. Engineering	(1983)	University of Surrey, UK
B.Sc. Physics (II-I Honours)	(1973)	University of London, UK

SPECIALIST TECHNICAL EXPERTISE

Electronics:	- Nano-photonics. Nano-structured/fabricated semiconductor laser diodes, avalanche photodiodes, LCDs, fast digital photon-correlators, digital displays and 3D-systems.
Optics:	- Optoelectronic sensing systems, laser measurement systems, single-mode fibers, single-photon detection and correlation, optical aperture synthesis. LED/laser colorimetry.
Fluid dynamics:	- Photon correlation laser velocimetry and applications to turbulent flow measurement.
Particles:	- Dynamic light scattering for particle size / distribution measurement.
History:	- Twentieth Century ‘History of Optics and Opto-electronics’ – co-author of the first account.

ADDITIONAL INFORMATION

- Publications: ~120 Research papers, book chapters, 'The Handbook of Optoelectronics', Conference pub's.
- Patents: 19 granted. 6 new Patent applications in 2008/9. 8 new Patent applications in 2011-2012.
- Reports: 15 Consultancy Reports.
- Honorary: - Special (Full) Professor, Electronics Dept, University of Nottingham, UK (1993 - for life)
Appointments - Visiting Fellow, Electronics Dept, University of Bristol (1999 - 2003)
- Honorary Reader in Physics, University of Kent (1988 -1993)
- Learned: - FIEE Fellow, Institute of Electrical and Electronic Engineers (1994)
Society - CEng Chartered Engineer
Appointments - FInstP Fellow, Institute of Physics (1987); also CPhys, Chartered Physicist
- Member Optical Society of America (1983); Society for Information Display (2006)
- Member Academia Europaea (Europe's Academy of the Sciences and the Arts) (2002)
- Awards/ Prizes: - MoD Prize for 'Outstanding Success in Technology Transfer', 1987
- Sharp Corporation (Japan) Prize for novel laser diode developments, 1995
- Queen's Award for Enterprise (team leader), Buckingham Palace, Monday 26th February 2000
- Advisory: - Chairman: Imperial College Applied Optics Department Advisory Board (1997- 2002)
Boards - Member: Heriot Watt / St Andrews University Optoelectronics MSc Advisory B'd. (1995-)
- EPSRC and BBSRC Life Sciences Interfaces and Post-Genomics Panels (2002-2003)
- UK Home Office Science and Technology Advisory Board Member (July 2004 - date)
- Committees: - NASA International Microgravity Advisory Committee (1990-open)
- IEE – E13 Optoelectronics/ Optical Committee (1994- 1999)
- University of Oxford, Dept of Continuing Education Steering C'tee (1997- 1999)
- Nottingham University MBE Steering Committee (1993-1997)
- IOP: Optical Group, Member and Treasurer (1980-1990); Instrument Science Committee
- Consultancy: - Consultant to Rockwell Collins Advanced Technology Center, Iowa (2009-2011)
- Consultant to US Navy, David Taylor Research Center, Bethesda, Md (1980-1990)
- Consultant to NASA Lewis (now Glenn) Research Center, Cleveland, Ohio (1988 - open)
- Consultant to the US Protein-measurement company, Protein Solutions Inc (1996 - 2006)
- Consultant to Insight Media Inc, Norwalk, CT (2007 - open)
- Other Editorial: - Editor in Chief - 'Handbook of Optoelectronics', CRC Press, May 2006.
Activities - Optoelectronics Book Series co-Editor (1996-), for Institute of Physics & CRC Press.
- Guest Editor – Applied Optics: special issues – Vol 36, # 30, 20th October 1997;
Vol 40, #24, 20th August 2001 – and Vol 45, #10, 1st April 2006.
- Editorial Boards of J Phys E (1987-1990) and Pure and Applied Optics (1992-1997)
- Thesis activity: - Supervision of various MSc and PhD theses at Southampton, Heriot Watt and St Andrews
- PhD external examiner at Cambridge, Tech U Denmark and London (Kings) Universities
- Conference: - Co-Chair, OSA Int'l Photon Correlation Conf, Aug 2000 Canada; Aug 2004 Amsterdam.
Activities - Co-organiser of 4 International Conferences in Washington DC, Cambridge, Capri, Krakow
- Eleven invited / keynote international conference lectures, listed above
- IOP Physics Day / New HQ Celebrations, invited speaker, December 1996
- Rank Prize Symposium: Optical Interconnects/Data Links, Invited speaker, Grasmere, 1997
- Professional: - Courses in Electronics (GEC), Optics (Reading), R&D Management (MoD), Finance (IoD)
- Recreational: - The flute and flute playing: various professional and good amateur ensembles/orchestras.
- Status: - British Citizen by birth; US Citizen by naturalization in 2011.

CORE COMPETENCIES & TRANSFERABLE SKILLS

Executive Director / CTO / CEO

SPECIALIST BUSINESS EXPERTISE

- CEO - effectively CEO of Northern Ireland Nanotechnology for 4 years. CEO of my own Consultancy.
- Executive Director - of IoP/IoPP as both Editorial Director - and International Director.
- Chairmanship - Committees at IoPP, Sharp Laboratories, Nottingham University and Imperial College.
- Committee member - too numerous to list: IOP, IOPP, IEE, Home Office, Queens Uni, Nottingham Uni, UC Irvine...
- International - business dev and negotiation/operations experience in China, Russia, Japan and Korea; also USA.
- Change Management - especially in Northern Ireland Nanotech - and within Sharp Corporation.
- Government - Home Office Advisory Board; Parliamentary Scientific Committee – the future value of physics.
- Finance and Profit: - significant improvement in IoPP Journals Business Income, extending high-margin profits. IoD.
- Inward Investment - into Northern Ireland Nanotechnology from UK Government and US Companies.
- New Product dev - many new Product inventions, both in photonic device/system engineering - and research Journals.
- New Business dev - created new business ventures for IOPP internationally in Beijing, Tokyo, Moscow and Seoul.
- Strategy/Vision - plans conceived & successfully executed at Rockwell Collins, Sharp Corp, Nanotech NI, IoPP.
- Core competencies - see below for an extensive chart.
- New Co. creation - spun-out Companies (eg, Protein Solutions, Myriad) from my DTE Ltd activities.

CORE COMPETENCIES & TRANSFERABLE SKILLS

- Visionary leadership
- Created / managed highly successful organizations
- Opened new plants
- Chaired civic and social organizations
- Cross-functional team leadership
- Key partnership & loyal team building
- Change management
- Project management experience
- Strategic planning and analysis
- Chaired multi-functional teams
- Customer relations
- Manufacturing experience
- Re-organized and re-vitalized teams
- Created new systems and standards
- Global strategic alliances
- Large budget, P&L & cost control
- Directed diversification
- Opto-electronic technology invention
- Research team leadership
- Procured major funding and grants
- Large team leadership
- Complex operations
- Negotiated foreign contracts
- Created and applied leading-edge high tech
- Consultancy
- Chaired international conferences
- Integrated new technologies
- Sales and Marketing experience
- Served on Corporate & non-profit Boards
- Formulated Board-level policies
- Patent / invention holder
- Entrepreneurial experience
- Authored major business plans
- World leading research results of high impact
- Risk management
- Go, no-go decisions
- Recruited top performers
- Published author, books, top-level papers
- Public / Media relations
- Served on many key committees
- Created and directed international teams
- Participated in breakthroughs