

# Curriculum Vitae

## Eric Morgan Yeatman

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### ACADEMIC QUALIFICATIONS

- 1989    **PhD, DIC**  
Imperial College of Science, Technology and Medicine, University of London  
Thesis: "Applications of surface plasmons - microscopy and spatial light modulation"  
Supervisor: Sir Eric Ash FRS;    Support: Commonwealth Scholarship
- 1986    **Master of Science (Physics)**  
Dalhousie University, Halifax, Nova Scotia, Canada  
Thesis: "The detection of oil under ice by remote mode conversion of ultrasound"
- 1985    **B.Eng. in Engineering Physics (with distinction)**  
Engineering Physics Medal  
Technical University of Nova Scotia, Halifax
- 1983    **B.Sc. in Physics (with distinction)**  
Avery Prize: highest academic standing in general degree programme, Faculty of Arts & Science  
Dalhousie University, Halifax, Nova Scotia

### APPOINTMENTS

#### Imperial College London, Department of Electrical and Electronic Engineering

- 2015 –                    Head, Department of Electrical and Electronic Engineering  
  
Overall executive responsibility for a department of 200 staff and 1000 students, including recruitment, pay review, promotions, assignment of other managerial posts, and disciplinary matters. During this time the department's rank in EEE has risen from 10<sup>th</sup> to 5<sup>th</sup> in the world (QS 2018 rankings).
- 2008 – 2015            Deputy Head, Department of Electrical and Electronic Engineering  
  
Primarily responsible for research matters. During the period the department's research income per capita grew from ≈ £77k to £220k per annum, and the department achieved top ranking of EEE departments in the UK in the REF 2014 research assessment (5<sup>th</sup> in 2008).
- 2005 –                    Professor of Micro-Engineering
- 1989 – 2005            Lecturer, Senior Lecturer (1996), Reader (2001)

#### Microsaic Systems plc

- 2001 – present            Co-founder and Director
- 2004 – 2013            Chairman of the Board (except Dec 2011-Oct 2012)
- Dec 2011 – Oct 2012    Acting CEO

Microsaic was founded in 2001 to commercialise intellectual property in microsystems arising from the research of its three co-founders. The company now specialises in developing and marketing miniature mass spectrometers for chemical analysis, primarily for pharmaceutical research and manufacture. Microsaic has the first, and to date the world's only, commercial mass spectrometer based on silicon micro-technology. In April 2011, Microsaic was admitted to the AIM market of the London Stock Exchange, the LSE's first technology IPO of the year. The company has raised over £20M in investment capital. Its sales are primarily to export, with major customers in Europe and the US. My role has included strategy and corporate governance, raising equity funding, negotiating international contracts, and recruiting and managing executives. See [www.microsaic.com](http://www.microsaic.com)

## University of California - Berkeley

Jan – Sept 2015 Visiting Professor, attached to Berkeley Energy and Climate Institute

## Imperial College London: Other Roles and Responsibilities

2002 – 2011 Founding Chairman, Academic Training Committee (ATC), Imperial College Graduate School of Engineering and Physical Sciences (GSEPS)

The ATC set up and managed the programme of transferable skills for a cohort of over 1000 research students; this won two Times Higher awards, and is acknowledged as one of the most successful such programmes in the UK.

1996 – 2008 Deputy Head, Optical and Semiconductor Devices Research Group

1993 – 1998 Senior Treasurer, Arts & Entertainments Committee, IC Student Union

1991 – 1997 Department Coordinator, Women in Science & Engineering (WISE) programme

## Fellowships of Learned Societies

- City and Guilds of London Institute (FCGI), 2013
- Institute of Electrical and Electronics Engineers (FIEEE), 2013
- Royal Academy of Engineering (FEng), 2012
- Institution of Engineering and Technology (FIET), 2005
- Institute of Materials, Minerals and Mining (FIMMM), 2005

## Research Highlights

- Co-founded (with RRA Syms) Imperial's activity in MEMS (micro-electro-mechanical systems) in 1992. This was for over two decades the largest, best funded and most cited MEMS research activity in the UK.
- Personally initiated activities in radio frequency MEMS and power MEMS, both leading to the appointment of a new member of academic staff specialising in that field. The power MEMS (energy harvesting) activity is now one of the best known internationally, with well over 3000 citations.
- Made world's first demonstration of surface plasmon microscopy (1987).
- With students and collaborators, made a number of device and technology firsts: motion energy harvesters for body mounted sensors; self-powered wireless tachometer for machine monitoring; high-Q inductors by self assembly; integrated optical amplifiers using sol-gel glasses; nano-pore size control for semiconductor doped glasses; fiber-connected tuneable MEMS optical filter; surface plasmon spatial light modulators.
- Coordinated two major EU collaborative projects and one EPSRC multi-university collaboration.
- More than 8600 citations (Google scholar data); h-index 40 (10/11/18)
- 34 Projects funded as Principal or Co-Investigator, £25M raised
- Awarded the Royal Academy of Engineering Silver Medal in 2011, given *"to recognise an outstanding and demonstrated personal contribution to British engineering"*.

## Other Professional Activities

- Member, Enterprise Committee, Royal Academy of Engineering, 2018 –
- Chief International Academic Advisor, Harbin Institute of Technology, China, 2011 –
- Academic Director, Vodafone Technical Excellence Programme, 2011 – 2015
- Advisor, Wingate Scholarships, 2005 – 2012
- Technical Consultant, Texas Instruments, Dallas, 2010
- Consultant, IC Consultants Ltd., 1995 - present
  - corporate technology assessment for Glaxo, Marconi, Texas Instruments
  - expert advisor: Applied Microengineering, Scientific Generics, Schroder Venture Partners
  - expert witness, Nortel Networks
- Project technical auditor, proposal reviewer and panel member, Framework IV, V, VI & VII programmes, European Commission, Brussels
- Member, Technical Advisory Board, Lambda Crossing, Caesarea, Israel, 2001- 2005 (optoelectronics start-up company)
- Member, Technical Advisory Board, Young Associates, London, 2002- 2005 (Venture Capital company)
- Member, Advisory Board, West Steag Partners, Essen, Germany, 2002-2004 (Venture Capital company)
- Technical Consultant, Analog Devices, 2001-2002, including on-site secondment, Cambridge, Mass.
- Hon. Secretary, Electronic Applications Divisional Board, Inst. of Materials, 1990 - 2002
- Member, IEE Professional Group S11 (Microengineering), 1998-2000
- Director and company secretary, Stage Seven Optics Ltd., 1989 -1995
- Engineer, Esso Resources Canada Ltd, and H.W. Jones & Assoc. Ltd, 1983 – 1986

## Detailed in Appendix:

- Undergraduate teaching experience
- 99 refereed journal and 135 conference publications, 14 book chapters and books edited
- 10 patents (7 granted)
- 39 invited, keynote and plenary talks; 10 presentations on Executive Education, Tech Foresighting and Innovation Policy
- 12 external review panel memberships; 9 internal review panel and committee memberships
- 5 editorial board memberships & editorships
- 15 conference organising posts and 22 programme committee memberships
- 20 PhD students graduated
- 34 Projects funded as Principal or Co-Investigator

## APPENDIX: DETAILED ACADEMIC AND EXTERNAL ACTIVITIES

### Undergraduate Teaching

Optical Communications: 4<sup>th</sup> year and MSc lecture course, 1991 – present

Previous lecturing:

- 1<sup>st</sup> year Fields
- 1<sup>st</sup> year Communications
- 1<sup>st</sup> year Mathematics
- 2<sup>nd</sup> year Fundamentals of Computing

Other previous duties:

- 1<sup>st</sup> and 2<sup>nd</sup> year personal tutorials
- 1<sup>st</sup> and 2<sup>nd</sup> year study groups (range of courses)
- 1<sup>st</sup> year electronics laboratory supervision
- Group and individual project supervision (all years)
- Organiser of 1<sup>st</sup> Year Undergraduate Course (1998 – 2008)

### Invited, Keynote & Plenary Research Talks

- *Microsystems & Nanoengineering Summit 2018*, Beijing, China, July 2018
- *EnerHarv 2018*, Cork, Ireland, May 2018
- *13th IEEE Int. Conf. on Nano/Micro Engineered and Molecular Systems (IEEE NEMS)*, Singapore, April 2018
- University of Kent Physics Centre, Feb. 2018
- *London International Youth Science Forum*, August 2017
- *Microsystems & Nanoengineering Summit 2017*, Dalian, China, July 2017
- *Micro-Energy 2017*, Gubbio, Italy, July 2017
- *QS Summit on Electrical and Electronic Engineering Education*, Singapore, March 2016
- *OECD Forum*, Paris, June 2015
- *Silicon Friendly Materials and Device Solutions for Microenergy Applications* workshop, LET'S Conference, Bologna, Sept 2014
- *Microsystems & Nanoengineering Summit*, Beijing, August 2014
- *In the Quest for Zero Power* workshop, ESSDERC 2013, Bucharest, Sept 2013
- *Nano-Energy 2013*, Perugia, July 2013
- *Noise in Physical Systems Summer School*, Erice, Italy, July 2012
- *Energy Harvesting 2012*, London, March 2012
- Materials Research Society spring conference, San Francisco, April 2011
- ARM plc, *External Research Speaker Conference 2010*, Cambridge, Oct. 2010
- Short course presenter, *Plastic Electronics Europe 2009*
- Panellist, *Device Research Conference*, Penn State University, rump session, June 2009
- *Transducers 2009*, short course: Micro Energy Harvesting
- *SPIE Smart Structures/NDE*, March 2009, San Diego (Plenary lecture)
- ESF-NSF Workshop on *Applications of Adaptive Structures and Materials to Sustainable Energy and the Built Environment*, Pizay, France, October 2008 (Keynote lecture)
- *British Machine Vision Association Symposium*, London, June 2008 (Keynote lecture)
- *IEEE Electron Devices Meeting (IEDM)*, Washington, Dec. 2007
- *Ars Electronica*, Linz, Austria, Sept 2006
- *Micromechanics Europe*, Southampton, UK, Aug. 2006

- *International Conference on Materials*, ICMAT '05, Singapore, July 2005
- *DTIP of MEMS/MOEMS*, Montreux, Switzerland, June 2005
- *UK-Ireland Sol-Gel Workshop*, London, March 2005
- 1st International Workshop on Body Sensor Networks, London, 2004
- *Telecom Israel*, Tel Aviv, 2002
- workshop on *Micromachining and MEMS*, 31<sup>st</sup> European Microwave Conf., London, 2001
- workshop on *The Disappearing Computer*, European Commission, Brussels, 2000
- *Sol-Gel '99 International Workshop*, Yokohama, 1999
- Inst. of Materials Discussion Forum on Surface Engineering, 1999
- *SPIE Annual Meeting*, July 1997, San Diego
- *20th International School of Quantum Electronics*, Erice, Sicily, Nov. 1996
- *SBMO/IEEE Microwave and Optoelectronics Conf.*, Brasil, 1995
- *IoP Congress (Microengineering Session)*, Brighton, 1994
- *European Science Foundation Workshop on Biosensing*, Helsinki, 1994

#### **Presentations: Executive Education, Tech Foresighting, and Innovation Policy**

- Imperial College Business School Executive MBA Programme, *Future of Technology*, July 2018
- Imperial College Business School Executive MBA Programme, *Smart Cities and the Internet of Things*, June 2017 and Oct. 2018
- Imperial Business Partners, *Quantum Technology*, Nov. 2017
- Imperial Business Partners, *Innovations in Infrastructure*, Oct. 2017
- Shanghai Advanced Institute of Finance (SAIF) Executive MBA Programme, Imperial College Business School, August 2017 and July 2018
- Schmidt Fellows: Rhodes Trust Workshop, July 2018
- Imperial College Executive Education: *Nationwide Enterprise Leadership* programme, 2016
- Imperial College / BML Munjal University Innovation Conference, Delhi, India, Jan. 2016
- Ambrosetti Club, London, Nov 2015
- *2034: Tech Foresight*, July 2014, ([www.imperialtechforesight.com](http://www.imperialtechforesight.com))

#### **Colloquia, Seminars (recent only)**

- Cambridge Graphene Centre, March 2017
- MIT, Dept of Mechanical Engineering, Dec. 2015
- U. Washington EE Colloquium, June 2015
- Berkeley Sensors and Actuators Center (BSAC) seminar series, April 2015

#### **External Review Panel Membership**

- Agency for Science, Technology and Research (A\*STAR), Advanced Manufacturing and Engineering (AME) programme, Nanotechnology for Artificial Intelligence, Singapore, 2018
- EPSRC, *Engineering for a Prosperous Nation*, Sept. 2017
- EU NEREID project (“NanoElectronics Roadmap for Europe”), 2016 – 2018
- Royal Academy of Engineering, *Frontiers of Engineering*, 2016 –
- Royal Academy of Engineering, *Research Fellowships*, 2015 –
- Royal Academy of Engineering, *Enterprise Awards and Fellowships*, 2014 –
- French-Singaporean Research Institute CINTRA, Singapore, Jan 2013

- *ERA Foundation Entrepreneurs Award*, Royal Academy of Engineering, 2013-2016
- *Univ. of California Center for IT Research in the Interests of Society (CiTRIS)*, a \$300M multi-campus initiative, 2010
- *International Travel Grants Scheme*, Royal Society, 2007 - 2010
- QinetiQ Fellowship, Dec. 2007
- Appointment panel, Head of Nanotechnology Group, Cranfield University, 2006

#### **Internal (Imperial College) Committee and Panel Memberships**

- Co-founder, *Smart Connected Futures Centre*, 2017-18
- Provost's Student Entrepreneurship Group, 2014 – 2017
- College Strategy Working Group (Leading the Data Revolution) 2014
- Research Board, Data Science Institute, 2013 – present
- Faculty of Engineering Research Committee, 2008 – 2015
- Founder and Co-Director, Digital Economy Lab, 2011 – present  
[www3.imperial.ac.uk/digital-economy-lab](http://www3.imperial.ac.uk/digital-economy-lab)
- Executive Committee, Institute for Security Science & Technology, 2010 – 2016  
[www3.imperial.ac.uk/securityinstitute](http://www3.imperial.ac.uk/securityinstitute)
- Co-founder and Management Comm. member, Centre for Pervasive Sensing, 2007 – 2016  
[www3.imperial.ac.uk/pervasivesensing/](http://www3.imperial.ac.uk/pervasivesensing/)
- Organiser of external course *Microsystems Technology*, 1994 – 2001

#### **Editorial Board Memberships & Editorships**

- Editorial board member, *J. of Micromechanics and Microengineering*, IoP Publishing, 2016 –
- Editorial board member, *Smart Health*, Elsevier, 2016 –
- Editorial board member, *Microsystems and Nanoengineering*, Nature Publishing Group, 2015 –
- Member, Int. Adv. Board, *Energy Harvesting and Systems Journal*, De Gruyter, 2014 -
- Editor in Chief, *Int. Journal of Electronics*, Taylor & Francis, 1998 – 2001

#### **Conference Organisation**

- Regional Chair Europe/Africa, *Transducers 2019*
- General Chair, *DE/2014 (Digital Economy All Hands Conference)*, London, Dec 2014
- Member, International Steering Committee, *PowerMEMS*, 2014 – present
- Co-Chair, *Privacy and the Digital City* panel discussion, Imperial College, March 2014
- Co-Chair, Technical Program Committee, *PowerMEMS 2013*, London, Dec 2013
- Member, International Steering Committee, *Transducers*, 2013-2021
- Chair, Steering Committee, *Int. Conference on Body Sensor Networks*, 2010 - 2018
- Co- General Chairman, *6<sup>th</sup> Int. Symposium on Body Sensor Networks*, Berkeley, June 2009
- Organiser, 1<sup>st</sup> and 2<sup>nd</sup> workshops, *Imperial College Centre for Pervasive Sensing*, 2007/8
- Member, International Advisory Committee, *11th Int. Ceramics Congress & 4th Forum on New Materials*, CIMTEC, 2006.
- Member, International Advisory Committee, *IEEE Region 10 Int. Conf on Electrical & Electronic Technology*, Singapore, Aug. 2001.
- Member of organising committee, and proceedings co-editor, *Ferroelectrics 2000*.
- Co-chairman, IEE Colloq. *Microengineering in Optics and Optoelectronics*, Nov. 1999.

- Member, International Advisory Comm, *World Ceramics Congress* (Section K), 1998.
- Chairman and organiser, *UK/Ireland Sol-Gel Group Annual Meeting*, 1998.

### Technical Program Committee (TPC) Memberships

- *Transducers 2013*, Barcelona, and *2015*, Anchorage (Executive TPC)
- *PowerMEMS: 2012, 2011, 2010, 2009, 2008, 2007*
- *IEEE Sensors 2011*, Dublin
- *Transducers: 2011*, Beijing; 2009, Denver
- *Design Automation & Test Europe (DATE) 2011*, Grenoble
- *IEEE MEMS: 2010*, Hong Kong; 2009, Sorrento, Italy
- *Latin American Optics & Photonics Conf.*, Recife, Brazil, Sept 2010
- *Bodynets 2009*, Los Angeles
- *Int. Workshop on Body Sensor Networks (BSN): 2009, 2008, 2007, 2006*
- *SENSORCOMM 2007*, First Int. Conf. on Sensor Technologies & Applications
- Fifth Int. Conference on *Information Processing in Sensor Networks (IPSN)*, SPOTS track, 2006

### Publications in Refereed Journals

- 99) Fu H., Yeatman E.M., "Rotational energy harvesting using bi-stability and frequency up-conversion for low-power sensing applications: Theoretical modelling and experimental validation", *Mechanical Systems and Signal Processing*, (2018).
- 98) Fu H., Yeatman E.M., "Effective Piezoelectric Energy Harvesting Using Beam Plucking and a Synchronized Switch Harvesting Circuit", *Smart Materials and Structures* (2018).
- 97) EM Yeatman, HM Gramling, EN Wang, "Introduction to the special topic on nanomanufacturing", *Microsystems & Nanoengineering* **3**, 17079 (2017).
- 96) von Allmen L., Bailleul G., Becker Th., Decotignie J. D., Kiziroglou M.E., Leroux C., Mitcheson P. D., Mueller J., Piguat D., Toh T.T., Weisser A., Wright S., Yeatman E.M., "Aircraft Strain WSN powered by Heat Storage Harvesting", *IEEE Trans. Industrial Electronics* **64**(9), 7284-7292 (2017).
- 95) Kiziroglou M.E., Becker Th., Wright S.W., Yeatman E.M., Evans J., Wright P.K., "3D Printed Insulation for Dynamic Thermoelectric Harvesters with Encapsulated Phase Change Materials", *IEEE Sensors Lett.* **1**(4), 1-4 (2017).
- 94) Kiziroglou M.E., Boyle D., Wright S.W., Yeatman E.M., "Acoustic power delivery to pipeline monitoring wireless sensors", *Ultrasonics* **77**, 54-60 (2017).
- 93) Fu H., Yeatman E.M., "A methodology for low-speed broadband rotational energy harvesting using piezoelectric transduction and frequency up-conversion", *Energy* **125**, 152-161 (2017).
- 92) Pillatsch P., Xiao B.L., Shashoua N., Gramling H.M., Yeatman E.M., Wright P.K., "Degradation of bimorph piezoelectric bending beams in energy harvesting applications", *Smart Materials and Structures* **26**, 035046 (2017).
- 91) Kiziroglou M.E., Boyle D., Yeatman E.M., Cilliers J. J., "Opportunities for Sensing Systems in Mining," *IEEE Trans. Industrial Informatics* **13**, 278-286 (2017).
- 90) Goverdovsky V., Yates D. C., Willerton M., Papavassiliou C., Yeatman E.M., "Modular Software-Defined Radio Testbed for Rapid Prototyping of Localization Algorithms," *IEEE Trans. Instrumentation and Measurement* **65**, 577-1584 (2016).
- 89) DE Boyle, ME Kiziroglou, PD Mitcheson, EM Yeatman, "Energy Provision and Storage for Pervasive Computing", *IEEE Pervasive Computing* **15** (4), 28-35 (2016).
- 88) SH Pu, DA Darbyshire, RV Wright, PB Kirby, MD Rotaru, AS Holmes, EM Yeatman, "RF MEMS Zipping Varactor With High Quality Factor and Very Large Tuning Range", *IEEE Electr. Dev. Lett.* **37** (10), 1340-1343 (2016).

- 87) P Pillatsch, EM Yeatman, AS Holmes, PK Wright, "Wireless power transfer system for a human motion energy harvester", *Sensors and Actuators A: Phys.* **244**, 77-85 (2016).
- 86) ME Kiziroglou, A Elefsiniotis, N Kokorakis, SW Wright, TT Toh, PD Mitcheson, U Schmid, Th Becker, EM Yeatman "Scaling and super-cooling in heat storage harvesting devices", *Microsystem Technologies*, 1-10 (2016).
- 85) H Fu, EM Yeatman, "A miniaturized piezoelectric turbine with self-regulation for increased air speed range", *Applied Physics Letters* **107** (24), 243905 (2015).
- 84) S Kaur, E Halvorsen, O Søråsen, EM Yeatman, "Characterization and Modeling of Nonlinearities in In-Plane Gap Closing Electrostatic Energy Harvester", *J. Microelectromech. Syst.* **24** (6), 2071-2082 (2015).
- 83) ME Kiziroglou, EM Yeatman, "Protection of electronics from environmental temperature spikes by phase change materials", *J. Electronic Materials* **44** (11), 4589-4594 (2015).
- 82) D Boyle, R Kolcun, E Yeatman, "Devices in the Internet of Things", *J. Inst.Telecommunications Professionals* **9**, 27-31 (2015).
- 81) Jiang H., Kiziroglou M.E., Yates D.C., Yeatman E.M., "A Motion-Powered Piezoelectric Pulse Generator for Wireless Sensing via FM Transmission", *IEEE Internet of Things Journal*, **2**(1), 5-13 (2015).
- 80) Toh T., Wright S.W., Kiziroglou M.E., Mitcheson P.D., Yeatman E.M. "A dual polarity, cold-starting interface circuit for heat storage energy harvesters", *Sensors and Actuators A* **211**, 38-44 (2014)
- 79) Pillatsch P., Yeatman E.M., Holmes A.S., "Magnetic Plucking Of Piezoelectric Beams For Frequency Up-Converting Energy Harvesters", *Smart Mater. Struct.* **23**, 25009-25020 (2014).
- 78) Kiziroglou M.E., Wright S.W., Toh T.T., Mitcheson P.D., Becker T., Yeatman E.M. "Design and Fabrication of Heat Storage Thermoelectric Harvesting Devices", *IEEE Trans. Ind. Electr.* **61**(1), 302-309 (2014).
- 77) Denisov A., Yeatman E.M., "Micromechanical Actuators Driven by Ultrasonic Power Transfer," *IEEE J. Microelectromechanical Systems* **23**, 750-759 (2014).
- 76) Pillatsch P., Yeatman E.M., Holmes A.S., "A piezoelectric frequency up-converting energy harvester with rotating proof mass for human body applications", *Sensors and Actuators A: Phys.* **206**, 178-185 (2014).
- 75) Kiziroglou M.E., A. Elefsiniotis A., Wright S.W., Toh T.T., Mitcheson P.D., Becker T., Yeatman E.M. "Performance of phase change materials for heat storage thermoelectric harvesting", *Appl. Phys. Lett.* **103**(19), 193902 (2013).
- 74) Boyle D.E., Yates D.C., Yeatman E.M. "Urban Sensor Data Streams", *IEEE Internet Computing* **17**, 12-20 (2013).
- 73) Miller L.M., Pillatsch P., Halvorsen E., Wright P.K., Yeatman E.M., Holmes A.S., "Experimental passive self-tuning behavior of a beam resonator with sliding proof mass", *Journal of Sound and Vibration* **332** (26), 7142-7152 (2013).
- 72) Pu S.H., Holmes A.S., Yeatman E.M. "Stress in Electroplated Gold on Silicon Substrates and its Dependence on Cathode Agitation", *Microelectronic Engineering* **112**, 21-26 (2013).
- 71) Ayala-Garcia N., Mitcheson P.D., Yeatman E.M. Zhu D., Tudor J., Beeby S.P. "Magnetic tuning of a kinetic energy harvester using variable reluctance" *Sensors and Actuators A.* **189**, 266-275 (2013)
- 70) Pillatsch P., Yeatman E.M., Holmes A.S., "A scalable piezoelectric impulse-excited energy harvester for human body excitation", *Smart Materials and Structures*, **21**(11):115018 (2012).
- 69) Le CP, Halvorsen E, Søråsen O and Yeatman EM, "Microscale Electrostatic Energy Harvester Using Internal Impacts", *J. Intelligent Material Systems and Structures*, **23** (13), pp. 1409-1421 (2012).
- 68) Dicken J, Mitcheson PD, Stoianov I, Yeatman EM, "Power-Extraction Circuits for Piezoelectric Energy Harvesters in Miniature and Low-Power Applications", *IEEE Trans. on Power Electronics* **27**(11), pp. 4514-4529 (2012).
- 67) Cepnik C, Yeatman EM and Wallrabe U, "Effects of a Nonlinear Magnetics on Electromagnetic Vibration Energy Harvesters", *J. Intelligent Materials Systems and Structures* **23**(13), 1533-1541 (2012).
- 66) C. He, M.E. Kiziroglou, D.C. Yates, E.M. Yeatman, "A MEMS Self-Powered Sensor and RF Transmission Platform for WSN Nodes", *IEEE Sensors* **11** (12), pp. 3437-3445 (2011).

- 65) G. Dou, A.S. Holmes, E.M. Yeatman, R.V. Wright, P.B. Kirby and C. Yin, "Transfer of Functional Ceramic Thin Films Using a Thermal Release Process", *Adv. Mater.* **10**.1002 (2011).
- 64) A. Bansal, R. Hergert, G. Dou, D. Bhattacharyya, R.V. Wright, P.B. Kirby, A.S. Holmes, E.M. Yeatman, "Laser transfer of sol-gel ferroelectric thin films using an ITO release layer *Microelectronic Engineering*", *Microelectronic Engineering* **88**(2), pp. 145-149 (2011).
- 63) E.M. Yeatman, "Viewpoint: Sensor Power Sources", *Sensor Review* **30** (3), p. 181 (2010).
- 62) S.H. Pu, A.S. Holmes, E.M. Yeatman, C. Papavassiliou and S. Lucyszyn, "Stable zipping RF MEMS varactors", *J. Micromechanics and Microengineering* **20**(3), art. 035030 (2010).
- 61) M.E. Kiziroglou, A.G. Mukherjee, S. Vatti, A.S. Holmes, C. Papavassiliou and E.M. Yeatman, "Self-Assembly of 3D Au inductors on silicon", *IET Microwaves, Antennas & Propagation* **4**(11), pp. 1698-1703 (2010).
- 60) M. Kiziroglou, C. He and E.M. Yeatman, "Flexible substrate electrostatic energy harvester", *Elec. Lett.* **46**(2), pp. 166-167 (2010).
- 59) H.-C. Lan, M.-L. Wu and E.M. Yeatman, "Non-mechanical sub-pixel image shifter for acquiring super-resolution digital images", *Optics Express* **17**(25), pp. 22992-23002 (2009).
- 58) M. Kiziroglou, C. He and E.M. Yeatman, "Rolling Rod Electrostatic Microgenerator", *IEEE Trans. Industrial Electronics* **56**(4), pp. 1101-1108 (2009).
- 57) T.T. Toh, P.D. Mitcheson, A.S. Holmes and E.M. Yeatman, "Continuously Rotating Energy harvester with Maximum Power Point Tracking", *J. Micromechanics and Microengineering* **18**, art. 104008 (2008).
- 56) P. D. Mitcheson, E. M. Yeatman, G.K. Rao, A. S. Holmes & T. C. Green, "Energy Harvesting from Human and Machine Motion for Wireless Electronic Devices", *Proc. IEEE* **96**(9), pp. 1457-1486 (2008).
- 55) P.D. Mitcheson, T. Sterken, C. He, M. Kiziroglou, E. M. Yeatman and R. Puers, "Electrostatic Microgenerators", *Measurement and Control* **41**(4), pp. 114-119 (2008).
- 54) E.M. Yeatman, "Energy Harvesting from Motion Using Rotating and Gyroscopic Proof Masses", *J. Mechanical Engineering Science* **222** (C1), pp. 27-36 (2008).
- 53) Mitcheson P.D., Reilly E.K., Toh T., Wright P.K. and Yeatman E.M., "Performance Limits of the Three MEMS Inertial Energy Generator Transduction Types", *J. Micromechanics & Microengineering* **17**(9), pp. S211-S216 (2007).
- 52) E.M. Yeatman, "Applications of MEMS in Power Sources and Circuits", *J. Micromech. Microeng.* **17**(7), pp. S184-S188 (2007).
- 51) Lipson A., Yeatman E.M., "A 1-D Photonic Band Gap Tunable Optical Filter in (110) Silicon", *IEEE J. MEMS* **16**(3), pp. 521-527 (2007).
- 50) A. Laliotis & E.M. Yeatman, "Multilayered Waveguides for Increasing the Gain Bandwidth of Integrated Amplifiers", *IEEE J. Lightwave Technology* **25**(6), pp. 1613-1620 (2007).
- 49) Mitcheson, T.C. Green and E.M. Yeatman, "Power Processing Circuits for MEMS Inertial Energy Scavengers", *Microsystems Technologies* **13**, pp. 1629-1635 (2007).
- 48) Miao P., Mitcheson P.D., Holmes A.S., Yeatman E.M., Green T.C. Stark B.H. "MEMS inertial power generators for biomedical applications", *Microsystem Technologies* **12** (10-11), pp.1079-1083 (2006).
- 47) Avlonitis N., Yeatman E.M. "Performance evaluation of optical DQPSK using saddlepoint approximation", *IEEE J. Lightwave Tech* **24**, 1176-1185 (2006).
- 46) Lipson A., Yeatman E.M., "Low loss 1D Photonic Band Gap Filter in (110) silicon", *Optics Letters* **31**(3), pp 395-397 (2006).
- 45) Avlonitis N., Yeatman E.M., Jones M., Hadjifotiou A. "Multilevel ASK in dispersion uncompensated optical systems", *IEE Proceedings: Optoelectronics* **153** (3), pp. 101-108 (2006).
- 44) Stark B.H., Mitcheson P.D., Miao P., Green T.C., Yeatman E.M., Holmes A.S. "Converter circuit design, semiconductor device selection and analysis of parasitics for micro-power electrostatic generators", *IEEE Trans. on Power Electronics*, **21**(1), 27-37 (2006).
- 43) Laliotis A., Yeatman E.M., Al-Bader S.J. "Modelling signal and ASE evolution in erbium doped Amplifiers by the Method of Lines", *IEEE J. Lightwave Tech.* **24**(3), 1589-1600 (2006).

- 42) T. von Buren, P. D. Mitcheson, T. C. Green, E. M. Yeatman, A. S. Holmes, G. Troster, "Optimization of Inertial Micropower Generators for Human Walking Motion", *IEEE Sensors Journal* **6**(1), 28-38 (2006).
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- 27) P D Mitcheson, T C Green, E M Yeatman and A S Holmes, "Analysis of Optimized Micro-Generator Architectures for Self-Powered Ubiquitous Computers," Fourth International Conference on Ubiquitous Computing, *UbiComp 2002*, Gothenburg, Sweden, Sept. 29 - Oct. 1, 2002
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- 11) E.M. Yeatman & P.D. Mitcheson, "Energy Harvesting and Power Delivery", in G.Z. Yang, Ed., Body Sensor Networks, 2<sup>nd</sup> Ed, Springer, 2014, pp 237-272.
- 10) M. Kiziroglou & E.M. Yeatman, "Materials and Techniques for Energy Harvesting", in Functional Materials for Sustainable Energy Applications, J. Kilner, S. Skinner, J. Irvine and P. Edwards, Eds., Woodhead Publishing, 2012, pp. 541-572.
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- 1) E.M. Yeatman, Ed. "Supporting microsystems technology in Europe: the SME dimension", strategy paper distributed to Esprit Framework IV planning committee, March 1994.

### Patents

- 10) Taylor H., Gramling H.M., Yeatman E.M., "Selective Transfer of a Thin Pattern from Layered Material using a Patterned Handle", US Patent Application 62579963, filed 1/11/2017.
- 9) Pillatsch P., Yeatman E.M., Holmes A.S. "Power generation device", UK Patent Application GB 1207987.7, filed 4/5/2012, US patent 9,893,653 granted 13/2/18.
- 8) A. Finlay, E.M. Yeatman, W. Boxford, A. Onishenko, "Mass Spectrometer System", filed 30/11/09, published 23/6/10, granted 8/6/2011 as GB 2466350.
- 7) A. Finlay, E.M. Yeatman, S. Wright, "Preconcentrator and Sample Interface", filed 4/10/2007, published 15/4/09, granted 6/1/2010 as GB 2453531.
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### Doctoral Theses Supervised

- 20) H. Fu, "Rotational energy harvester for low power electronics", Imperial College London 2018.
- 19) H. Jiao, "Piezoelectric Energy Harvesting and Wireless Sensing Powered by Non-Harmonic Motion", Imperial College London 2016.
- 18) P. Pillatsch, "Piezoelectric energy harvesting from low frequency and random excitation using frequency up-conversion", Imperial College London 2014 (co-supervised).
- 17) A. Denisov, "Stepper microactuators driven by ultrasonic power transfer", Imperial College London 2013.
- 16) L. Thorner, "Miniaturized Energy Harvesters in a Fluid Environment", Imperial College London 2013 (co-supervised).

- 15) T.T. Toh, "A Gravitational Torque Energy Harvesting System for Rotational Motion", Imperial College London 2011 (co-supervised).
- 14) C. He, "Electrostatic Micro Energy Harvester with Rolling Mass", U. of London 2010.
- 13) S.H. Pu, "A Micromachined Zipping Variable Capacitor", Imperial College London 2010 (co-supervised).
- 12) Li Zhao, "Design and Fabrication of Micro-Electro-Mechanical Tilt Sensors for Low Power Body Motion Detection", U. of London 2009.
- 11) S. Vatti, "RF CMOS VCOs: MEMS Inductor Integration and the Bias Tuning Method", U. of London 2008 (co-supervised).
- 10) A. Lipson, "A Tunable Micro-Electro-Mechanical Optical Filter in Silicon", U. of London 2006.
- 9) A. Laliotis, "Analysis and Fabrication of Homogeneous High Concentration Erbium Doped Waveguide Amplifiers", U. of London 2005.
- 8) N. Avlonitis, "Multi-valued signalling for high efficiency optical communication systems", U. of London 2004.
- 7) E. Manyonganise, "Design, Analysis and Fabrication of a Micromachined Optical Tunable Lattice Filter", U. of London 2003.
- 6) G. Dahlmann, "Microfabrication of monolithic inductors for microwave integrated circuits using a self-assembly technique based on surface tension", U. of London 2002.
- 5) M. Solomon, "Laterally driven self-assembly of microstructures", U. of London, 2002.
- 4) M.H.M. Zai, "Chemical synthesis of lead zirconate titanate thin films for a piezoelectric actuator", U. of London, 2000.
- 3) O. McCarthy, "Selective area doping of porous silica films for optical applications", U. of London 1998.
- 2) M.A. Fardad, "Fabrication of sol-gel silica-on-silicon waveguides doped with semiconductor quantum dots for integrated optics", U. of London, 1995.
- 1) M.E. Caldwell, "Surface plasmon spatial light modulators", U. of London 1991

## Research Grants and Contracts

As Principal Investigator (PI) where marked \*, else as Co-investigator.

Total funds raised: £25.6M

As PI: £2.5M

2018-21	<i>Revolutionary Sensors</i> Sponsor: ABB	£350k
2018-20	<i>AMPWISE*</i> Clean Sky Joint Undertaking	£170k
2017-18	<i>Sky Swarm</i> sponsor: DSTL	£70k
2017-22	<i>Micro-Robotics for Surgery</i> sponsor: U.K. Engineering & Physical Sciences Research Council (EPSRC)	£6.2M
2017-20	<i>ENHANCE</i> sponsor: European Commission	£460k
2015-20	<i>Managing Air for Green Inner Cities (MAGIC)</i> sponsor: U.K. Engineering & Physical Sciences Research Council (EPSRC)	£4.2M
2014	<i>Sensor Survey*</i> sponsor: Rio Tinto	£40k
2013-2014	<i>FLite Instrumentation Test Wireless Sensor – FliteWISE*</i> sponsor: EU Clean Sky Programme	£65k

2013-2014	<i>Power line energy harvesting for aircraft sensor nodes</i> sponsor: Airbus	£40k
2011-2016	<i>Digital City Exchange (acting PI, 2013-2014)</i> sponsor: Research Councils UK	£5.9M
2011-2012	<i>ASU – Imperial College Collaboration*</i> sponsor: British Council	£20k
2010-2012	<i>Strain Wireless Sensor Network – StrainWISE*</i> sponsor: EU Clean Sky Programme	£153k
2009-2012	<i>Next Generation Energy-Harvesting Electronics - holistic approach</i> sponsor: EPSRC	£351k
2009-2012	<i>University Defence Research Centre</i> sponsor: U.K. Ministry of Defence	£1.4M
2008-2011	<i>Platform Support for 3D Electrical MEMS (renewal)</i> sponsor: U.K. Engineering & Physical Sciences Research Council (EPSRC)	£808k
2008-2011	<i>Mobile Water Quality Sensor System</i> sponsor: European Commission	£273k
2006-2009	<i>Integrated Functional Materials for System-in-Package Applications*</i> sponsor: EPSRC	£420k
2005-2009	<i>Autonomic Biosensor Networks For Pervasive Healthcare (WINES)</i> sponsor: EPSRC	£1.4M
2004-2008	<i>MEMS Technologies for Fast Storage Area Network Switch Fabrics*</i> sponsor: EPSRC	£212k
2004-2006	<i>Integration of Functional Ceramics in 3D MEMS*</i> sponsor: EPSRC	£89k
2004-2007	<i>Platform Support for 3D Electrical MEMS</i> sponsor: EPSRC	£418k
2004-2005	<i>Microstructures For Nanoscale Measurement</i> sponsor: Royal Society / Wolfson Foundation	£157k
2002-2005	<i>HARM Technologies for Optical and RF Components</i> sponsor: EPSRC	£650k
2000-2003	<i>Optical Amplification in Laminated Waveguides*</i> sponsor: Nortel Networks	£51k
2001-2003	<i>ORESTEIA: Modular Hybrid Artefacts With Adaptive Functionality*</i> sponsor: European Commission	£150k
2001-2003	<i>TeMPoS : Technologies for Microengineered Power Systems*</i> sponsor: EPSRC	£199k
2000	<i>Ultrametrology for MEMS</i> Sponsor: EPSRC Strategic Equipment Initiative	£242k
2000-2002	<i>OASIS : Materials for Wideband Optical Amplifiers in Silica-on-Silicon*</i> sponsor: EPSRC	£198k
2000-2003	<i>MiMiC: Microstructures on Microwave Circuits*</i> sponsor: EPSRC	£200k
1997-2000	<i>Micro-Engineered Optical Read Heads and Scanners</i>	£239k

	sponsor: EPSRC	
1995-1998	<i>Customer Access Photonics...*</i> sponsor: European Commission	£274k
1992-1995	<i>Non-Linear and Active Optical Devices on Silicon*</i> sponsor: European Commission	£217k
1993-1995	<i>Microsystems : Useage, Strategy, Technology*</i> sponsor: European Commission	£75k
1994-1996	<i>Micro-Molding and Micro-Actuation using Surface Tension</i> sponsor : Japanese Micromachine Centre Foundation	£20k
1994-1996	<i>Self-Assembling Three Dimensional Microstructures</i> sponsor : U.K. Science & Engineering Research Council (SERC)	£99k
1993-1995	<i>Piezo-Electric Micro-Mechanical Actuators by Sol-Gel Processing</i> sponsor: SERC	£67k
1988-1991	<i>Surface Plasmon Spatial Light Modulators*</i> sponsor: SERC	£68k