

CURRICULUM VITAE – KISHAN DHOLAKIA

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Date of Birth: 28th December 1966

EDUCATION

1990-1993 Imperial College, London, PhD in Laser Physics (laser cooling and trapping of ions)

1989-1990 Imperial College, London, M.Sc. (with distinction) in Applied Optics

1985-1988 Churchill College, Cambridge University, B.A. (Natural Sciences, Physics)

EMPLOYMENT

2003- Professor of Physics at St Andrews

2000 - 2003 Lecturer/Reader in School of Physics and Astronomy, St Andrews

1997 - 2000 Royal Society of Edinburgh Research Fellow, University of St Andrews

1994 - 1997 Postdoctoral Research Assistant, St Andrews and Imperial College, London

INTERNATIONAL AWARDS/HIGHLIGHTS/MEMBERSHIPS

2019 Elected Affiliate Professor at the Department of Physics, College of Science, Yonsei University, South Korea

2018 Recipient of the SPIE Dennis Gabor Award

2017 Recipient of the Institute of Physics Thomas Young Medal and Prize

2017 Distinguished Professor IIT Madras, Chennai, India

2016 Recipient of The Optical Society (OSA) R.W. Wood Prize

2016 Recipient of Institute of Advanced Studies, Distinguished Visiting Fellowship at the University of Western Australia, Perth, Australia

2015 Christmas Lecture for the Royal College of Surgeons, Edinburgh

2015 International Year of Light Lecture, Tate Modern, London

2015 Guinness Book of Records citation: "fastest man-made rotation"

2015 Royal Society Leverhulme Trust Senior Fellowship

2014 Elected OSA "Member at Large"

2013 Finalist for IET A.F. Harvey Prize (last three)

2013 Chair of OSA Fellows Committee

2013 Korean Government International Advisor for new \$100M IBS Initiative

2012 Visiting Professor at Chiba University, Japan (extended until 2018)

2013 Elected to OSA International Council

2012 OSA Outstanding Reviewer Award

2011- 2015 Nature Publishing Group, "Exceptional" Reviewer

2010 Elected as NSERC International member (Canada)

2008 Royal Society Wolfson Merit Award

2008 Elected Fellow of the Optical Society of America

2009 Elected Fellow of SPIE

2007 Fellow of the Royal Society of Edinburgh

2005 UK EPSRC Anniversary Newline 2005: *Selected Highlight Researcher* (Biophotonics). EPSRC looked at last decade of scientific work *across every discipline*: picked only 15 UK persons

2005 Honorary Adjunct Professor at the Center for Optical Sciences, University of Arizona, USA

2005 Finalist for the International Koerber Prize (in the last three)

2004 Fellow of the Institute of Physics, UK.

2003 Winner of European Optics Prize for work on optical micromanipulation.

2004 Awarded the International Tan Chin Tuan Visiting Fellowship at NTU, Singapore

PRESENT FUNDING TRACK RECORD

I have been awarded over £32M in Research Funding since 2000. (Since 2017 I have raised > £9M as Principal Investigator). Examples:

EPSRC Programme Grant: Challenging the Limits of Photonics: structured light (2012-2017), £4,406,673; EU FP7 ICT Functional anatomical molecular optical screening (FAMOS) (2012-2017) €654,516; EPSRC Platform Grant: Shaping light at the interface (2014-2019) £1,183, 629; EPSRC Programme Grant: Resonant and Shaped Photonics (2017-2022) £5,023,462; EPSRC Prosperity Partnership (2017-2022) £1,434,010. EU H2020 Proscope Grant €650,000 (2019-2023); EU DyNamiC grant €825,000 (2019-2023).

INVITED/PLENARY/KEYNOTE TALKS. I have delivered >200 Invited/Plenary/Keynote talks. Since 2008, I average 10+ invited talks and 3-4 Plenary talks/year and have had Visiting Fellow positions in the USA, Australia, Singapore and Mexico. I have also been an Invited Lecturer at fifteen International Summer Schools in Photonics and Biophysics (incl. Mexico, Denmark, Sweden (**Hven Biophotonics School**), Bath, UNESCO, ICTP, Switzerland, Italy, Australia, India. I have delivered over ten international talks as **OSA Travelling Lecturer**. Invited Lecturer at the **OSA Siegman School in 2018**. Selected as the International Researcher/Lecturer for the “Erudite” Programme in Cochin, India (restricted solely Nobel Prize Winners and World Recognised Researchers)

JOURNAL PUBLICATIONS I have >300 journal publications including over twenty in Nature/Science family journals. My career citations/statistics are below (11/09/19).

	Google Scholar	ISI Web of Knowledge	Scopus
h-index	85	72	76
citations	28,576	19,351	20,804

LEADERSHIP EXPERIENCE I have led several collaborative UK and EU projects to very successful outcomes. Examples include co-ordination of the ATOM-3D NEST fp6 network of seven European partners that yielded 61 high impact papers (over 50% joint work, 2004-2007). Further examples are three EPSRC Platform Grants (e.g. GR/S96296/01), the Basic Technology ‘Sonoptics’ (EP/D04877X/1) project and the subsequent translation grant (EP/H045368/1). I am PI of the current EPSRC Programme Grant (Resonant and Shaped Photonics (2017-2022) £5,023,462). The previous Programme Grant, where I was also PI, was top rated (6/6) by the Advisory Board and EPSRC for high quality outputs, industry liaison and exhibiting exceptional flexibility. I have co-organised (or co-chaired) > 12 international meetings in the last five years, including the largest international conference on trapping (typ. 100-150 participants, SPIE, USA) and am topical chair and instigator of the new Neurophotonics Topical Session at CLEO, USA (2016, 2017). I was head of the SUPA Physics and Life Sciences theme (2011-2015) and successfully brought the theme to prominence. Invited international committee member for five major international Biophotonics initiatives since 2010 (e.g. Korea, Australia, Czech Republic). Chair of Int Conference on Biophotonics 2019: www.icob2019.com

CONTRIBUTIONS TO TEACHING AND CAREER DEVELOPMENT I have successfully supervised **46 students** to PhD level since 1999 (over 70% as sole supervisor). Student Susan Skelton won the UK Best Physics “SET” student Prize in 2009. **Fifteen members of my team** have progressed to permanent academic positions worldwide (three at full Professor level). I have a strong teaching programme in the department and have instigated new final year courses on “Biophotonics” and “Applications of Quantum Physics”

INDUSTRIAL ACTIVITIES AND GRANTED PATENTS I commercialized the World’s first portable compact suite of optical trapping systems for biophysics (through **Elliot Scientific Ltd**). This product won the Photonics Circle of Excellence Award (USA, Jan 2005) and sales in excess of £3M have been achieved to date. Twenty-seven main patent families (approx. 110 individual patents) of which twenty-three families are licensed. More than 54 individual patents awarded worldwide in areas of beam shaping, manipulation, Raman and imaging.

In 2015 a £2.2M licence deal transferred the 23 patent families (Biophotonics Portfolio) to **M Squared Lasers**.

In 2016 I commercialised Airy beam Light Sheet Technology with subsidiary **M Squared Life** (<http://www.m2lasers.com/microscopy-aurora.html>). Currently 17 instrument sales have been made in UK, USA, Europe and South Africa under an Alpha Programme including systems at NPL, London, Max Planck Institutes in Germany, MRC Centres in London and John Hopkins, USA. A further ten new patents are filed since Jan 2015.

I am in the process of exploring the establishment of a new spin-off company based on the TRAFIX concept (Science Advances 2018) I have already IP filed and identified early stage customers.

PUBLIC ENGAGEMENT/OUTREACH ACTIVITIES

Kishan Dholakia has raised >£500K for outreach activities and had substantial interactions with teachers, educators, students (primary-1st year undergraduate) at Schools, Science centres and over fifteen UK Science festivals. He has had substantial interactions with teachers, educators, students (primary-1st year undergraduate) and developed a modular photonics show that has proved very successful and resulted in the establishment of new lectures/visual simulations of optics in action, working demonstrations of optical tweezers, refraction/reflection of light, levitation, Newton's laws, colour mixing, a "Rainbow in a lab" amongst others.

Highlight activities over the last decade include:

- Presentation to IoP Teachers Conference at Glasgow Science Centre ; Family lectures to the Yorkshire Philosophical Society; Attendance at the inaugural Carnegie Festival, Dunfermline, 2008
 - Visits the Cheltenham Science Festival in 2008 and 2009 (15,000 visitors each year); including appearance on BBC Points West in 2008 and interview on BBC Radio Gloucestershire in 2009
 - Presentation to day care attendees, Age Concern Glenrothes 2011, 2012
 - Edinburgh International Science Festival 2007, 2009, 2011, 2013
 - Family lectures at Science Centre in Dundee (DSC) in 2008 -2012
 - ICPS 250 student invited talk (Aug 2013); KOALA Australia student conference (Nov 2013)
 - Attendance at a number of events for National Science and Engineering Week, including Open Days at St Andrews, the Moray Science Festival and school workshops around Fife (2012-2018).
 - CPD events for teachers (3-4 per year) in association with SSERC, University of St Andrews and the ASE.
- International Outreach Prize (2 of 5 prizes won by my team) at SASOL Festival South Africa (2006)
- Invited to Buckingham Palace as one of only 100 scientists in UK on selected list of exceptional outreach Professors (see picture below)

Examples of major Public/Outreach Lectures

- University of Sydney, Public Lecture: The Light Fantastic (November 2013, 300 public attendees)
- International Year of Light Lecture at the Tate Modern, London (Nov 2015, 100 public attendees)
- Christmas Lecture for the Royal College of Surgeons, Edinburgh (Dec 2015, 150 student attendees)
- Price Waterhouse Coopers, New York, Public Lecture on Imaging (September 2016, 120 attendees)
- Bach the Universe and Everything Lecture (<http://www.oae.co.uk/event/bach-universe-everything-5/>); (February 2018, 250 public attendees)
- OSA International Day of Light Festival, Sydney (16 May 2019; public lecture 300 attendees)

My efforts have also been the subject of a Times Higher Education Supplement article and a major Biophotonics EPSRC Newline article. Over fifteen BBC Radio/National TV interviews in last eight years. Example on "fastest spinning man-made particle": BBC News article 28/8/13 and BBC R4 interview (Palab Ghosh)



The figure above shows examples of my outreach and public understanding work. **Left:** BBC news article, on spinning a particle in vacuum. **Middle:** Team pictured with the Guinness Book of World Records 2015. **Right:** Outreach Event at Buckingham Palace (June 2007)