Karl Griffin

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GitHub: https://github.com/karljgriffin

Profile: Government of Ireland Postgraduate Scholarship PhD student at University College Dublin

EDUCATION

University College Dublin, *PhD Chemistry*   **10/2019 – Present**
- Recipient of 'Government of Ireland Postgraduate Scholarship' to pursue a PhD in materials chemistry

University College Dublin, *BSc Chemistry*   **09/2013 – 05/2019**
- 1st class honours (1.1) degree with a GPA of 3.95 (1.1 $\geq$ 3.68, max. = 4.20)
- Recipient of 'Entrance Scholar Award' (2013) from UCD for results in the Leaving Certificate
- Recipient of 'Ad Astra Academy Elite Athlete Scholarship' (2013) from UCD for achievements in athletics (4 year scholarship)

Abbey Vocational School Donegal Town, *Leaving Certificate*   **08/2008 – 06/2013**
- Overall result: 565/600 points

RESEARCH SKILLS

Undergraduate Researcher   **10/2018 – 05/2019**
- Thesis Title: *"Organic Nanowires for Memristive Computing: Understanding the Relationship Between Molecular Packing, Electronic Properties & Device Performance"*
Co-supervisors**:** Prof. Gareth Redmond and Dr. James Ryan

Postgraduate Researcher   **10/2019 – Present**
- Research focussed on developing organic memristive devices for next-generation computing
Supervisor**:** Prof. Gareth Redmond

Postgraduate Lab Demonstrator   **10/2019 – Present**
- Teaching undergraduate (1st to 4th year) chemistry & engineering laboratories

Postgraduate Student Research Supervisor
- Directed 4th year BSc. Thesis Project of Harvey Gleeson   **10/2019 – 05/2020**
"*Squaraine Dyes for Functional Nanostructures: Investigations of Molecular Interactions & Aggregation*"
- Directed MSc. Thesis Project of Pallavi Dutta   **06/2020 – 08/2020**
"*Squaraine Dye-Based Chemosensor to Detect Metal Ions in Pharmaceutical Production Process*"
- Directed 4th year BSc. Thesis Project of Ewan Wells   **10/2020 – 05/2021**
"*Medium-Dependent Aggregation & Formation of Squaraine Nanostructures*"
- Directed MSc. Thesis Project of Patrick McQuillan (Intel-funded)   **03/2021 – 08/2021**
"*Organic Nanowires for Memristive Computing: Molecular Packing, Electronic Properties & Neuromorphic Behaviour*"

LABORATORY AND TECHNICAL SKILLS

- Single Crystal Preparation – preparation of high-quality organic single crystals
- Nanomaterial Preparation Techniques – nanowire preparation via self-assembly and reprecipitation
- Electrochemical and Optical Characterisation – cyclic voltammetry, UV-Vis spectroscopy, photoluminescence spectroscopy
- Structural Characterisation – atomic force microscopy, scanning electron microscopy, optical microscopy, powder and single crystal x-ray diffraction, x-ray photoelectron spectroscopy

- Electrical Characterisation – current-voltage, electrochemical impedance spectroscopy and equivalent circuit modelling, memristive and neuromorphic measurement design and analysis

- Analytical Software – ImageJ (nanomaterial size characterisation), PS-Trace (electrochemical software), EC-Lab (electrochemical software), Mercury (crystallographic software)
- Data Analysis and Visualisation Software – Excel, Kaleidagraph (MacOS), Origin (Windows), Python (via use of Matplotlib, Seaborn, NumPy and Pandas)

CODING

Python (Programming Language)
- Experience with libraries / frameworks such as Selenium (automation), Flask (web-app development), Matplotlib and Seaborn (data visualisation), NumPy and Pandas (data analysis)
- Udemy certificate "*2021 Complete Python Bootcamp: From Zero to Hero in Python*"

SQL (Database Language)
- Experience with PostgreSQL – searching and creating databases
- Udemy certificate "*The Complete SQL Bootcamp 2021: Go from Zero to Hero*"

Git (Version Control System)
- Proficient in git and command line fundamentals, as well as using GitHub

HTML / CSS & Flask (Web Development)
- Experience creating multiple websites and web applications using HTML, CSS, and Flask (Python micro web framework), as well as deployment / hosting using platforms such as GoDaddy and Heroku. My personal website "www.karlgriffin.com" was built using a combination of these methods

JavaScript (Programming Language)
- Proficient in JS fundamentals and syntax

C (Programming Language)
- Completion of postgraduate module based on the C programming language run by the Irish Centre for High-End Computing (ICHEC) focussed on scientific computing and mathematical concepts (see GitHub repository called sciprog21 for examples of problem sets and completed assignments)

Terminal Live Spring 2022 Europe Regional (AI Coding Competition)
- One of 70 students selected across Europe's top universities to compete in this AI coding competition run by Correlation One on behalf of Citadel and Citadel Securities. Acceptance was contingent on aptitude tests including statistics, probabilities, and data analysis using Pandas. The coding for the competition was done in Python

List of Websites Built and Deployed:
- [www.karlgriffin.com , www.wwwbrid22.com , sevenarcheslaghey.com , oneillsbarletterbarra.com]

CONTRIBUTION

Postgraduate Representative – UCD College of Science EDI Committee   **01/2021 – Present**
Since January 2021 I have served as the postgraduate student rep on the UCD college of science Equality, Diversity & Inclusion Committee representing the interests and concerns of the greater college of science postgraduate population. This is something I enjoy and am passionate about which I hope to continue advocating for during the rest of my time here.

WORK EXPERIENCE

Athletics Coach   **01/2020 – Present**
Level 1 IAAF Certified Athletics Coach

Sports Massage Therapist   **05/2019 – Present**
VTCT Level 3 Diploma in Sports Massage Therapy

Professional Athlete for New Balance 10/2014 – 12/2017
Sponsored athlete representing the New Balance brand on the European and World stage for three seasons, specialising in the 800 metres

Track & Field Achievements:
- Second fastest Irish Youth (u18) athlete of all time over 800m (1:49.63 in 2012)
- Third fastest Irish Junior (u20) athlete of all time over 800m (1:47.44 in 2014)
- 2011 - European Youth Championships, Bronze medal, 800m (Trabzon, Turkey)
- 2012 - World Junior Championships, 800m (Barcelona, Spain)
- 2013 - European Junior Championships, 800m (Rieti, Italy)
- 2014 - World Junior Championships, 12th place, 800m (Oregon, USA)
- 2014 - 'Irish Junior Athlete of the Year Award'
- 2015 - European u23 Championships, 6th place, 800m (Tallinn, Estonia)
- 2016 - European Senior Championships, 800m (Amsterdam, Holland)
- 2017 - European u23 Championships, 7th place, 4x400m (Bydgoszcz, Poland)

Available upon request