Benjamin John Eggleton FAA, FTSE, FOSA, FIEEE, FSPIE, FAIP, FRSNSW
Pro-Vice-Chancellor (Research)

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Citizenship:	Australian

Education

1996	Doctor of Philosophy in Physics, The University of Sydney, 1996
1992	Bachelor of Science (Hons 1) in Physics, The University of Sydney, 1992

Current and Previous Positions

2022	**Pro-Vice-Chancellor (Research),** University of Sydney
2016-	**Co-Director,** NSW Smart Sensing Network (NSSN)
2018-2022	**Director,** University of Sydney Nano Institute (Sydney Nano)
2003-	**Professor of Physics,** The University of Sydney
2015-	**Editor-in-Chief** APL Photonics (AIP Publishing)
2009- 2018	**Founding Director,** Institute of Photonics and Optical Science (IPOS), The University of Sydney
2013- 2017	**ARC Laureate Fellow**
2003- 2017	**Founding Director,** ARC Centre of Excellence for Ultrahigh bandwidth Devices for Optical Systems (CUDOS)
2008- 2012	**ARC Federation Fellow** (renewed)
2003- 2007	**ARC Federation Fellow**
2000- 2002	**Director,** Photonic Devices Research Department, OFS Laboratories and Research Director, Specialty Photonics Division, OFS Fitel (managed a team of 25 scientists and engineers supporting the $200 Million OFS Specialty Optical Fibre business)
2000-2001	**Director of Research,** Specialty Fiber Devices, Bell Laboratories, Lucent Technologies (supporting Lucent' Optical Network business)
1999- 2000	**Technical Manager,** Optical Fiber Research Department, Bell Laboratories, Lucent Technologies
1998- 2000	**Member of Technical Staff,** Optical Fiber Research Department, Bell Laboratories, Lucent Technologies
1996- 1998	**Postdoctoral Member of Technical Staff,** Bell Laboratories, Lucent Technologies
1993- 1996	**Research Assistant,** University of Sydney and Optical Fibre Technology Centre

Prizes and Awards

2022	**Academic of the Year,** Australian Defence Industry Awards
2020	**W.H. (Beattie) Steel Medal** for an outstanding career contribution to the field of optics in Australia or New Zealand by a member of the Australian Optical Society.
2020	**Eureka Prize Winner of the Defence Science and Technology** for Outstanding Science in Safeguarding Australia

2019 **MOC Award,** presented to the Plenary speakers at the Micro Optics Conference
2018 **Fellow** of the SPIE
2017 **Vice-Chancellor's Award** for Excellence for Outstanding Research
2016 **Fellow** of the Australian Academy of Science
2011 **Walter Boas Medal** from the Australian Institute of Physics
2011 **Eureka Prize** for Leadership in Science; the citation states "leadership in establishing CUDOS and for the vast body of research he continues to contribute to the field"
2010 **Scopus Young Researcher** of the year in the physical sciences
2009 **Fellow** of the IEEE (yearly intake limited to 0.1% of the voting membership)
2009 **Fellow** of the Australian Academy of Technological Sciences and Engineering (ATSE)
2008 **NSW Scientist of the Year Award** for Physics and Astronomy, NSW Government
2007 **The Pawsey Medal** from the Australian Academy of Science, for outstanding research in physics by a scientist younger than 40
2007 **COSMOS Bright Spark.** Australia's Top Ten Scientific Minds under 40, as voted by the Editorial Advisory Board and selected by COSMOS Magazine
2004 **Malcolm McIntosh Prize** – Australian Physical Scientist of the Year, Australian Government
2003 **ICO Prize,** International Commission for Optics, awarded to an individual who has made a noteworthy contribution to optics before reaching the age of 40
2002 **R&D100 Award** for inventing and developing the dynamic dispersion compensator, as one of the 100 most technologically significant products of the year
2002 **IEEE/LEOS Distinguished Lecturer Award** (2002–03) Awarded to honour excellent speaker who have made technical, industrial or entrepreneurial contributions of high quality to the field of lasers and electro-optics.
2002 **Fellow** of the Optical Society of America, by nomination and elected by the Committee, in recognition of contributions optical fibre gratings and photonic devices
1998 **Adolph Lomb Medal,** Optical Society of America, presented to a scientist who has made a noteworthy contribution to optics before the age of 35

Research Grants

Successful Competitive Research Grants and major contracts- External
Total secured funding: >$60M

Project Title	Investigators	Sponsor/ Grant	Value	Year
Catching the fast waves: high speed RF sensing using Brillouin scattering	B. Eggleton; M. Merklein; L. Thevenaz	ARC Discovery Projects (DP)	$480k	2022-2024
Jericho Smart Sensing Lab	B. Eggleton	Royal Australian Air Force	$10M	2021-2026
Harnessing opto-acoustic interactions for on-chip optical isolation	B Eggleton S Madden C Poulton M Steel	ARC Discovery Projects (DP)	$620k	2020- 2022

Jericho Smart Sensing Lab	B Eggleton C Wrigley	Defence Science and Technology	$4.01M	2019- 2021
Brillouin processing for carrier recovery in optical communications	B Eggleton W Corcoran	ARC Discovery Projects (DP)	$374k	2019- 2022
Integration of broadband microwave photonic frequency convertors	B Eggleton S Madden	ARC Linkage with L3 Harris Technologies	$1.12M	2018- 2021
Nanoscale Single Photon Detectors	B Eggleton	Defence Science and Technology	$1.3M	2018- 2021
High-Resolution Integrated Microwave Signal Processing to the W-band	B Eggleton	US. Office of Naval Research US. Army Research Lab	$574k	2018- 2021
Multi-Passband and Stop-Band Tunable FR Photonic Filters based on Stimulated Brillouin Scattering	B Eggleton D Marpaung	Lockheed Martin Corporation	$1M	2017- 2020
NSW Smart Sensing Network (NSSN)	B Eggleton J Gooding	NSW Department of Industry, Skills and Regional Development	$2.5M	2016-2021
Air-quality monitoring	B Eggleton T Hu	Office of Environment and Heritage (NSW Government)	$30k	2017- 2018
Better vibrations: controlling light with sound in semiconductor chips	B Eggleton M Steel C Poulton	ARC Discovery Projects (DP)	$450k	2016
Harnessing giant Brillouin gain for advanced integrated microwave signal processing	Benjamin Eggleton A Choudhary D Marpaung	Asian Office of Aerospace Research and Development (AOARD) - US Air Force/Research Grant	$100k	2016-2017
Inductively-coupled plasma etching facility (LE150100172)	B Eggleton D Reilly S Palomba S Fleming C Poulton M Arnold A Dzurak A Mitchell M de Sterke D Moss	ARC Linkage Infrastructure, Equipment and Facilities (LIEF)	$270k	2015
Silicon Quantum Photonics	B Eggleton	Huawei contract	$300k	2015- 2017
Frequency agile microwave photonic filter in a photonic chip	B Eggleton D Marpaung	Asian Office of Aerospace Research and Development (AOARD)	$100k	2014- 2015
Universal Optical Transmitter for rapid prototyping and	J Schroeder B Eggleton	Australian Research Council	$240k	2014

system emulation (LE140100062)	A Lowery B Luther-Davies C Husko M Pelusi M Roelens	(ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)		
Helium and Neon Ion Microscope for Sub nanometer imaging and Fabrication (LE130100128)	E Skafidas B Eggleton	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)	$670k	2013
A Femtosecond Mid-IR Optical Parametric Amplifier Source for Waveguide Nonlinear Optics (LE130100067)	B Luther-Davies S Jackson B Eggleton D Hudson D Moss	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)	$150k	2013
Putting stimulated brillouin scattering to work: Tailored optical-phononic interactions of on-chip signal processing (DP130100832)	C Poulton B Eggleton M Steel	Australian Research Council (ARC)/Discovery Projects (DP)	$400k	2013- 2015
Nonlinear optical Phononics: harnessing sound and light in nonlinear nanoscale circuits (FL120100029)	B Eggleton	Australian Research Council (ARC)/Laureate Fellowship (FL)	$2.9M	2012- 2017
The University of Sydney and the Technion collaborative photonics research project	B Eggleton	NSW Department of Industry and Investment/Research Attraction and Acceleration Program	$300k	2012- 2016
Coherent detection based characterization facility for ultra-broadband photonic and RF systems (LE120100124)	W Shieh W B Eggleton R Tucker A Nirmalathas C Lim E Skafidas M Pelusi J Schroeder M Austin T Nguyen L Bui	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)	$300k	2012
A versatile optical wavelength and mode switching device for future telecommunication networks (LP120100661)	B Eggleton J Schroeder M Roelens	Australian Research Council (ARC)/Linkage Projects (LP)	$250k	2012- 2014
Deep - Ultraviolet light source by frequency doubling of blue or green light for disinfection (LP120100059)	C de Sterke S Fleming B Eggleton S Duvall P Atanackovic	Australian Research Council (ARC)/Linkage Projects (LP)	$265k	2012- 2014

ARC Centre of Excellence for Ultrahigh bandwidth Devices for Optical Systems (CUDOS) (CE110001018)	B Eggleton et al.	Australian Research Council (ARC)/Centres of Excellence (CE)	$24M	2011- 2018
100 Gbit to 1 Terabit per second optical communication test-bed facility (LE110100116)	B Eggleton et al.	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)	$400k	2011
Tunable stimulated Brillouin scattering in planar optical circuits (#FA23861114030)	B Eggleton R Pant	Asian Office of Aerospace Research and Development (AOARD)/Research Support	$125k	2011
ARC Centre of Excellence for Ultrahigh bandwidth Devices for Optical Systems (CUDOS)	B Eggleton	Department of Innovation, Industry, Science and Research (Federal)/Project Support	$500k	2010
Stimulating light scattering in periodic structures: How slow can it go? (DP1096838)	B Eggleton R Pant	Australian Research Council (ARC)/Discovery Projects (DP)	$370k	2010- 2012
A co-thermal evaporation system for the production of chalcogenide thin films for photonics (LE100100092)	B Eggleton et al.	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)	$270k	2010
Silicon-Organic hybrid fabrication platform for integrated circuits (SOFI) (#248609)	Kronimus B, Eggleton B	European Commission (Belgium)/Seventh Framework Network of Excellence Programme	EUR2.5M	2010- 2013
Nanophotonic and Microfluidic Integration Facility: a Platform for Optofluidics (LE0989726)	Mitchell A, Eggleton B	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)	$250k	2009
Optical Test-bed facility for Testing Mid Infrared Components for Sensing, Imaging and Astrophotonics (LE0989648);	B Eggleton et al.	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)	$350k	2009
Tailoring ultrafast pulses for Tb/s transmission with advanced modulation formats (LP0989752)	B Eggleton S Frisken	Australian Research Council (ARC)/Linkage Projects (LP)	$281k	2009- 2011

Slow Light in Chalcogenide Moiré Bragg gratings (094085)	B Eggleton	Air Force Office of Advanced Research and Development (AOARD)	$65k	2009- 2010
Unlocking the bandwidth using ultrafast photonic integrated circuits	B Eggleton	Australian Research Council (ARC)/Federation Fellowship (FF);	$3M	2008- 2012
Ultra-sensitivity through resonances in photonic bandgap fibres (DP0881528)	B Kuhlmey B Eggleton J Knight	Australian Research Council (ARC)/Discovery Projects (DP)	$255k	2008- 2010
High-Resolution Field Emission Scanning Electron Microscopy (FESEM) Platform for Characterisation at the Nanometre-Level (LE0883030)	B Eggleton et al.	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)	$450k	2008
100 Gb/s optical switch - collaboration with EU project SPLASH	B Eggleton	DEST/International Science Linkages Competitive Grants	$200k	2008- 2011
Ultrafast photonic integrated circuits: Unlocking the bandwidth (FF0776056)	B Eggleton	Australian Research Council (ARC)/Federation Fellowship (FF)	$1.6M	2007- 2012
Direct write microphotonics fabrication facility (LE0775668)	B Eggleton et al.	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF);	$210k	2007
Ultra-high speed optical transmission test-bed for testing next generation photonic devices (LE0668490)	B Eggleton S Fleming A Mitchell D Moss I Littler I Cosic C de Sterke J Bolger	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)	$207k	2006
National Nanolithography Facility (LE0667994)	B Eggleton et al.	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)	$1M	2006
Semiconductor Photonic Crystal Devices (LX0668600)	D Moss B Eggleton	Australian Research Council (ARC)/Linkage International: ARC International Fellowships (ARCIF);	$24k	2006- 2007

Efficient and tailored supercontinuum generation using dispersion management (DP0665627)	C de Sterke B Eggleton	Australian Research Council (ARC)/Discovery Projects (DP)	$850k	2006- 2009
Novel optical dispersion compensation techniques in an optical transmission system (LP0667956)	S Frisken B Eggleton	Australian Research Council (ARC)/Linkage (LP)	$228k	2006- 2008
Microfluidic photonic systems (DP0556781)	C Grillet B Eggleton	Australian Research Council (ARC)/Discovery Projects (DP)	$365k	2005- 2007
Vibrational Spectroscopy Microprobe/FESEM/AFM Imaging of Cells, Tissues and Materials (LE0560680)	B Eggleton et al.	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF);	$901k	2005
Raman Photonic Device Facility (LE0453541)	B Eggleton et al.	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF);	$298K	2004
Microwave Signal Processing Using A Photonic Crystal Superprism	B Eggleton	DSTO Department of Defence/Research Grants	$50k	2004
NSW Government funding supporting ARC Centre of Excellence for Ultrahigh bandwidth Devices for Optical Systems;	J Blows C de Sterke B Eggleton R McPhedran L Botten	DEPT OF BUSINESS AND REGIONAL DEVT NSW/Research Grant	$500k	2004
Engineered optical fibre device structures for next generation telecommunication systems (FF0241382)	B Eggleton	Australian Research Council (ARC)/Federation Fellowship (FF)	$2.5M	2003- 2007
ARC Centre of Excellence for Ultrahigh bandwidth Devices for Optical Systems (CUDOS) (CE0348259)	B Eggleton M Gu J Blows C de Sterke R McPhedran L Botten J Dawes W Krolikowski B Luther-Davies	Australian Research Council (ARC)/Centres of Excellence (CE);	$19M	2003- 2010
Light-matter interactions in microstructured optical waveguides for nonlinear optical signal processing (DP0344675)	B Eggleton	Australian Research Council (ARC)/Discovery Projects (DP);	$1.215M	2003- 2007
Picosecond optical probing and characterization of	C de Sterke B Eggleton	Australian Research Council	$208k	2003

infrared and visible devices (LE0347140)	J Dawes	(ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)		
Optical fibre fabrication and characterisation facility for next-generation photonics research (LE0346889);	B Eggleton et al	Australian Research Council (ARC)/Linkage Infrastructure, Equipment and Facilities (LIEF)	$670k	2003
Frontier and security technologies microfabrication network (SR0354721)	B Eggleton S Fleming	Australian Research Council (ARC)/ Special Research Initiatives (SRI)	$10k	2003
Network for Optical and Quantum Science and Technology (SR0354519)	B Eggleton et al	Australian Research Council (ARC)/ Special Research Initiatives (SRI)	$10k	2003
Frontier technologies, prototypes and strategic positioning for the international radio telescope, the Square Kilometre Array (SR0354527)	B Eggleton et al	Australian Research Council (ARC)/ Special Research Initiatives (SRI)	$10k	2003
Australian Network on Microelectronics, Optoelectronics and Microelectromechanical Systems (SR0354735)	B Eggleton et al	Australian Research Council (ARC)/Special Research Initiatives (SRI)	$10k	2003

Successful Competitive Research Grants- Internal

Project Title	**Investigators**	**Sponsor/ Grant**	**Value**	**Year**
High-speed RF generation and detection architecture	B Eggleton A Choudhary B Stiller	DVC Research/Equipment Grant	$175k	2016
Research infrastructure for Optical Lithography	B Eggleton S Fleming D Reilly D J Bland-Hawthorn	DVC Research/Equipment Grant		2013
Mid-infrared photonics	B Eggleton	DVC Research/Bridging Support Grant		2011
Near-field Scanning Optical Microscopy (NSOM)	B Eggleton et al	University of Sydney/Major Equipment		2005

Fellowships, Professional and Major Leadership Roles

2018	Fellow, SPIE
2017-	Membership of the Australian Academy of Science Gender Equity committee
2016-	Membership of the School of Physics Equity committee
2015-2017	Member of the Optical Science of America Leadership group (strategic planning)
Since 2016	Fellow, Australian Academy of Science (AAS)
Since 2014	Fellow, Royal Society of New South Wales
Since 2009	Fellow, Australian Academy of Technological Sciences and Engineering
Since 2009	Fellow, IEEE Photonics Society
Since 2008	Fellow, Australian Institute of Physics
Since 2003	Fellow, Optical Society of America
Since 2003	Member, Australian Optical Society (President 2008–10)

Recent relevant professional and University leadership roles

2021-2022	Chair of Australian Academy of Science Selection Committee (SC5)
2015-2017	Board of Governors, IEEE Photonics Society
2015-2017	Member of the OSA Meetings Council
2015	Chair of the University of Sydney working group that shaped the University's current strategy for engagement and translation
2014	Chair of the University of Sydney working group that shaped the interdisciplinary strategy for the University's research program in nanoscience and nanotechnology
2008-2010	President of the Australian Optical Society
2005	Chair, OSA Adolph Lomb Medal Committee

Significant positions – Conferences and Workshops

2020	General chair, CLEO-Conference on lasers and electro-optics -Pacific Rim (Sydney, Australia)
2019	General chair, Asia conference on photonics, Chengdu, China
2019	General chair, CLEO-conference on lasers and electro-optics, San Jose, USA
2017	Program chair, *CLEO-conference on lasers and electro-optics*, San Jose, USA
2016	Congress chair, *OSA photonics and fiber technology*, Sydney, Australia
2016	Conference chair, nonlinear optics & applications, SPIE *Photonics Europe 2016*, Brussels, Belgium
2016-2018	Chair of CLEO Short Courses, Leads Coordination of CLEO Short courses (~20 4 hour courses given by leading researchers from around the world)
2015	Conference Chair, *SPIE Micro+Nano Materials, Applications, and Devices 2015*, Sydney, Australia Founding Conference Chair, *Workshop on OptoMechanics and Brillouin scattering: fundamentals, Applications and Technologies (WOMBAT 2015*), Sydney, Australia
2014	Conference General Chair, *OptoElectronics and Communication Conference (OECC),* Melbourne, Australia Conference Chair, Nonlinear Optics and its Applications, *SPIE Photonics Europe 2014*, Brussels, Belgium
2012	Conference Chair, Nonlinear Optics and its Applications, *SPIE Photonics Europe 2012*, Brussels, Belgium
2011	Program Chair, *International Quantum Electronics Conference / Conference on Lasers and Electro-Optics (IQEC-CLEO),* Sydney, Australia
2009	General Chair, *8th International Photonic & Electromagnetic Crystal Structures Meeting (PECS VIII)*, Sydney, Australia
2008	General Chair, *Opto-Electronics and Communications Conference (OECC)*, Sydney, Australia

2007 General Chair, *OSA Topical Meeting, Bragg Gratings, Photosensitivity and Poling (BGPP)*, Quebec City, Canada

2005 Program Chair, *Bragg Gratings, Photosensitivity and Poling (BGPP)*, Sydney
General and Program Chair, *Photonic Crystals: Fundamentals to Devices*, Sydney, Australia
Sub-committee Chair, Fiber and guided wave lasers and amplifiers, *Conference on Laser and Electro-Optics (CLEO 2005)*, Baltimore, USA

2004 Program Chair: *Australian Conference on Optical Fiber Technology*, Canberra
Technical Group Chair: Photonic Devices, Frontiers in Optics, *OSA Annual Meeting*, Rochester, USA

2003 Sub-committee Chair: *Gratings, Photonic Bandgap and Signal Conditioning Devices*, Optical Fiber Communications Conference, Anaheim, USA
Committee: *Conference on Lasers and Electro-optics (CLEO'2003)*, Anaheim, USA
Sub-committee chair: *Bragg Gratings, Photosensitivity and Poling*, Monterey, USA
Program Chair: Holey Fibers and Photonic Crystals, *IEEE/LEOS Topical Meeting*, Vancouver, Canada
Symposium organiser: *Specialty Fiber Devices, Optical Society of America Annual Meeting*, Tuscon, USA

2002 Committee: *Conference on Lasers and Electro-optics (CLEO 2002)*, Long Beach, USA
Committee: *Nonlinear Guided Waves, topical meeting (NLGW 2002)*, Stressa, Italy
Committee: Materials Research Society annual meeting, *Symposium on Micro-Photonics*, Boston, USA
Committee: *Optical Fiber Communications Conference*, 2002, Anaheim, USA

2001 Committee Member: *Bragg Gratings, Photosensitivity Meeting and Poling (BGPP)*, Stressa, Italy

2000 Committee: *Quantum-Electronics and Laser-Spectroscopy, Subcommittee member: Novel Optics, QELS'2000*, San Francisco, USA
Committee: *Nonlinear Guided Waves topical meeting*, 2000–01, Florida, USA

1999 Committee: *Bragg Gratings, Photosensitivity and Poling*, Florida, USA

1998 Co-organiser for workshop: *Novel Solitons and Nonlinear Periodic Structures* (Victoria Meetings 1998), Victoria, Canada

Editorial positions

2015 - Editor-in-Chief, *APL Photonics*

2007-2015 Editor-in-Chief, *Optics Communications*

2014- 2016 Associate Editor, OSA Advances in Optics and Photonics

2018 Guest Editor, Special Issue on Ultralow loss integrated waveguides, *Journal of Selected Topics in Quantum Electronics*

2016 Guest Editor, Special issue on Quantum photonics, *Journal of Nanophotonics*

2015 Guest Editor, *Focus on Stimulated Brillouin Scattering, New Journal of Physics*

2011 Guest Editor, Special Issue on Chalcogenide Photonics, *Optics Express*

2006- Editorial Board Member, *Opto-Electronics Letters*

2003- 2007 Associate Editor, *IEEE Photonics Technology Letters*

2003 Guest Editor, Special Issue on Photonic Crystals and Holey Fibres, *Optics Express*

Plenary and Keynote addresses at major conferences

1. B. J. Eggleton, Plenary, "New Frontiers in Nonlinear Integrated Circuits" OSA Advanced Photonics Congress, Virtual format (2020).
2. B.J. Eggleton, Plenary, "New frontiers in smart sensing", 13th International Conference on Sensing Technology, Macquarie University (2019).
3. B. J. Eggleton, Plenary, Microoptics conference, Toyama, Japan November 2019.
4. B. J. Eggleton, Keynote, Photonics global conference, Singapore November 4th (2019).

5. B. J. Eggleton, Plenary, "Brillouin integrated photonics," IEEE Summer Topical Meeting, Fort Lauderdale, USA, July 2019.
6. B. J. Eggleton, Keynote, "A renaissance in Stimulated Brillouin Scattering," CLEO-Europe, Munich, June 2019.
7. B. J. Eggleton, Plenary, "Brillouin integrated nanophotonics," 14th International Multidisciplinary Conference on Optofluidics (IMCO2019), Hong Kong, June 2019.
8. B. J. Eggleton, Plenary, "Brillouin integrated photonics", Workshop on OptoMechanics, Brillouin Scattering: Fundamentals, Applications and Technologies (WOMBAT), Tel-Aviv, Isrel, March 2019
9. B. J. Eggleton, Tutorial, Winter School on Nonlinear Optics, Andalo, Italy, January 2019.
10. B. J. Eggleton, Plenary, "Integrated Brillouin Photonics, Photonics India, IIT Delhi, December 2018.
11. B. J. Eggleton, Plenary, "Brillouin Integrated Photonics, Singapore Photonics Conference, NTU Singapore, November 2018.
12. B. J. Eggleton, Plenary, "High performance Brillouin Integrated Microwave Photonics" Microwave Photonics Conference (MWP), Toulouse, France October 2018.
13. B. J. Eggleton, Keynote, "Emerging Photonic technologies in defence, IEEE Rapid Conference (Research and Applications of Photonics in Defense), Florida, USA, August 2018.
14. B. J. Eggleton, Plenary, "Billouin integrated photonics" Light Conference, Changchun, China, July 2018.
15. B. J. Eggleton, Keynote, "Portable air-quality sensors for environmental monitoring: The challenges and opportunities," Create, Innovate, Translate, Sydney June 2018.
16. B. J. Eggelton, Plenary, AELERT conference, "Smart sensing" UTS, Sydney, February 2018.
17. B. J. Eggleton, Plenary, "Harnessing Opto-acoustic Interactions in Nanoscale Integrated Circuits," SPIE NanoPhotonics Australasia Symposium, Melbourne, Australia, December 2017.
18. B. J. Eggleton, Plenary, "New frontiers in Integrated Nanophotonics," 16TH International Conference on Optical Communications and Networks (ICOCN'2017), P.R. China, August 2017.
19. B. J. Eggleton, Plenary, "Inducing and Harnessing Photon-phonon Interactions in Nanoscale Integrated Circuits," OSA Advanced Photonics Conference, New Orleans, USA, July 2017.
20. B. J. Eggleton, Plenary, Harnessing photon-phonon interactions in nanoscale integrated circuits', NOMA 2017, Cetraro, Italy, June 2017.
21. B. J. Eggleton, Plenary "Integrated photonic smart sensors," 2nd International Conference on Fibre-optic and Photonic Sensors for Industrial and Safety Applications, Brisbane, January 2017.
22. B. J. Eggleton, Plenary "Integrated photonic smart sensors for air-quality sensing," Emerging Sensing Technologies Summit 2016 (ESTS'16), Melbourne, December 2016.
23. B. J. Eggleton, Keynote, "Inducing and Harnessing Hypersound Acoustic Phonons in Photonic Integrated Circuits," 2016 International Conference on Optical MEMS and Nanophotonics (OMN), Singapore, August 2016.

University and Conference lecturing

Course	University/ Event	Years	#Lecture
Second year Advanced Optics- Physical Optics	Sydney	2018-2021	13
Third year Nanophotonics	Sydney	2004-2012	6-8
Masters in Photonics: Optical Physics	Sydney	2011-2012	12
Fourth year Honours course: Advanced Optical Physics	Sydney	2013-present	8
Short course: Photonic crystals and optical fibers	CLEO	2005-2012	4 hours
Short course: Nonlinear waveguides	CLEO	2013-present	4 hours

Short course: Optical fiber gratings	OFC	2000-2003	4 hours

Research Student supervision
Current postgraduate students

Name	Topic	Degree	Start
Luke McKay	Integrated Microwave photonics	PhD	2017
Matthew Garret	Integrated Microwave photonics	PhD	2019

Completed PhD students

Name	Topic	Period
Charles Kerbage	Microfluidic optical fibers	1998-2002
Peter Domachuk	Microfluidic photonic devices	2003-2006
Vahid Ta'eed	Microphotonic planar devices for optical signal processing	2003-2006
Paul Steinvurzel (with Martijn de Sterke)	Novel photonic crystal fibers	2003-2006
Joe Mok (with Martijn de Sterke)	Nonlinear pulse propagation in Bragg gratings	2003-2006
Hong Nguyen (with Martijn de Sterke)	Tapered nonlinear photonic crystal fibres	2004-2007
Neil Baker (with Martijn de Sterke)	Slow light in chalcogenide grating structures	2005-2008
Mike Lamont (with David Moss)	Integrated all-optical chalcogenide waveguides	2005-2008
Mehrdad Shokooh-Saremi	Nonlinear effects in chalcogenide Bragg gratings	2005-2006
Cameron Smith	Coupling into photonic crystal waveguides using tapered nanowires	2006-2009
Michael Lee	Optical cavities through photosensitivity in chalcogenide photonic crystals	2007-2010
Bill Corcoran (with Christelle Monat)	Slow light enhanced nonlinearities in silicon	2007-2010
Trung Vo	Nonlinear signal processing in Chalcogenide waveguides	2008-2012
Irina Kabakova (with Martijn de Sterke)	Nonlinear pulse propagation in Bragg gratings	2008-2011
Alvaro Casas Bedoya	Optofluidics	2009-2012
Matthew Collins	Nonlinear Photonic Devices for Quantum Information Processing	2011-2015
Tomonori Hu, (with Stuart Jackson)	Creating highly efficient mid-infrared fiber lasers	2011-2015
Yvan Paquot (with Jochen Schroeder)	Integrated all optical information processing	2011-2015
Thomas Büttner (with Irina Kabakova)	SBS frequency combs in chalcogenide waveguides	2012-2015
Neetesh Singh (with Darren Hudson)	Silicon mid-infrared waveguides devices	2012-2016

Yanbing (Young) Zhang, (with Chad Husko)	Phase sensitive amplifier in silicon	2012-2016
Mattia Pagani, (with David Marpaung)	Stimulated Brillouin scattering on chip	2012-2015
Jiakun He (with Chunle Xiong)	Correlated Photon-pair Generation for Quantum	2013-2016
Sayyed Reza Mirnaziry (at UTS with Chris Poulton)	Phonon-Photon interactions	2013-2017
Iman Aryanfar (with David Marpaung)	Non-reciprocal mode-conversion	2013-2017
Moritz Merklein (with Birgit Stiller)	Chip based Brillouin scattering	2013-2017
Moritz Merklein (with Birgit Stiller)	Chip based Brillouin scattering	2013-2017
Andri Mahendra (with Philip Leong in EE)	Electronic Photonic Integrated Circuits	2015-2018
Atiyeh Zarifi (with Birgit Stiller)	Silicon-chalcogenide Hybrid Integration	2015-2018
Xiang Zhang	Multiplexed quantum light sources	2015-2018
Yang Liu (with David Marpaung)	Integrated microwave photonics	2015-2018
Loris Marini (with Stefano Palomba)	Nonlinear effects in 2D materials	2015-2018

Completed Master students

Name	**Topic**	**Degree**	**Period**
Sam Meyers (Macquarie Uni with Judith Dawes)	Radiation dynamics in photonic crystals	Master of Science	2003-2004
Trina Ng (with Justin Blows)	Optical performance monitoring using four-wave mixing	Master of Science	2004-2005
Dane Austin (with Martijn de Sterke)	Sculpting supercontinuum generation	Master of Science	2006-2007
Darren Wu (with Boris Kuhlmey)	Hybrid photonic crystal fibres	Master of Science	2008-2008
Stephen Dekker (with Martijn de Sterke)	Supercontinuum Generation in optical fibres	Master of Science	2013-2015
Iman Jizan (with Chunle Xiong)	Two photon spectral correlation states	Master of Science	2014-2016
Tomonori Hu (with Jochen Schroeder)	Complex filtering in dissipative solitons lasers	Masters of Photonics and Optical Science	2011
Matthew Stuart (with Chad Husko)	Dispersion Measurement in Photonic Crystals	Masters of Photonics and Optical Science	2011

Completed Engineering Honours students

Name	**Topic**	**Period**
Cameron Smith	Transverse probing tapered photonic crystal fibres	2004

Yi Lun Miao	Efficient coupling to planar nanowire using taper micro-structured optical fibres	2004
Tom Liu	Raman scattering in silica fibre	2004
Eric Yiuhong Lo	Measurement of high repetition rate pulse train by homodyne detection	2005
Mohit Patil	Grating apodisation in chalcogenide glasses	2005
Maggie Chao (with Mark Pelusi)	Pulse Compression for Communications	2007
Tong Chen	Recirculating loop test bed for high capacity optical networks	2007
Bhranavan Sivanandan (with Mark Pelusi)	OSNR monitoring using nonlinear optics	2007
Darran Wu (with Boris Kuhlmey)	Selectively Filling Photonic Crystal Fibres with Liquids	2007
Amy Fu (with Mark Pelusi)	SBS based optical performance monitoring	2009
Kevin Ng	Tunable passive mode-locked L-band laser	2009
Adam Byrnes	Microwave photonic filter based on SBS	2012

Completed Physics BSc Hons students

Name	**Topic**	**Period**
Hong Nguyen	Transverse probing of photonic crystal fibres	2003
Trina Ng	Dispersion monitoring using four-wave-mixing in nonlinear fibers	2003
Dane Austin	Supercontinuum generation in optical fibers	2005
Therese Au (with Martijn de Sterke)	Low-threshold optical switching in fibre Bragg gratings	2006
Michael Lee	Photosensitive post-tuning of chalcogenide photonic crystal waveguides	2006
George Brawley	Photosensitivity in chalcogenide glass waveguides	2007
Tim Iredale (with Mark Pelusi)	Multichannel signal regeneration using NL fibres	2007
Alessandro Tuniz	Raman modulation schemes in photonic structures	2007
Hanna Mcfarlane	Suppressing SBS in photonic integrated circuits	2010
Owen Brasier, (with Jochen Schroeder)	Noise Monitoring in optical Networks	2011
Adam Byrnes	Stimulated Brillouin Scattering Induced Slow and Fast Light on a Chip	2011
Richard Neo	Phase sensitive parametric amplification of light in a photonic chip	2012
Andrew Watts	Photoinducing Whispering Gallery Mode Cavities in Chalcogenide Fibres	2012
Iman Jizan	Novel method of measuring the spectral entanglement of photon pairs	2013

El-Abed Haidar	Controlling Four Wave Mixing Phase Matching Condition using SBS	2014
Runyu Jiang (with Chunle Xiong)	Interfering single photons	2015

Publications

Patents (issued in the USA)- 35

1. 7,440,664 Microstructured optical waveguide for providing periodic and resonant structures
2. 7,139,478 Nonlinear device comprising a spectrally broadening fiber
3. 7,110,646 Tunable microfluidic optical fiber devices and systems
4. 7,081,323 Method of making gratings and phase masks for fiber grating fabrication
5. 7,079,777 Optical fiber communication systems having simultaneous compensation of polarisation mode dispersion and chromatic dispersion
6. 6,996,317 Optical devices including microstructured fiber sections disposed for transverse signal propagation
7. 6,940,889 Optical pulse source for long haul optical communication systems
8. 6,885,792 Wavelength monitoring optical fibers using detection in the near field
9. 6,847,763 Colourless tunable dispersion compensator
10. 6,836,606 Filled-core optical fiber and method of making the same
11. 6,807,338 Multiwavelength cascaded raman resonator
12. 6,782,148 Modifying birefringence in optical fibers
13. 6,778,734 Thermally tunable fiber devices with microcapillary heaters
14. 6,768,577 Tunable multimode laser diode module, tunable multimode wavelength division multiplex Raman pump, and amplifier, and a system, method, and computer program product for controlling tunable multimode laser diodes, Raman pumps, and Raman amplifiers
15. 6,753,118 Optical grating fabrication process
16. 6,658,183 Process for fabricating tapered microstructured fiber system and resultant system
17. 6,654,522 Process for fabricating tapered microstructured fiber system and resultant system
18. 6,608,952 Fiber apparatus and method for manipulating optical signals
19. 6,529,676 Waveguide incorporating tunable scattering material
20. 6,438,277 Stabilized thermally tunable optical waveguide devices and communication systems employing them
21. 6,427,040 Optical waveguide gratings device with adjustable optical space profile
22. 6,415,079 Optical fiber gratings having internal gap cladding for reduced short wavelength cladding mode loss
23. 6,408,118 Optical waveguide gratings having roughened cladding for reduced short wavelength cladding mode loss
24. 6,386,714 Controlling mirror shape for generating interference patterns and the like
25. 6,370,300 Optical communication system incorporating automatic dispersion compensation modules
26. 6,351,585 Thermally adjustable optical fiber grating device with packaging for enhanced performance
27. 6,307,988 Optical fiber communication system incorporating automatic dispersion compensation modules to compensate for temperature induced variations
28. 6,303,182 Method for making optical fiber devices having variable thickness metal coatings
29. 6,285,812 Switchable and reconfigurable optical grating devices and methods for making them
30. 6,275,629 Optical grating devices with adjustable chirp

31. 6,201,916 Article comprising means for optical pulse reshaping
32. 6,192,177 Electrically modifiable optical grating devices
33. 6,181,852 Optical grating device with variable coating
34. 6,169,831 Method of making optical chirped grating with an intrinsically chirped grating and external gradient
35. 6,163,638 Article comprising an optical pulse compressor

Edited books- 2

1. S. Wabnitz and B. J. Eggleton (eds), *All-Optical Signal Processing: Data Communication and Storage Applications*, Springer, 2015
2. R. E. Slusher and B. J. Eggleton (eds), *Nonlinear photonic crystals*, Springer, 2002

Book Chapters- 16

1. D. Marpaung, R. Pant, and B. J. Eggleton, "Harnessing Nonlinear Optics for Microwave Signal Processing", *All-Optical Signal Processing: Data Communication and Storage Applications*, S. Wabnitz and B. J. Eggleton (eds), Springer, 2015, pp. 449-468.
2. A.S. Clark, L.G. Helt, M.J. Collins, C. Xiong, K. Srinivasan, B. J. Eggleton, and M.J. Steel, "Nonlinear Optics for Photonic Quantum Networks", *All-Optical Signal Processing: Data Communication and Storage Applications*, S. Wabnitz and B. J. Eggleton (eds), Springer, 2015, pp. 355-422.
3. D.-I. Yeom, M.R.E. Lamont, B. Luther-Davies, B. J. Eggleton, "Supercontinuum generation in chalcogenide waveguides", *Supercontinuum Generation in Optical Fibers*, J.M. Dudley and J.R. Taylor (eds), Cambridge University Press, 2010, pp. 306-333.
4. C. Karnutsch, S. Tomljenovic-Hanic, C. Monat, B. J. Eggleton, "Reconfigurable photonic crystal circuits using microfluidics", *Optofluidics: Fundamentals, Devices, and Applications*, Y. Fainman, L.P. Lee, D. Psaltis, C. Yang (eds), McGrawHill, 2009, pp. 421-451 (Chapter 18).
5. P. Domachuk, P. Steinvurzel, B. Kuhlmey, B. J. Eggleton, "Optofluidic photonic crystal fibers: properties and applications", *Optofluidics: Fundamentals, Devices, and Applications*, Y. Fainman, L.P. Lee, D. Psaltis, C. Yang (eds), McGrawHill, 2009, pp. 133-169 (Chapter 7).
6. J. Mok, M. Ibsen, M. de Sterke, B. J. Eggleton, "Slow light gap solitons", Fundamentals and applications of slow light, Jacob Khurgin, Rodney Tucker, Editors, Academic Press, 2008, pp. 223-234.
7. D. Moss and B. J. Eggleton, "Towards photonic integrated circuits all-optical signal processing based on Kerr nonlinearities", in *Advanced in information optics and photonics,* Ari Friberg and Rene Dandliker, SPIE, 2008, pp. 657-686.
8. S. Radic, D. Moss, B. J. Eggleton, "Nonlinear optics in communications: from crippling impairment to ultra-fast tool", in *Optical fiber telecommunications*, Alan Willner, Tingye Li (eds), Elsevier, 2008, pp. 759-828.
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10. M. Sumetsky and B. J. Eggleton, "Fiber Bragg gratings for dispersion compensation in optical communication systems", in *Journal of Optical and Fiber Communications Reports, Volume 2, Issue 3*, Sep 2005, pp. 256–78.
11. B. J. Eggleton and R.E. Slusher, "Nonlinear pulse propagation in one-dimensional photonic bandgap structures", *Springer Series: Nonlinear photonic crystals*, Springer, 2003, pp. 169-198.
12. P. Westbrook and B. J. Eggleton, "Fiber gratings", in *Encyclopedia of modern optics*, Elsevier, 2002.
13. M. de Sterke, B. J. Eggleton, and J.E. Sipe, "Bragg solitons: theory and experiments," in *Spatial solitons*, S. Trillo and W. Torruellas (eds), Springer, New York, 2001, pp. 169–209.
14. B. J. Eggleton, C. Martijn de Sterke, and R.E. Slusher, "Nonlinear pulse propagation in fibre gratings", in *IUTAM Symposium on mechanical and electromagnetic waves in structured media*", R.C.

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16. B. J. Eggleton, J.A. Rogers, P.S. Westbrook, G. Burdge, S. Ramachandran, A.A. Abramov, T.N. Nielsen, G.R. Kowach, R.S. Windeler and T. Strasser, "Tunable fiber grating devices utilizing integrated thin film heaters", in *OSA Trends in Optics and Photonics Series, Vol. 29*, *WDM Components*, 1999, pp. 61–72.

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1. Liu, Y; Zhang, ZQ; Burla, M; Eggleton, BJ, 11-GHz-Bandwidth Photonic Radar using MHz Electronics, Apr 2022 | Feb 2022 (Early Access) | LASER & PHOTONICS REVIEWS 16 (4)
2. Lai, C. K., Choi, D.-Y., Athanasios, N. J., Yan, K., Chong, W. Y., Debbarma, S., Ahmad, H., Eggleton, B. J., Merklein, M., Madden, S. J., Hybrid Chalcogenide-Germanosilicate Waveguides for High Performance Stimulated Brillouin Scattering Applications. *Adv. Funct. Mater.* 2021, 2105230.
3. Cai Li, Moritz Merklein, Yang Liu, Amol Choudhary, Benjamin J. Eggleton, and Bill Corcoran, "Effective linewidth reduction in self-homodyne coherent reception by stimulated Brillouin scattering-based optical carrier recovery," Opt. Express 29, 25697-25708 (2021).
4. Bin-Bin Xu, Gabriele G. de Boo, Brett C. Johnson, Miloš Rančić, Alvaro Casas Bedoya, Blair Morrison, Jeffrey C. McCallum, Benjamin J. Eggleton, Matthew J. Sellars, Chunming Yin, and Sven Rogge, Ultrashallow Junction Electrodes in Low-Loss Silicon Microring Resonators, , Phys. Rev. Applied **15**, 044014.
5. Yanmei Cao, Ezgi Sahin, Ju Won Choi, Peng Xing, George F. R. Chen, D. K. T. Ng, Benjamin J. Eggleton, and Dawn T. H. Tan, "Thermo-optically tunable spectral broadening in a nonlinear ultra-silicon-rich nitride Bragg grating," Photon. Res. 9, 596-604 (2021).
6. Liu, Y., Choudhary, A., Ren, G., Choi, D.-Y., Casas-Bedoya, A., Morrison, B., Ma, P., Nguyen, T. G., Mitchell, A., Madden, S. J., Marpaung, D., Eggleton, B. J., Circulator-Free Brillouin Photonic Planar Circuit. *Laser & Photonics Reviews* 2021, 15, 2000481.
7. Xin Guo, Yang Liu, Tangman Yin, Blair Morrison, Mattia Pagani, Okky Daulay, Wim Bogaerts, Benjamin J. Eggleton, Alvaro Casas-Bedoya, and David Marpaung, "Versatile silicon microwave photonic spectral shaper", APL Photonics 6, 036106 (2021).
8. Tong, A., Sorrell, T.C., Black, A.J. et al. Research priorities for COVID-19 sensor technology. Nat Biotechnol 39, 144–147 (2021).
9. Atiyeh Zarifi, Moritz Merklein, Yang Liu, Amol Choudhary, Benjamin J. Eggleton, and Bill Corcoran, "Wide-range optical carrier recovery via broadened Brillouin filters," Opt. Lett. 46, 166-169 (2021).
10. M. Merklein, B. Stiller, K. Vu, P. Ma, S. J. Madden, B. J. Eggleton, "On-chip broadband nonreciprocal light storage," Nanophotonics **1** (2020).
11. Z. Zhu, DY. Choi, S. J. Madden, B. J. Eggleton, M. Merklein, "High-conversion-gain and deep-image-rejection Brillouin chip-based photonic RF mixer," Optics Letters **45** (19), 5571- 5574 (2020).
12. L. McKay, M. Merklein, A. Choudhary, Y. Liu, M. Jenkins, C. Middleton, A. Cramer, A. Chilton, J. Devenport, K. Vu, D. Choi, P. Ma, S. Madden, R. DeSalvo, B. Eggleton, "Broadband Brillouin phase shifter utilizing RF interference: Experimental demonstration and theoretical analysis," Journal of Lightwave Technology (2020).
13. M. Garrett, Y. Liu, P. Ma, DY. Choi, S. J. Madden, B. J. Eggleton, "Low-RF-loss and large-rejection reconfigurable Brillouin-based RF photonic bandpass filter," Optics Letters **45** (13), 3705-3708 (2020).
14. Y. Liu, A. Choudhary, D. Marpaung, B. J. Eggleton, "Integrated microwave photonic filters," Advances in Optics and Photonics **12** (2), 485-555 (2020).
15. B. Stiller, M. Merklein, C. Wolff, K. Vu, P. Ma, S. J. Madden, B. J. Eggleton, "Coherently refreshing hypersonic phonons for light storage, Optica **7** (5), 492-497 (2020).
16. Z. Zhu, Y. Liu, M. Merklein, Z. Zhang, D. Marpaung, and B. J. Eggleton, "Si3N4-chip-based versatile photonic RF waveform generator with a wide tuning range of repetition rate," Opt. Lett. 45, 1370-1373 (2020)

17. Z. Zhu, Y. Liu, M. Merklein, O. Daulay, D. Marpaung, and B. J. Eggleton, "Positive link gain microwave photonic bandpass filter using Si_3N_4-ring-enabled sideband filtering and carrier suppression," Opt. Express **27**, 31727-31740 (2019)
4. Y. Xie, A. Choudhary, Y.Liu, D. Marpaung, K.Vu, P. Ma, D. Choi, S. Madden and B. J. Eggleton, "System-Level Performance of Chip-Based Brillouin Microwave Photonic Bandpass Filters," in Journal of Lightwave Technology, vol. **37**, no. 20, pp. 5246-5258, 15 Oct.15, 2019.
5. Y. Liu, A. Choudhary, G. Ren, K. Vu, B. Morrison, A. Casas-Bedoya, T. G. Nguyen, D. Choi, P. Ma, A. Mitchell, S. J. Madden, D. Marpaung, *and* B. J. Eggleton, "Integration of Brillouin and passive circuits for enhanced radio-frequency photonic filtering," APL Photonics **4**, 106103 (2019);
6. B. J. Eggleton, C. G. Poulton, P.T. Rakich, M. J. Steel, G. Bahl, "Brillouin integrated photonics". Nat. Photonics **13**, 664–677 (2019).
7. M. Wang, C. Doyle, B. Bell, M. J. Collins, E. Magi, B. J. Eggleton, M. Segev and A. Blanco-Redondo, "Topologically protected entangled photonic states," Nanophotonics, Volume **8**, Issue 8, Pages 1327–1335.
8. L. McKay, M. Merklein, A. Casas Bedoya, A. Choudhary, M. Jenkins, C. Middleton, A. Cramer, J. Devenport, A. Klee, R. DeSalvo, and B. J. Eggleton, "Brillouin-based phase shifter in a silicon waveguide," Optica **6**, 907-913 (2019).
9. E. Sahin, A. Blanco-Redondo, P. Xing, D. Ng, C.E. Png, D.T.H. Tan, B. J. Eggleton, "Bragg Soliton Compression and Fission on CMOS-Compatible Ultra-Silicon-Rich Nitride". *Laser & Photonics Reviews* 2019,
10. Minzioni *et al*. "Roadmap on all-optical processing," Journal of Optics Journal of Optics, Volume **21**, Number 6 (2019).
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13. M. K. Schmidt, C. G. Poulton, G. Z. Mashanovich, G. T. Reed, B. J. Eggleton, and M. J. Steel, "Suspended mid-infrared waveguides for Stimulated Brillouin Scattering," Opt. Express **27**, 4976-4989 (2019).
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