Paul Hooper

PhD MEng DIC

Department of Mechanical Engineering
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Professional experience

2015–Present **Research Fellow**, *Imperial College London*.
Conducting and supervising research in Additive Manufacturing. Undergraduate/Postgraduate teaching and student supervision. Management and administration. Research interests include:

- In-situ process monitoring and control
- Process-microstructure-performance relationships
- Simulation of AM processes
- New manufacturing process development
- Architected materials and design for AM

2011–2015 **Research Associate**, *Imperial College London*.
Conducting and supervising research in mechanical material behaviour and failure. Research projects included:

- MoD: *Selective laser melting process development and modelling*
- MoD: *Strength and damage of novel metallic materials*.
- ONR: *Strength and damage tolerance of novel Composite/Sandwich Materials*
- Arup: *Blast resistant window materials*
- EU/FP7: *Condition monitoring of next generation power stations*

2006–2007 **Design engineer**, *Cranes Fluid Systems Ltd*.
Value engineering to reduce raw material and manufacturing costs for fluid control valves. My role included design prototyping, testing and evaluation. The design changes I made resulted in annual savings of over £100k.

Education

2007–2011 **PhD in Mechanical Engineering**, *Imperial College London*.
Thesis title: *Blast performance of silicone-bonded laminated glass*.
Supervisors: Professor J. P. Dear and Dr B. R. K. Blackman.
Funding: EPSRC Industrial CASE award with Arup Security Consulting.
Viva date: 17th March 2011, Awarded: 1st April 2011

2002–2006 **MEng in Mechanical Engineering**, *University of Bath*.
Degree result: *First class honours*.
Dissertation title: *Control system for a robot arm in zero gravity*.
Awarded: 27th June 2006

Memberships and awards

- Awarded Faculty of Engineering Teaching Assistant of the Year 2012
- Awarded Mechanical Engineering Teaching Assistant of the Year 2012
- PhD Thesis nominated for the Unwin Prize in Mechanical Engineering
- Associate member of the Institution of Mechanical Engineers
- Associate member of the Institute of Physics
- Scholarship to attend 2010 APS SCCM conference
- Two Royal Academy of Engineering travel awards

Invited talks

2016 Unlocking the potential of additive manufacturing: From fundamental understanding to integrated process modelling. AMN launch event, Imperial College London, UK

2015 High strain-rate behaviour of SLM 316L stainless steel. Additive Manufactured Metallic Materials Properties & Structures (AM3PS) conference. Manufacturing Technology Centre, Coventry, UK

2015 Additive manufacture process modelling: Unlocking the potential of 3D printing. Postdoc research showcase. Imperial College London, UK

2014 Additive manufacturing at Imperial: An overview. AWE Universities Conference, Imperial College London, UK

2014 AM process development and modelling for selective laser melting. CEMS Kick Start Workshop, Imperial College London, UK

2011 High rate tensile testing of metals using conventional mechanical test machines. Impact Club Meeting, Imperial College London, UK

2010 Research into glass edge effects for blast resistance of laminated glass structures. 11th UK GEMS Annual Meeting, Arup, London, UK

2008 Blast resistance of laminated glass. Composites Centre Annual Meeting, Imperial College London, UK

Teaching activities

2012–Present Course leader and designer of ME3-HECM "Embedded C for Microcontrollers" course. Approximately 90 students and 90 hours contact time per year. Excellent Student Online Evaluation (SOLE) results: over 90% of students were satisfied with lecturing and course quality over this period.

2007–Present Supervision of over 20 MEng and MSc project students and UROP placement.

2012–2013 Lecturer and tutor on the ME1-HDMF "Design and Manufacture" course for electronics for the Hovercraft design project.

2007–2011 Teaching assistant on the 1st year "Fairground Laboratory", 1st and 2nd year Materials laboratory classes.

Professional and administrative activities

- Co-organiser of "Lattice Structures" symposium hosted at Imperial College, September 2016. Speakers from Lawrence Livermore National Laboratory, Nottingham, Cambridge, Sheffield, Imperial, AWE, TWI and MTC
- Founding member of the Additive Manufacturing Network (AMN) at Imperial College London
- Committee Member for IOM3 Structure and Properties of Materials Committee (2014 to date)
- Theme Leader for Additive Manufacturing in the Manufacturing Futures Lab at Imperial College London (2013 to date)
- Reviewer for: International Journal of Impact Engineering, Engineering Structures, Applied Mechanics Reviews
- Management of additive manufacturing lab
- Member of the Mechanical Engineering Athena Swan Committee
- Mechanical Engineering Departmental Postdoc representative, Imperial College London (2012 to 2014)
- Equipment selection for teaching and research

Research students supervised (PhD)

Name	Project	Status	Supervisors
Filippo Vecchiato	Microstructure process-parameter relationships in selectively laser melted 316L Stainless Steel	1st Year	M. Wenman P.A. Hooper
Shaaz Ghouse	SLM lattice structures for early intervention implants	2nd Year	J. Jeffers P.A. Hooper
Alex Sancho	Continuum Damage Mechanics Modelling	2nd Year	J.P. Dear P.A. Hooper C.M. Davies
Mohammad Samieian	Blast of glass façade structures	2nd Year	P.A. Hooper J.P. Dear B.R.K. Blackman
Youseff Ibrahim	Additive manufactured components for aerospace applications	2nd Year	P.A. Hooper C.M. Davies J.P. Dear
Mark Kelly	Lightweight composite structures resistant to blast	Passed 2016	J.P. Dear P.A. Hooper
Alex Worley	Methods to develop and validate constitutive relationships for metallic systems	Passed 2015	J.P. Dear P.A. Hooper

Paolo Del Linz	Materials for blast resistant windows	Passed 2014	J.P. Dear P.A. Hooper B.R.K. Blackman

Media coverage and outreach activities

- Flying 3D printer featured in the "Technology Now!" exhibition at the Science Museum (June 2014)
- "Flying 3D printer could seal off nuclear waste" *New Scientist* (magazine), MEng project researching mobile 3D printing featured in Issue 2968 (May 2014)
- "Bend, break or stretch" demonstrations for 3 to 11-year-olds for Bring Your Child to Work Event 2015
- "Materials on the edge" demonstration at the 2013 Imperial Festival