Jack Wilson

PhD Student in Nuclear Science and Engineering

Overview

- Nuclear Engineering and Science PhD researcher with several years of broad practical experience in chemistry, materials science, metallurgy, and computational modelling.
- Research profile at nubu.nu/materials/students/jack-wilson/

Education

2019-present **PhD in Nuclear Engineering and Science**, *Bangor University Nuclear Energy Futures EPSRC CDT*, Advanced Alloy Development for Accident Tolerant Fuels • Centre for Doctoral Training: Bangor University; Bristol University; Cambridge University; Imperial University; and The Open University • • Modules include: Nuclear Safety Management, Reactor Design and Operation, Responsible Research and Innovation, Materials for Reactor Design, Policy and Nuclear Regulation..

2019 **Masters in Chemistry (First-Class with Honours)**, *Bangor University*, Structure and Reactivity (83%), Core Organic Chem concepts (89%), Chemical Biology (86%), Core Phys Chem Concepts (100%), Advanced Phys Chem (80%). • Final Project title: Synthesis of Novel Manganese (III) Catalysts and their Application Towards Classic Organic Oxidation Transformations..

2015 **A Levels: Chemistry A, Maths B, Biology C - AS Psychology B**, *Birmingham Metropolitan College*.

2013 **GCSEs: 9 GCSEs A*-B, including English, Maths, and Sciences**, *Beamont Collegiate Academy*.

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Research Projects

2019 **Biochemical studies of oxygen-sensing mechanisms in algae and early land plants**, *University of Oxford*, UNIQ+ internship: Interdisciplinary Bioscience Doctoral Training Partnership under Dr. Emily Flashman. • Thermal shift assays, RapidFire-Q-ToF LC/MS, nanoDSF, XRD crystallography. .

2019 **Organometallic Catalysis**, *Bangor University*, Synthesis of Manganese (III) catalysts. • Application towards classic epoxidation and sulfoxidation reactions. • Single crystal and powder X-ray diffraction, NMR spectroscopy, IR spectroscopy, Mass spectrometry and Column Chromatography. • Publication pending. .

2018 **Organic Asymmetric Catalysis**, *Bangor University*, Synthesis of novel L-proline derived chiral catalysts. • Application towards conjugate addition reactions. • NMR, FTIR, Alpha D / optical rotation, Mass Spectrometry, Column Chromatography, HPLC. • Publication Sep 2019: "Proline derived Guanidine catalysts forge extensive H-bonded architectures: A solution and solid-state study". .

Employment

2018/2019 **Laboratory Technician**, *Liquids Research Ltd., Bangor*, • Producing small- and large-scale (500 mL – 12 L) formulations of magneto-rheological fluids and ferrofluids. • Advising direction of an R&D project following ISO standards in recording and presenting data and in compliance with NDAs. • Vibrating-sample magnetometry, UV spectroscopy, Rheometry, Viscometry, non-Newtonian (Thixotropic) fluids. • Contract extended well beyond original end-date based on quality of practical work..

2018 **Laboratory Technician**, *School of Chemistry, Bangor University*, Awarded internship in natural product isolation. • Isolating, identifying, and purifying natural alkaloids from the Narcissus genus of daffodil. • Column chromatography, NMR spectroscopy..

Professional qualifications and awards

Fire Awareness Training.

Emergency Life Support.

Health and Safety at work.

Chemical Safety in the Laboratory.

Control of Substances Hazardous to Health (COSHH).

Welsh Language Skills Certificate (Chemistry)., with Distinction.

Affiliate member of the Royal Society of Chemistry.

Bangor Employability Gold Award, BEA-200.

Professional interests and skills

2021 **R for data science**, *Jumping Rivers RSS Accredited*, Manipulating data, statistical modelling, functional programming, and advanced graphics in R..

Full and clean driving licence.

Microsoft Office Suite, Including Excel and Access, familiar with data functions (e.g. pivot tables) and working with relational databases.

Welsh language, equivalent to level B2 in the Common European Framework of Reference for Languages (CEFR)..

2019 **Programming Principles and Practice using Python**, *Bangor Doctoral school*, Fundamental programming concepts and best practice.

2019 **Advanced Python**, *Bangor Doctoral school*, Exceptions; libraries; documentation and unit testing; mapping and fitlering; lanbda functions; additional tools.

2019 **Introduction to the Linux Shell**, *Bangor Doctoral school*, Navigating file structures; working with files and directories; standard out, standard error and pipes; loops; conditions; re-use though scripts; substantial experience with bash.