

## SHORT FORM CURRICULUM VITAE

**Name :** James Roy TAYLOR  
**Nationality :** British  
**Date of Birth :** 29 April 1949  
**Place of Birth :** Carrickfergus, N. Ireland  
**Contact points :** Tel : + 44 (0) 20 7594 7786 Fax : + 44 (0) 20 7594 7782  
e - mail : jr.taylor@ic.ac.uk

**Education :**  
1967 - 1971 The Queen's University of Belfast, BSc 1st Class Hons Physics  
1971 - 1973 The Queen's University of Belfast, start of PhD studies, transferring  
1973 - 1974 Imperial College London PhD in Laser Physics Supervisor: Professor D.J. Bradley FRS, Thesis Title "Studies of Tunable Picosecond Laser Pulses and Nonlinear Interactions"

**Employment :**  
1975 - 1977 Research Assistant, Institut für Physikalische Chemie, Technische Universität , Arcisstrasse, 21, 8000 München 2, Germany  
1977 - 1987 Research Assistant, Optics Section, Physics Department, Imperial College, Prince Consort Road, London SW7 2BZ, England  
1987 Promotion to Academic Related Staff Grade III  
1990 Promotion to Professorial Research Fellow (Grade IV Academic Related Staff)  
2002 Professor of Ultrafast Physics and Technology

**Present Positon :** Founder and Head of Femtosecond Optics Group (since 1986)

**Patent Applications :**  
1987 Simple tunable soliton source  
1995 Fibre Amplifier for the Second Telecommunications Window  
1995 Fibre Amplifier Pump Sources  
1996 Novel Q-switch fibre laser supercontinuum source

**Awards :**  
1990 Ernst Abbé Award of the Carl Zeiss Foundation (Germany)  
An inaugural recipient of this award. An international award in the field of optics, lasers and photonics made in recognition of my contributions to the development and diverse application of ultrashort laser pulses.  
2006 Royal Society Wolfson Research Merit Award  
2007 Thomas Young Medal and Prize of the Institute of Physics, UK  
"For contributions to the development of modern solid state lasers"  
2008 Imperial College London Research Excellence Award  
"For nonlinear optics and fibre based instrumentation"  
2008 Royal Society Brian Mercer Feasibility Award  
"Long length tapered photonic crystal fibre structures for spectral and temporal manipulation"  
2012 Royal Society Rumford Medal  
"In recognition of my outstanding contributions to tunable ultrafast lasers and nonlinear fibre optics, including fibre Raman, soliton and supercontinuum laser sources, which translated fundamental discoveries to practical technology"

**Books :**

- 1988 Co-author " Lasers - How they are made ", Threshold Books, London. Published by Faber and Faber. A text book explaining very basic laser concepts and applications, aimed at non-scientists and school students
- 1992 "Optical Solitons - Theory and Experiment", Cambridge University Press, Research level text book.
- 2011 "Supercontinuum Generation in Optical Fibres" Co-edited with J.M. Dudley, Cambridge University Press, Research level text book

**Society Membership:**

Fellow of Optical Society of America (Elected 2000)  
Member of Institute of Electrical and Electronic Engineers

**P-G Supervision :**

I have supervised the successful completion of 10 M.Sc. research theses and 41 PhD candidates.  
PhD external examiner at Trinity College Dublin, University College London, Kings College London, Universities of Southampton, St Andrews, Strathclyde, Swansea, Dundee, Aston, Technical University Tampere, Finland, Technical University Denmark and NanYang Technology University, Singapore

**External Committees :**

Optical Society of America: Charles Townes Award 2000 - 2002  
Frederic Ives Award 2006 - 2007 (Chairman 2007)

**International Journals - Topical Editor :**

1991-1993 Soviet Lightwave Communications  
2007- 2011 Journal of European Optical Society Rapid Communications  
2007- 2012 Optical Society of America – Optics Letters

**Conference Programme Committees :**

Conference on Lasers and Electro-Optics (CLEO), Non Linear Waveguides (1989,1991), Ultrafast Phenomena (2000,2002), International Symposium on High Power Fibre Lasers (2002,2003,2006), Advanced Solid State Lasers, OSA Annual Meeting (1988), Rank Prize (Raman Amplifiers 2001), Euro Photon 2010, Photonics 2008 and Photonics 2010 India, IEEE Photonics Society Nonlinear Optics 2010, European CLEO (2005, 2007), Nonlinear Photonics (2012), Photonics West (2009, 2010, 2011, 2012)

**Publications and Research:**

I have co-authored more than 350 research publications in journals of international standing and more than 400 conference presentations at international conferences. In 2002 I was named as the most prolific European experimentalist (working solely in Europe) publishing in Optics Letters, the leading international journal in optics, lasers and photonics, over its then initial twenty five year lifetime.

In the past five years I have given 30 invited presentations at the major international conferences.

I have worked on the generation, measurement and application of ultrashort pulses for more than forty years with experience in dye lasers, diode-pumped solid state lasers, vibronic lasers and high power fibre lasers and have also utilized nonlinear optical processes in fibres to generate wavelength versatile sources, such as the high power supercontinuum source, which has been a scientific and commercial success. My current research programmes are directed towards the development of all-fibre compact and efficient visible systems which can be readily incorporated into routine diagnostic laboratory equipment.

**Research Highlights (World Firsts) 1986-Present**

- 1986** Wavelength tunable, duration selectable ultrafast generation from a non linear supercontinuum in conventional fibre.
- 1987** Generation of pulses of 4 optical cycles in optical fibre  
Single pass soliton Raman generation  
Soliton Raman lasers  
Cascaded soliton Raman lasers  
Colliding pulse mode locked dye laser with new dye combination other than Rhodamine 6G & DODCI  
Femtosecond cw mode locked blue laser
- 1988** Experimental and theoretical demonstration of suppression of soliton self frequency shift  
Soliton pulse reconstruction via synchronous fibre Raman amplification  
Comprehensive experimental-numerical analysis of pulse shaping in femtosecond laser
- 1989** Demonstration of amplification of picosecond and femtosecond pulses in Er fibre amplifier  
Femtosecond Ti:Sapphire laser ( using coupled cavity APM)
- 1992** Theoretical and experimental verification of spectral and temporal instability of periodically amplified solitons  
Pulse compression of diode laser signals using dispersion decreasing fibre  
Sub 100 fs pulses from diode pumped Cr:LiSAF – 33 fs record
- 1993** Vibronic laser, cw pumped mode locked with intracavity multiple quantum well absorber  
Femtosecond Ti:Sapphire laser mode locked with SESAM  
All solid state, diode pumped, tunable ultrafast laser passively mode locked with intracavity MQW absorber.  
Ultrafast cw pumped mode locked Cr:YAG laser
- 1994** Comb-like dispersion profiled fibre for pulse compression  
Step-like dispersion profiled fibre for controlled pulse compression  
Femtosecond pulse generation from Pr doped fibre lasers  
Chirped fibre gratings for dispersion compensation of femtosecond pulses in transmission  
THz repetition rate pulse train generation  
Diode pumped femtosecond vibronic (Cr:LiSAF) laser  
Diode pumped tunable solid state regenerative amplifier  
Sub 100 fs compact fibre laser pumped Cr:YAG laser  
Ultrafast visible laser, using KLM to mode lock Pr:YLF
- 1995** All solid state tunable femtosecond laser oscillator and regenerative amplifier (diode pumped Cr:LiSAF)
- 1996** Visible femtosecond cw pumped solid state laser Pr:YLF and 14 new laser transitions identified  
Fibre laser pumped CW supercontinuum generation using standard optical fibre
- 1997** Development of technique for the measurement of the non linear coefficient  $n_2$  of optical fibres using cw pumping  
Supercontinuum fibre laser  
Introduction of the master oscillator power fibre amplifier (MOPFA) configuration
- 1998** Ultra broad-band fibre Raman amplifiers and lasers 1100nm - 2000nm  
The dispersion compensating fibre Raman amplifier
- 2000** MOPFA (Master Oscillator Power Fibre Amplifier) sources plus non linear conversion for high average power visible generation. The MOPFA has become a key element in fibre laser technology.
- 2001** Multi watt average power cw and pulsed, all-fibre, holey fibre supercontinuum sources. Supercontinua with up to 20W average and 20 mW.nm spectral power density
- 2002** Totally fibre integrated soliton-like femtosecond source incorporating holey fibre for dispersion compensation. Soliton fibre lasers at one micron wavelength
- 2003** All fibre integrated chirped pulse amplifier (CPA) incorporating photonic bandgap fibre. Power scalability with CPA in Yb, Yb-Er and Raman based amplifiers.
- 2004** Application of cw pumped all fibre supercontinuum source to optical coherence tomographic imaging

- 2005** Fully fibre integrated, high brightness picosecond based supercontinuum extending 500 nm – 1800 nm , average power 10W, 5 mw/nm spectral brightness.  
Demonstration of extension of supercontinua to the blue by using dispersion control with stepped dispersion profiled cascaded photonic crystal fibres  
First demonstration of the giant chirped, normally dispersive, mode locked Yb fibre laser
- 2006** Introduction of long length tapered photonic crystal fibre for absolute control of supercontinuum generation and demonstration of enhanced uv supercontinuum generation with up to 5mW/nm in the uv.  
Application of long length tapered PCF for adiabatic soliton compression at 1  $\mu$ m. Generation of 30 fs pulses and demonstration of soliton evolution from noise bursts at near visible wavelengths.
- 2007** World first demonstration of extreme pulse compression in long length tapered photonic crystal fibres
- 2008** World record average spectral power density in a visible/ir supercontinuum of 100mW/nm
- 2009** Direct measurement of giant chirp pulses in normally dispersive passively mode locked fibre lasers
- 2010** All fibre integrated Bi-doped silica fibre laser mode locked with carbon nanotubes
- 2011** Amplification of picosecond pulses at gigahertz repetition rates in Bi-doped silica fibre amplifiers
- 2012** The universal ultra-short optical pulse source in fibre - Raman gain medium, graphene saturable absorber passively-mode-locked fibre laser with operational wavelength solely defined by pump wavelength