Jack Wilson

PhD Student in Nuclear Science and Engineering

Nuclear Futures Institute, Bangor University
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Curriculum Vitae
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Overview

➤ Nuclear Engineering and Science PhD researcher with several years of broad practical experience in chemistry, materials science, metallurgy, and computational modelling.

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

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