

# Jack Wilson

PhD Student in Nuclear Science and Engineering

Curriculum Vitae  
August 2021

📍 Nuclear Futures Institute, Bangor University  
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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	<b>PhD in Nuclear Engineering and Science</b> 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.	Bangor University Nuclear Energy Futures EPSRC CDT
2019	<b>Masters in Chemistry (First-Class with Honours)</b> 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.	Bangor University
2015	<b>A Levels: Chemistry A, Maths B, Biology C - AS Psychology B</b>	Birmingham Metropolitan College
2013	<b>GCSEs: 9 GCSEs A*-B, including English, Maths, and Sciences</b>	Beamont Collegiate Academy

## Research Projects

2019	<b>Biochemical studies of oxygen-sensing mechanisms in algae and early land plants</b> UNIQ+ internship: Interdisciplinary Bioscience Doctoral Training Partnership under Dr. Emily Flashman. Thermal shift assays, RapidFire-Q-ToF LC/MS, nanoDSF, XRD crystallography.	University of Oxford
2019	<b>Organometallic Catalysis</b> 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.	Bangor University
2018	<b>Organic Asymmetric Catalysis</b> 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".	Bangor University

## Employment

2018/2019	<b>Laboratory Technician</b> 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.	Liquids Research Ltd., Bangor
2018	<b>Laboratory Technician</b> Awarded internship in natural product isolation. Isolating, identifying, and purifying natural alkaloids from the Narcissus genus of daffodil. Column chromatography, NMR spectroscopy.	School of Chemistry, Bangor University

## 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	<b>R for data science</b> Manipulating data, statistical modelling, functional programming, and advanced graphics in R. <b>Full and clean driving licence</b> <b>Microsoft Office Suite</b> Including Excel and Access, familiar with data functions (e.g. pivot tables) and working with relational databases <b>Welsh language</b> equivalent to level B2 in the Common European Framework of Reference for Languages (CEFR).	Jumping Rivers RSS Accredited
2019	<b>Programming Principles and Practice using Python</b> Fundamental programming concepts and best practice	Bangor Doctoral school
2019	<b>Advanced Python</b> Exceptions; libraries; documentation and unit testing; mapping and filtering; lambda functions; additional tools	Bangor Doctoral school
2019	<b>Introduction to the Linux Shell</b> Navigating file structures; working with files and directories; standard out, standard error and pipes; loops; conditions; re-use though scripts; substantial experience with bash	Bangor Doctoral school