

Jack Marsden Donoghue

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Key Points

- Electron microscopist with extensive experience in crystallography. Particularly with EBSD.
- Authored and co-authored many peer reviewed scientific contributions.
- Experienced lab manager and has led development projects with OEMs since 2018.
- Invited keynotes speaker at several international conferences and was recently an opening plenary speaker at the XVIIIth International Conference on Electron Microscopy, Zakopane, Poland, 2024.

Work Experience

2023-Present Senior Technical Specialist, The Henry Royce Institute, University of Manchester

My role centres on managing the TANIST lab, a collaborative development project to create the first fully automated in situ testing microscope platform. I helped conceive and lead the project, which now includes two electron microscopes with broad testing capabilities. Since 2020, I have also managed the Thermo Scientific Helios 5 L-PFIB, the first of its type in the UK, developing fs-laser workflows for applications including XCT pillar preparation and large-volume 3D-EBSD.

Through The Henry Royce Institute, I support external academic and industrial users by advising on equipment capabilities, experiment design, data collection, and interpretation of results.

I have also led major equipment purchases exceeding £3m, including tendering processes and overseas factory visits.

2016-2023 Experimental Officer, University of Manchester

Developed a mechanical testing rig for use between a Zeiss Versa XCT and Zeiss Sigma SEM, and helped establish the foundations for the TANIST project and current lab capabilities, including overseeing installation of the fs-laser PFIB.

2010-2011 Laboratory Assistant, Högskolan Väst, Sweden

Completed a 12-month undergraduate placement at Produktionsteknik Väst, supporting research into manufacturing and processing techniques. Managed materials lab activities across welding and thermal spray coating projects, including metallographic preparation, sample analysis, equipment training, and supervision.

Education

2012-2016 PhD in Advanced Metallic Materials – University of Manchester

Project title - *Hybrid Additive Manufacture and Deformation Processing for Large Scale Near Net Shape Manufacture of Titanium Aerospace Components*

Funding: President's Doctoral Scholar Award

Sponsorship: Airbus Group

The focus of the PhD was on how the addition of a deformation step, by either rolling or peening, affects the microstructure and texture of Ti-6Al-4V builds.

The samples were built in collaboration with Airbus, BAE Systems, and Cranfield University. Analysis of the samples required highly novel advanced electron microscopy techniques to be developed, and I oversaw the development of equipment to simulate the various processing steps under laboratory conditions.

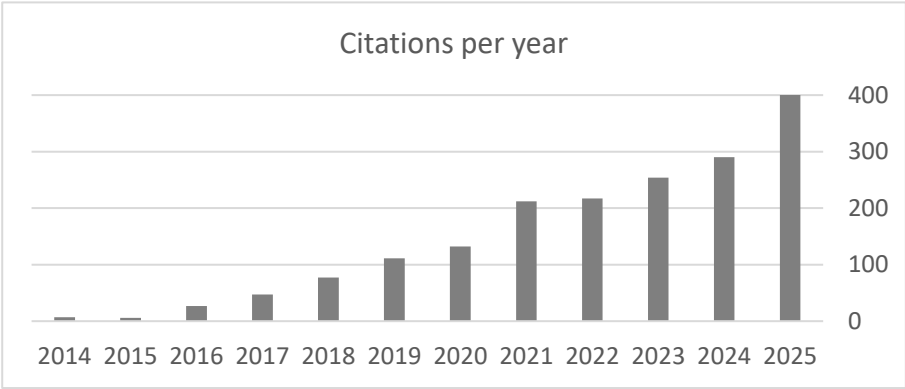
2008-2012 MEng Materials Science and Engineering with Industrial Experience - University of Manchester

Graduated with a high first-class degree. My final project and dissertation achieved an average mark of 80%. I also succeeded in attaining over 80% in several key modules including Phase Transformations, Deformation Processing, and Advanced Analytical Techniques.

Selected Presentations and Publications

Throughout my education and employment I have contributed to over 40 peer reviewed journal articles and presented at several international conferences. For a more complete list, please visit my [Google Scholar](#).

Feb 2026	A new approach to SEM <i>in-situ</i> thermomechanical experiments through automation <i>A.D. Smith, D. Lunt, M. Taylor, A. Davis, R. Thomas, F. Martinez, A. Candeias, A. Gholinia, M. Preuss, J.M. Donoghue</i> Ultramicroscopy, Volume 280
May 2025	Automated in situ EBSD experiments: Capabilities and Considerations <i>Jack Donoghue</i> Invited speaker – EMAS 2025, Mataró, Spain
June 2024	Recent developments in automated EBSD acquisition <i>J. Donoghue</i> Plenary Speaker - XVIIIth International Conference on Electron Microscopy, Zakopane, Poland
March 2024	Exploration of fs-laser ablation parameter space for 2D/3D imaging of soft and hard materials by tri-beam microscopy <i>A. Gholinia, J. Donoghue, M. Curd, M. Lawson, R. Geurts, B. Winiarski, P.J. Withers, and T. Burnett</i> Ultramicroscopy, Volume 257
April 2023	Automated in situ thermo-mechanical testing and the opportunities when combined with EBSD and EDS <i>Jack M Donoghue, Albert D Smith, Jiaqi Xu, Zhening Yang, Antoine Candeias, Patrick W Trimby</i> Keynotes - RMS EBSD 2023, Leeds, UK



	All	Since 2021
Citations	2068	1647
h-index	22	20
i10-index	29	28

Data accessed from google scholar July 2026

Contributions to the Wider Research Community

In addition to the above talks and publications, I co-lead a network of TANIST operators across the world to discuss operation and technique development. This currently consists of seven systems across four countries.

Through the Royce Institute I have been running EBSD training days every ~6 months for the last two years. These training days are open to all to attend, and over the last 4 events we have trained over 140 attendees.

I have been a steering committee member of the European FIB network since being invited to join in September 2024 and have led tutorial sessions at their meetings.

Skills and Techniques

In addition to EBSD, I have acquired a high level of proficiency with several other SEM techniques including STEM, ECCI, EDS, and HRDIC, alongside data analysis software associated with these techniques.

Referees

Regius Prof. Phil Withers
Currently on sabbatical
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Prof. Tim Burnett
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