



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Trinity School of Engineering Academic Staff Profiles

Healthcare, Biomedical Engineering, Medical Devices



School of Engineering Academic Staff Profile



Name: Brooke Tornifoglio

Discipline: Biomedical Engineering

Bio: Her research group is interested in the interplay between imaging, biomechanics and device design. Specifically, evaluating the microstructure and microenvironment of tissue via imaging to infer the mechanics of the tissue and ultimately inform better device design

Areas of Expertise: Clinically relevant and research imaging (quantitative MRI, US, μ CT, microscopy techniques), biomechanics, and medical device design within arterial, hepatic, breast and female reproductive tissue

Team Size: 2 PhD researchers, 1 post-doctoral researcher, 2 research assistants, 5 MSc students

Website: <https://www.biblab.eu> or <https://www.tcd.ie/biomedicalengineering/people/principal-investigators/btornifo/>

School of Engineering Academic Staff Profile



Name: Bruce Murphy

Discipline: Biomedical Engineering

Bio: Bruce Murphy is Professor in the Department of Mechanical, Manufacturing and Biomedical Engineering. He runs a medical device design incubator lab in TCD. To date his lab has spun-out 5 TCD spin-outs: Croívalve, Selio Medical, Proverum PLIO Surgical and One Projects. The spinouts from his lab have raised over €150M in capital, employ over 120 full time equivalents. His interests are in the area of solving clinical needs with novel mechanical engineering based solutions. He teaches medical device design and materials applications courses and is presently the stream director for Biomedical Engineering

Areas of Expertise: Medical Device Design (Mechanical mechanism of action)

Team Size: Changes year to year, at present 3

Website: <https://www.tcd.ie/research/profiles/?profile=murphb17>

School of Engineering Academic Staff Profile



Name: Professor Conor Buckley

Discipline: Biomedical Engineering

Bio: His group develops advanced biomaterials, biofabrication methods, and cell-based therapies to regenerate damaged tissues using minimally invasive approaches. Current projects include gene-activated biomaterials for intervertebral disc repair, electroconductive ECM nerve guidance conduits, biomimetic self-healing tissue adhesives, 3D-printed orthopaedic implants, and predictive in silico models for cell-based therapies. He co-founded Altach, a spin-out company creating cartilage scaffolds for knee joint regeneration. His lab is funded by the European Research Council, AMBER, and Research Ireland.

Areas of Expertise: Bioprinting, bioinks, injectable hydrogels, biomimetic self-healing tissue adhesives, intervertebral disc, spine, nerve guidance conduits, cartilage, in silico nutrient microenvironments

Team Size: 5 PhD students and 2 postdoctoral researchers

Website: <https://www.buckleylab.eu/> or <https://www.tcd.ie/research/profiles/?profile=cbuckle>

School of Engineering Academic Staff Profile



Name: Prof. David Hoey

Discipline: Biomedical Engineering

Bio: His group develops advanced therapeutics, cell-derived therapies (vesicles), and biomaterials to regenerate damaged and diseased tissues, with a particular focus on the musculoskeletal system. In addition, his group develops Organ-on-a-Chip (OoC) systems of musculoskeletal tissues to better model and validate identified therapies. Current projects include OoC models of bone, cartilage, and synovium (Joint-on-a-Chip), tissue and cell-derived vesicles for bone repair, and immunomodulatory therapeutics and materials for musculoskeletal tissue regeneration. His lab has been funded by the European Research Council (Starting, PoC), Research Ireland FFP Project and Award grants, HRB, IRC, and Industry.

Areas of Expertise: Musculoskeletal biomechanics/mechanobiology, Immunology, Biomaterials, Tissue Engineering and Regenerative Medicine, Extracellular Vesicles, Organ-on-a-Chip Technologies, Bioreactors.

Team Size: Currently 1 Postdoctoral fellow, 7 PhD students, 4 MSc students

Website: <https://www.hoeylab.com> or <https://www.tcd.ie/research/profiles/?profile=dahoey>

School of Engineering Academic Staff Profile

Name: Mark Ahearne



Discipline: Biomedical Engineering

Bio: Marks research is focused on generating new therapies to treat ocular conditions such as corneal blindness and glaucoma by using a combination of tissue engineering, advanced biomaterials, organ-on-a-chip technology and cell based techniques. His research has been funded by European Research Council, Research Ireland, Science Foundation Ireland, Marie-Curie COFUND, COST Actions and Irish Research Council.

Areas of Expertise: Ocular Bioengineering, Tissue Engineering, Mechanobiology, Hydrogel Fabrication, Materials Characterization, Bioreactor Development, Cell-Material Interactions

Team Size: Currently supervising 4 PhD students

Website: <https://www.ahearnelab.com/>

School of Engineering Academic Staff Profile

Name: Dr Daniel Kelly

Discipline: Mechanical, Manufacturing and Biomedical Engineering

Bio: Prof Daniel Kelly leads a multidisciplinary tissue engineering group based in the Trinity Centre for Biomedical Engineering. The goal of his lab is to develop novel tissue engineering and 3D bioprinting strategies to regenerate damaged and diseased musculoskeletal tissues such as articular cartilage, meniscus and bone.

Areas of Expertise: Biomaterials; 3D Bioprinting; Biofabrication; Tissue Engineering.

Team Size: 9 PhD students and 4 postdoctoral researchers

Website: www.kelly-lab.com



School of Engineering Academic Staff Profile



Name: Professor Caitríona (Triona) Lally

Discipline: Biomedical Engineering

Bio: Her research is focused on better understanding soft tissue mechanics and composition using novel experimental, *in silico* modelling and imaging techniques, with a particular focus on cardiovascular and urological tissue mechanics to inform medical device design. She leads several research projects ranging from using novel MRI sequences to inform carotid plaque vulnerability, to creating benchtop models to test urological devices. Her lab has received funding from the ERC (starting and PoC grant), and extensive funding from Research Ireland, much of it through co-funding with leading medical device industries.

Areas of Expertise: Cardiovascular and urological tissue biomechanics, Computational modelling, Vascular Imaging (MRI, US, uCT), Biomaterials, Medical Device Design

Team Size: Currently 4 PhD students, 7 postdoctoral researchers and 1 research assistant in research group

Website: <https://www.lallylab.eu/> or <https://www.tcd.ie/research/profiles/?profile=lallyca>

School of Engineering Academic Staff Profile



Name: Professor Michael Monaghan

Discipline: Biomedical Engineering

Bio: His group's primary research areas are in electroconductive biomaterials, melt electrowriting cardiac tissue regeneration, innate immunology, and real-time imaging of extracellular matrix components and metabolism in differentiation and disease. He leads a number of interdisciplinary projects ranging from immunometabolism, evaluation of fibrosis, and induced pluripotent stem cell derivitisation of cardiac organoids and resident immune cell populations. Currently he is funded by the EU Commission, ERC and Research Ireland.

Areas of Expertise: iPSCs/stem cell biology, conductive and piezoelectric polymers for scaffolds and sensors, advanced imaging (FLIM/Brillouin) in metabolism and mechanotransduction.

Team Size: Ten PhD students and three postdoctoral researchers in research group

Website: <https://www.monaghanlab.com> or <https://www.tcd.ie/research/profiles/?profile=MONAGHMI>

School of Engineering Academic Staff Profile

Name: Ciaran Simms

Discipline: Mechanical, Manufacturing & Biomedical Engineering



Bio: Professor in Biomechanics in MMBE & TCBE, previous Head of Discipline, Fellow of Trinity College Dublin. Previous President of IRCOBI.org and Soft Tissue Editor JMBBM. Cofounder and CSO for KineMo sports technology. Prior to working at Trinity College Dublin he held research engineer positions with TNO Automotive in Delft and Detroit and with Denis Wood Associates in Dublin. (www.kine-mo.com).

Areas of Expertise: injury biomechanics, soft tissue mechanics, sports technology, human pose estimation

Team Size: 6

Website: [Ciaran Simms Trinity Research - Trinity College Dublin](#) [KineMo - Home](#)

School of Engineering Academic Staff Profile



Name: Dr. Friedrich Wetterling (Assistant Professor)

Discipline: Electronic and Electrical Engineering

Bio: The Medical Circuits and Systems lab (MediCAS-Lab) innovates through cross-disciplinary translational research, with focus to improve our shared understanding in the areas of congestive heart failure and Long-QT syndrome. It develops accessible devices that are remotely deployable, sustainable systems that reduce the need of finite resources such as helium (Earth-field Magnetic Resonance Imaging), and meaningful solutions offering physiologically-relevant and accurate measurements to monitor and manage chronic health conditions.

Areas of Expertise: Medical Circuits and Systems (MediCAS), remote monitoring sensors (wearable, subcutaneous, intravascular), Magnetic Resonance Imaging, Ultrasound, radiofrequency cardiography

Team Size: 1 PhD student, 1 Research Assistant, 4 MSc and 1 BSc researchers in research group

Website: <https://medicas-lab.eu>

<https://www.tcd.ie/biomedicalengineering/people/principal-investigators/wetterf/>

School of Engineering Academic Staff Profile

Name: Dr Alejandro Lopez Valdes

Discipline: Electronic and Electrical Engineering

Bio: Research focus on translational neural engineering research with applications in monitoring and influencing cognitive function. Specific interests in sensory integrity, cognitive reserve, neurotechnology, individualized cognition, context-based biomarkers of cognitive function and hyper-scanning of multi-modal electrophysiology.

Areas of Expertise: Signal processing of biomedical signals, unobtrusive neurotechnology, development of validation methods and tools, active neural implants, neural engineering. Affiliated to Trinity College Institute of Neuroscience, The Global Brain Health Institute and Trinity Centre for Biomedical Engineering

Team Size: 3 PhD students (and 3 MSc students)

Website: www.lovalab.net

<https://www.tcd.ie/research/profiles/?profile=alopezva>



School of Engineering Academic Staff Profile



Name: Professor Richard Reilly

Discipline: Biomedical Engineering

Bio: Research focuses on understanding neural function and the pathophysiology of sensory and cognitive processing. The lab conducts cross-disciplinary translational research, particularly in the areas of movement disorders (Dystonia, Parkinson 's Disease) and ageing. It develops patient-oriented diagnostic and assessment tools, as well as objective measures for active implantable devices and therapeutic devices.

Areas of Expertise: Clinical Neural Engineering, Neuroimaging, Neuromodulation, Neurodegeneration

Team Size: 4 PhD students, 5 MSc researchers in research group

Website: <https://reillylab.net/> <https://www.tcd.ie/research/profiles/?profile=reillyri>

Digital Networks, Communications, Artificial Intelligence



School of Engineering Academic Staff Profile

Name: Dr. Harun Šiljak

Discipline: Electronic and Electrical Engineering

Bio: My research focuses on applying complex systems theory into emerging technologies of communication and computation, as well as exploring systemic perspectives on the nexus of technology, society, and art. I am interested in limits of distributed solutions and self-organisation in social, biological, and engineered systems.

Areas of Expertise: Control theory, Complex systems theory, Quantum communications and computing, Molecular communications, Wireless communications, Science and technology studies

Team Size: 1 PhD student, 1 postdoctoral researcher, 1 MSc student

Website: <https://notarace.space>



School of Engineering Academic Staff Profile



Name: Dr. Nils Peters (Assistant Professor)

Discipline: Electronic & Electrical Engineering

Bio:

- MSc (Graz, Austria), PhD (McGill, Canada), Post-Doc (UC Berkeley, USA)
- Ex-Research Lead and Engineering Manager at Qualcomm Inc., USA
- Ex-Associate Professor at International Audio Laboratories Erlangen, Germany
- Steering board member of IEEE Internet of Sounds Emerging Technologies Initiative

Areas of Expertise: Digital Signal Processing and Machine Learning for Audio Systems, Communication acoustics, Computational Acoustics, Spatial Audio Perception, eXtended Realities, Internet of Things, Human-Computer-Interaction

Team Size: 4 PhD students (abroad), 3 MSc students

Website: <https://peoplefinder.tcd.ie/petersn>

School of Engineering Academic Staff Profile



Name: Georgios Floros

Discipline: Electronic & Electrical Engineering

Bio: George Floros is an Assistant Professor in the Department of Electronic & Electrical Engineering at Trinity College Dublin. Previously, he was a Postdoctoral Researcher and Adjunct Lecturer at the Department of Electrical and Computer Engineering at the University of Thessaly, Greece. He received his Diploma in Engineering, MSc, and PhD degrees from the same department in 2013, 2015, and 2019, respectively. His research interests primarily focus on the fields of electronic design automation (EDA), semiconductor device modelling, circuit simulation, model order reduction, thermal analysis of ICs, as well as VLSI design techniques and embedded systems.

Areas of Expertise: Electronic Design Automation, VLSI Design, Circuit Simulation, Reliability, Low power design

Website: <https://peoplefinder.tcd.ie/Profile?Username=FLOROSG>

School of Engineering Academic Staff Profile

Name: Dr. Enda Bates

Discipline: Music & Media Technologies

Bio: He is the director of the M.Phil. Programme in Music & Media Technologies, and his research addresses the evaluation of spatial audio systems, particularly in new immersive media, as well as music composition. He is currently writing a book for Routledge Press entitled Spatial Music: Composing with Sound and Space, the first on this topic, which is set for publication in 2026.

Areas of Expertise: Spatial Audio, Spatial & Electroacoustic Music, XR, Contemporary Composition

Team Size: Two PhD Students, M.Phil. Students (numbers vary from year to year).

Website: <https://www.tcd.ie/research/profiles/?profile=ebates>



School of Engineering Academic Staff Profile

Name: Dr Arman Farhang

Discipline: Electronic & Electrical Engineering

Bio: Dr Arman Farhang is an Assistant Professor at Trinity College Dublin. Dr Farhang is a PI on several research projects and a member of Research Ireland centres ARC Hub in ICT, ADVANCE-CRT and CONNECT, where he leads research around the topics of waveform design and multiple antenna systems for future wireless networks. Dr Farhang is a founding member and currently the co-chair of the IEEE special interest group (SIG) on Next-Evolution Waveform (NEW). He regularly serves as a TPC in top-tier IEEE conferences and workshops.

Areas of Expertise: wireless communications, digital signal processing for communications, waveform design, multiuser communications, multiantenna and multicarrier systems

Team Size: 5 PhD students, 3 Research Fellows and 2 MSc students

Website: <https://www.tcd.ie/eleceng/people/academics/afarhang/>



School of Engineering Academic Staff Profile

Name: Prof. Daniel Kilper

Discipline: Electrical and Electronic Engineering

Bio: Professor of Future Communication Networks, Research Ireland CONNECT Centre Director, and Head of Electrical and Electronic Engineering. From 2000-2013, he was a member of technical staff at Bell Labs. In 2019 he was recognized as a NIST Communications Technology Lab Innovator and served as a NIST faculty appointee. He holds thirteen patents and authored six book chapters and more than two hundred peer-reviewed publications. His research is aimed at solving fundamental and real-world problems in communication networks, addressing interdisciplinary challenges for smart cities, sustainability, and digital equity.

Areas of Expertise: Sustainable communication networks, optical and photonic transmission systems, quantum networks, AI/ML in communication networks, radio and optical edge networks

Team Size: 10 PhD students, 10 research fellows, 6 research assistants, and 5 MSc/MAI students

Website: [Future Networks and Communications - Electronic & Electrical Engineering | Trinity College Dublin](#)



School of Engineering Academic Staff Profile

Name: Prof. Nicola Marchetti



Discipline: Electronic & Electrical Engineering

Bio: My work enables pushing beyond the boundaries of current and future communication networks, in an economical and sustainable way, by distributing intelligence within the network among many simpler entities while ‘stretching’ dimensionality of important factors, i.e., (i) deployment density; (ii) infrastructure dynamics; (iii) radio frequency carrier and bandwidth.

Areas of Expertise: Communications & AI in Biology, Complex Systems, Mathematical Methods in Communications, Quantum Networks, Signal Processing, Wireless Communications.

Team Size: 4 PhD students, 1 Postdoc

Website: <https://nicolamarchetti.wordpress.com/>

School of Engineering Academic Staff Profile

Name: Dr Aleksandra Kaszubowska

Discipline: Electronic and Electrical Engineering

Bio: Dr. Kaszubowska has over 20 years of R&D experience gained in academic and industrial environments. She focuses on developing photonic solutions for future optical and integrated optical-wireless communications networks as well as environmental sensing and critical infrastructure protection. PI/co-PI with over €1.8M in funding through European and national projects.

Areas of Expertise: Photonic integrated devices, fibre sensing, photonic generation of mmWave and THz signals, optical frequency combs for telecoms and sensing.

Team Size: 1 PhD students, 2 postdoctoral researchers, 1 research assistant

Website: <https://www.linkedin.com/in/aleksandrakaszubowska>



School of Engineering Academic Staff Profile



Name: Shreejith Shanker

Discipline: Electronic & Electrical Engineering

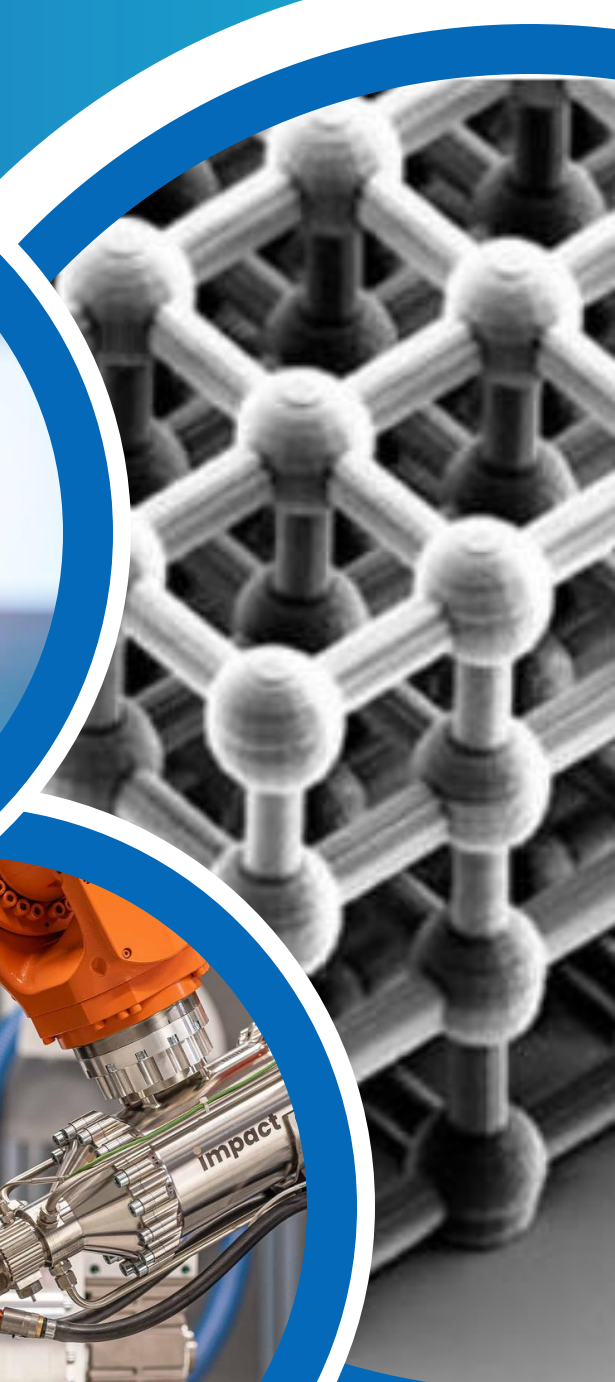
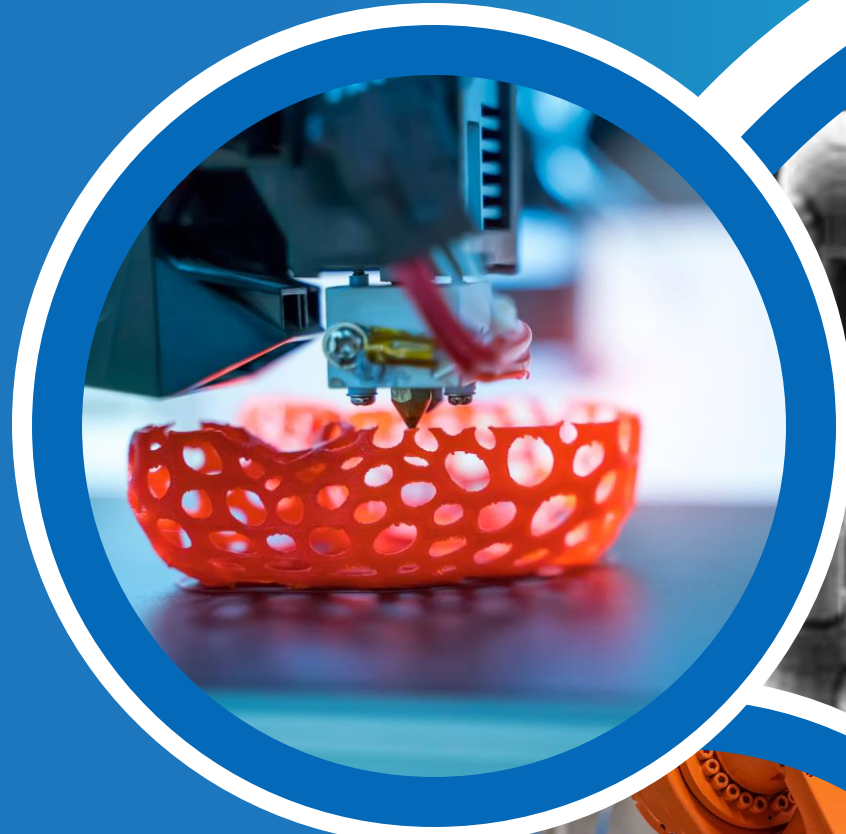
Bio: Dr. Shanker's research focusses on reconfigurable and adaptive computing systems with applications in distributed embedded computing, communication networks and high-performance computing systems. His research interest is in co-designing hardware and software stacks of modern computer architectures for creating sustainable, energy-efficient and adaptive engineering solutions.

Areas of Expertise: Reconfigurable Computing, Computer architecture, Digital VLSI Design, Computer Networks, Automotive Embedded Systems, Distributed and decentralised computing, Vehicular networks, Edge computing, In-network computing, Electronic Design Automation

Team Size: 4 PhD students, 1 postdoctoral researcher (and 3 Masters students)

Website: <https://rcsl-tcd.github.io> <https://www.tcd.ie/research/profiles/?profile=shankers>

Advanced Materials and Manufacturing



School of Engineering Academic Staff Profile



Name: Kevin Kelly

Discipline: Department of Mechanical, Manufacturing & Biomedical Engineering

Bio: Kevin Kelly is an Associate Professor. His research covers a broad range of topics defined by novel and innovative technical solutions addressing societal challenges. His most recent focus areas have been in innovation methodology – performance frameworks for quantification of innovation activity, and in robotics – robotic manipulation, pneumatic muscles and human-robot interaction. He collaborates with a wide range of industry from large multinationals to start-ups.

Areas of Expertise: Robotics, Design Innovation, Engineering Education, Manufacturing

Team Size: Varies, currently 1 post-doctoral researcher, 4 Masters Students

Website: <https://www.tcd.ie/mecheng/research/robotics-and-innovation-lab/>,
<https://scholar.google.com/citations?hl=en&user=3qpIWq4AAAAJ>

School of Engineering Academic Staff Profile

Name: Prof. Rocco Lupoi



Discipline: Mechanical, Manufacturing & Biomedical Engineering

Bio: Rocco Lupoi is a Professor in Advanced and Additive Manufacturing in Trinity College Dublin, where he established his research group (STAM) and secured major funding, including a Marie Curie Fellowship and a landmark European Space Agency grant, the first of its scale at Trinity. His ESA project was highlighted by the *Irish Times* in 2015. Today, he is a funded investigator in AMBER and I-Form, and an Associate Member of CIRP. His collaborations span Europe, North America, and Asia. Recognized as a leader in his field, he was elected Fellow of Trinity College Dublin (2019) and Fellow of the Institute of Materials, Minerals & Mining (2022). According to Stanford's citation database, he ranks among the top 2% of scientists worldwide.

Areas of Expertise: Coatings, Laser Processing and ablation, Additive Manufacturing, 3D shaping

Team Size: 3 PhD students, 2 Research Assistants, 6 Research Fellows

Website: <https://www.stamlab.eu/> or <https://www.tcd.ie/research/profiles/?profile=lupoir>

School of Engineering Academic Staff Profile



Name: Dr. John Kennedy

Discipline: Department of Mechanical, Manufacturing & Biomedical Engineering

Bio: Dr. John Kennedy is Associate Professor in Vibrations, Acoustics and Dynamics at Trinity College Dublin. His research centres on the use of advanced additive manufacturing techniques to design and fabricate novel acoustic metamaterials for environmental noise control. This includes the development of AI-driven optimisation strategies using deep learning to tailor metamaterial structures for specific acoustic performance goals. He has secured over €2.5 million in research funding and has authored over 100 peer-reviewed publications. He is a Member of the Institute of Acoustic (MIOA) and an academic affiliate of the Association of Acoustic Consultants of Ireland (AACI).

Areas of Expertise: Acoustics, Vibrations, Fluid Mechanics, Aeroacoustics, Additive manufacture of acoustic materials, Acoustic metamaterials, Environmental noise modelling, UAVs.

Team Size: 3 PhD, 2 Postdoc, 6 MSc

Website: <https://www.tcd.ie/mecheng/research/fluids-acoustics--vibration/>

School of Engineering Academic Staff Profile

Name: Dr Gursahib Singh Bhatia

Discipline: Mechanical, Manufacturing & Biomedical Engineering

Bio: Dr. Bhatia specializes in composites materials. His research integrates experimental mechanics, materials characterization, and fractography. His recent works focus on understanding failure mechanisms in composites. Towards this, he has secured beam time as a co-applicant at major synchrotron facilities, including ESRF (France) and Diamond Light Source (UK). His current interests include the repair of offshore energy structures, sustainable composites, bio-inspired materials, and advanced composites for prosthetic applications.

Areas of Expertise: Fibre reinforced polymer (FRP) composites, Mechanical characterization, Fractography.

Team Size: 3 MAI students

Website: <https://peoplefinder.tcd.ie/Profile?Username=BHATIAG>; <https://orcid.org/0000-0002-2653-1892>



School of Engineering Academic Staff Profile

Name: Dr Amir Pakdel

Discipline: Mechanical, Manufacturing & Biomedical Engineering

Bio: A multidisciplinary materials scientist, with diverse academic experiences in Japan (National Institute for Materials Science, University of Tsukuba), Iran (University of Tehran, Shiraz University), and Ireland (Trinity College, UCD, SFI Research Centre - CRANN). He has authored more than 60 peer-reviewed publications (32 h-index & 5500 citations), is an editor in [Energies](#), [Frontiers in Chemistry](#), and [Discover Nano](#), has collaborated with numerous international institutes and industrial partners, and secured over €2.5 million in research funding to date.



Areas of Expertise:

Materials science, Nanotechnology, Renewable energy, Thermoelectrics, Sustainability, Functional surfaces, Additive manufacturing, Flexible & wearable electronics, Biomedical sensors.

Team Size: 1 postdoctoral researcher, 1 PhD student, 5 MSc students, 2 research assistants

Website: <https://pakdelgroup.weebly.com/> <https://www.tcd.ie/research/profiles/?profile=pakdela>

Structures, Water, Transport and Sustainability



School of Engineering Academic Staff Profile



Name: Prof. Bidisha Ghosh

Discipline: Civil, Structural & Environmental Engineering

Bio: My research focus is solving real-world, complex traffic & mobility problems using mathematical modelling and data driven solutions. My research has informed national and global policies on cycling, sustainable development and freight emission, supports equitable transition to sustainable transport and champions open, reproducible research.

Areas of Expertise: Traffic flow and data modelling, Traffic emission and health impacts, Connected Autonomous Vehicles, Spatio-temporal data modelling and predictions.

Team Size: 4 PhD students and 2 postdoctoral researchers in research group

Website: <https://www.tcd.ie/civileng/research/transport/quant/>

School of Engineering Academic Staff Profile



Name: Prof. Brian Caulfield

Discipline: Civil, Structural & Environmental Engineering

Bio: Prof in Transportation and director of the Trinity Centre for Transport Research. An expert in transport decarbonisation, he has advised the Irish Citizens' Assembly and Climate Change Advisory Council. With over 250 publications and €12 million in funding, he specialises in sustainable transport strategies.

Areas of Expertise: Transport modelling, Transport Policy, Transport Emissions, Transport Planning

Team Size: 7 PhD students and 7 postdoctoral researchers in research group

Website: <https://www.tcd.ie/transport-research/>

School of Engineering Academic Staff Profile

Name: Professor Brian Broderick

Discipline: Civil, Structural and Environmental Engineering

Bio: Professor of Built Environment Engineering. Research aims to protect civil society by studying interactions between engineered systems and natural processes in the built environment, including the response of structures to wind and earthquakes and the effects of emissions on urban air quality. His expertise lies in the integrated mathematical-information modelling of complex systems and the development of modelling tools that support design innovation.

Areas of Expertise: Built Environment, Structural Earthquake Engineering & Dynamics, Wind Engineering, Air Quality Modelling

Team Size: 3 PhD, 2 Post-doc, 4 MSc

Website: <https://www.tcd.ie/civileng/people/academic-staff-/bbrodrrck/>



School of Engineering Academic Staff Profile

Name: Dr John Hickey

Discipline: Civil, Structural and Environmental Engineering

Bio: Structural Engineer specializing in dynamics and vibrations problems in novel civil engineering structures. Specifically, interested in understanding and quantifying the role of uncertainties in structural dynamics problems in these systems.

Areas of Expertise:

Structural dynamics and vibrations, operational modal analysis, nonlinear vibrations, random vibrations, uncertainty quantification, energy dissipation in vibration

Team Size: 2 PhD students and 1 postdoctoral researcher (and 6 MAI/MSc students)

Website: <https://www.tcd.ie/civileng/people/academic-staff-/hickeyj3/>



School of Engineering Academic Staff Profile

Name: Dr. David Igoe



Discipline: Department of Civil, Structural & Environmental Engineering

Bio: Research focuses on Geotechnical and Offshore Engineering and solving the geotechnical challenges in developing offshore wind energy. Experienced principal/co-investigator with over €3 million in funding through International (EPSRC-SFI) and National (SEAI, Research Ireland, GSI) projects.

Areas of Expertise: Geotechnical Engineering, Offshore wind, Experimental Design, Field Testing, Numerical Modelling (Finite Element Analysis, Discrete Element Modelling).

Team Size: 6 PhD students and 3 Postdoctoral Researcher

Website: <https://peoplefinder.tcd.ie/igoed>

School of Engineering Academic Staff Profile

Name: Dr Patrick Morrissey

Discipline: Department of Civil, Structural & Environmental Engineering



Bio: Research focused on understanding key processes within the water environment, including contaminant pathways, flooding, groundwater recharge, and the impacts of climate change. Additional work explores geothermal energy systems and the interactions between geostructures and groundwater.

Areas of Expertise: Hydrological modelling, groundwater modelling, contaminant transport modelling, GIS analysis and model development, hydrological and hydrogeological field study and analysis, water resource management, nature-based solutions, groundwater recharge & MAR, geothermal energy

Team Size: 5 PhD, 2 MSc, 2 Postdoctoral Researchers, 2 Research Assistant

Website: <https://www.tcd.ie/civileng/people/academic-staff-/morrisp5/>

School of Engineering Academic Staff Profile

Name: Dr. John Gallagher



Discipline: Department of Civil, Structural & Environmental Engineering

Bio: Research focuses upon engineered and nature-based solutions for environment pollution and control, sustainable energy technologies, and building-nature interactions in the built environment. Experienced principal/co-investigator with over €1 million in funding through European (Horizon2020, INTERREG) and National (EPA, Research Ireland, EI) projects.

Areas of Expertise: environmental pollution, passive mitigation, life cycle and circular design, water-energy-climate nexus.

Team Size: 5 PhD students and 1 Postdoctoral Researcher (and 6 MSc students)

Website: <https://peoplefinder.tcd.ie/jgallag9> and <https://www.tcd.ie/trinityhaus/>

School of Engineering Academic Staff Profile

Name: Dr David O'Connell

Discipline: Civil, Structural and Environmental Engineering

Bio: Research focus on engineered and nature-based solutions for environmental pollutants and mitigation, resource recovery, sustainable agriculture, food production and water resources protection, natural system processes understanding and management. Funded through national, E.U. and international sources.

Areas of Expertise: Pollutant tracing, monitoring and mitigation, passive treatment systems, biogeochemical engineering, hydrogeology, hydrology, agriculture water, water-Food-climate Nexus.

Team Size: 5 PhD students and 1 postdoctoral student (and 6 MSc students)

Website: <https://www.tcd.ie/civileng/people/academic-staff-/oconnedw/>



School of Engineering Academic Staff Profile

Name: Dr Muhammad Ali

Discipline: Civil, Structural and Environmental Engineering

Bio: Muhammad Ali leads a research programme at the interface of environmental biotechnology, microbial ecology, and bioprocess engineering. As the founding Director of the Trinity Water Centre, he drives interdisciplinary collaboration across the university to advance climate-resilient water solutions. His research focuses on sustainable environmental biotechnologies, biofilm engineering, and resource recovery. His work has been recognised through the Trinity Innovation Award, AAEEES “40 Under 40,” and the Research Ally Prize.

Areas of Expertise: Microbial ecology of engineered and natural water systems, Biofilm systems, membrane technologies, Resource recovery (water, energy, biochemicals) and low-energy treatment design

Team Size: 5 PhD students and 1 postdoctoral student (and 4 MSc students)

Website: <https://www.tcd.ie/research/profiles/?profile=alim3>



Energy, Sustainability, Aviation



School of Engineering Academic Staff Profile



Name: Dr Michael Gibbons

Discipline: Department of Mechanical, Manufacturing & Biomedical Engineering

Bio: Dr. Gibbons's research group explores methodologies for the prediction and control of heat transport to enhance the performance and efficiency of thermal management technologies and energy transfer processes. He holds a Research Ireland-Royal Society University Research Fellowship investigating waste heat recovery from data centres. He is an inaugural member of the Royal Irish Academy Young Academy of Ireland and a lead researcher on a European Space Agency Parabolic Flight programme.

Areas of Expertise: Advanced electronics cooling; Phase-change transport phenomena; Additive manufacturing of thermal management components; Topological optimisation and machine-learning-based design; Microscale and nanoscale surface engineering for enhanced thermal transport.

Team Size: Three PhD students, Two Research Fellows

Website: <http://www.gibbonslab.com/> or <https://www.tcd.ie/mecheng/staff/academic-staff/gibbonm3/>

School of Engineering Academic Staff Profile

Name: Dr Aimee Byrne

Discipline: Civil, Structural and Environmental Engineering

Bio: Aimee's research focuses on sustainable buildings which includes improving the embodied and operational environmental impact. This is through retrofit; novel low-carbon materials and methods; and circular construction practices such as design-for-deconstruction. This is supported by accurate monitoring, modelling, testing and analysis as well as occupant and stakeholder engagement.

Areas of Expertise: Bio-based Materials, Circular Construction, Energy & Thermally Efficient Buildings, Retrofit, Heat and Energy Modelling, Building and Environment Monitoring, BIM, Structural Testing, Thermal Testing, Education Research, Sustainable Construction Materials, 3D printing

Team Size: 2 PhD students, 1 Post-doc, 1 Research Assistant (9 MSc/MAI)

Website: <https://www.tcd.ie/civileng/people/academic-staff-/abyrne50/>



School of Engineering Academic Staff Profile

Name: Anthony Robinson, PhD



Discipline: Mechanical, Manufacturing and Biomedical Engineering

Bio: Anthony Robinson is an Associate Professor. With over 30 years of experience in experimental and computational thermal-fluid science, he has contributed significantly to the fields of heat transfer, fluid mechanics, and applied energy research. He has published over 100 peer-reviewed journal papers, acquired multiple patents, secured license agreements with industry, and is founder and CSO of a start-up company.

Areas of Expertise: Two-phase heat and mass transport, Electrohydrodynamics (EHD), Heat pipes and thermosyphons, Forced convection heat transfer, Thermal interface materials, Thermal conductivity measurement, Solidification, Thermoelectricity, Energy and buildings, Energy for international sustainable development, Electronics cooling, Energy in data centres, Natural convection

Team Size: 2 PhD, 2 Postdocs, 1 MSc

Website: <https://www.tcd.ie/mecheng/research/fluids--heat-transfer/>

School of Engineering Academic Staff Profile



Name: Jin Zhao

Discipline: Electronic & Electrical Engineering

Bio: Dr. Jin Zhao is an Assistant Professor at Trinity College Dublin and the Alexander von Humboldt Research Fellow of Germany. She is a Senior Editor of IET Generation, Transmission & Distribution, Associate Editor of IEEE trans. on Smart Grid, and a regular reviewer for several IEEE and Nature Portfolio journals. She is the chair of IEEE Task Force AISR, steering committee, and PES rep of IEEE DataPort, and secretary of IEEE EDPG GHG subcommittee and IEEE load subcommittee.

Areas of Expertise: Power systems, power grid, climate-adaptive energy systems, electricity resilience, microgrids, optimization, and machine learning (deep/reinforcement learning)

Team Size: currently 4 PhDs and 2 postdoctoral researchers in the research group

Website: <https://jinzhaotcd.github.io/> or <https://www.tcd.ie/research/profiles/?profile=zhaoj6>

School of Engineering Academic Staff Profile

Name: Dr Tim Persoons

Discipline: Mechanical, Manufacturing & Biomedical Engineering

Bio: Research focus on multi-scale convective heat transfer for electronics thermal management using unsteady flows, active flow control for sustainable energy technologies, by means of novel experimental thermal fluid measurement techniques and advanced computational simulation and optimisation.

Areas of Expertise:

Electronics cooling, Flow control, Experimental fluid mechanics, CFD, Reduced-order modelling, Energy system integration.

Team Size: 3 PhD students and 2 postdoctoral researchers

Website: <https://peoplefinder.tcd.ie/Profile?Username=PERSOONT> , <https://timpersoons.org/>



School of Engineering Academic Staff Profile



Name: Seamus O'Shaughnessy

Discipline: Mechanical, Manufacturing, and Biomedical Engineering

Bio: Dr Seamus O'Shaughnessy is a mechanical engineer and Associate Professor in the Fluids & Heat Transfer Research Group. A key focus of his research is the thermal management of manufacturing and engineering processes, as well as electronics cooling, particularly the batteries used in electric vehicles, all of which is investigated through the combination of analytical, experimental, and computational techniques.

Areas of Expertise: Lithium-ion battery thermal management, jet cooling, pulsed flow, surface condensation

Team Size: 2 PhD students, 2 PD research fellows, 1 RA (and 3 MAI students and 1 MSc student)

Website: <https://www.tcd.ie/research/profiles/?profile=oshaugse>

School of Engineering Academic Staff Profile



Name: Dr. Charles Stuart

Discipline: Department of Mechanical, Manufacturing & Biomedical Engineering

Bio: Dr. Charles Stuart is Assistant Professor of Power and Propulsion Technologies at Trinity College Dublin. As Co-Lead for Aircraft Propulsion projects within the Ryanair Sustainable Aviation Research Centre, he has active research collaborations with Boeing, Cummins, ESB and IHI Corporation. His research focal points include next generation aircraft propulsion, characterisation of aviation's full climate impact, turbomachinery aerodynamic design, power-to-liquid fuel production and airline fleet modelling. He has secured over €1 million in research funding from both industry and national funding agencies, and is a member of the AIAA Sustainability Integration and Outreach Committee (SIOC).

Areas of Expertise: Sustainable aviation, aviation's full climate impact, turbomachinery, model-based systems engineering, machine learning for engineering design, discrete optimisation, alternative fuels

Team Size: Five PhD students, five MSc students, one Research Assistant

Website: <https://www.tcd.ie/research/profiles/?profile=stuartch>

School of Engineering Academic Staff Profile

Name: Dr Mohammad Reza Ghaani

Discipline: Civil, Structural and Environmental Engineering

Bio: Dr. Mohammad Reza Ghaani has been an Assistant Professor of Energy Engineering at TCD since 2023. He specialises in Sustainable Aviation Fuel (SAF) and process modelling. He is a service leader to the EU SAF Clearing House and co-PI of SAFLAB, with an entrepreneurial background as co-founder of an Enterprise Ireland recognized High Potential Start-Up.

Areas of Expertise: Sustainable Aviation Fuel (SAF); Power-to-X Processes; Hydrogen Storage; Decarbonisation Technologies; Life Cycle Analysis (LCA); Technoeconomic Analysis (TEA); Industrial Circular Economy; Nanobubbles; Process Modelling; Water Treatment.

Team Size: 4 PhD students and 1 postdoctoral student (and 3 MSc students)

Website: <https://www.tcd.ie/civileng/people/academic-staff-/rezagham/>



For more information

<https://www.tcd.ie/engineering/research/>

