Karl Griffin

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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 ≥ 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

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

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 of completion "2021 Complete Python Bootcamp: From Zero to Hero in Python"

SQL (Database Language)

- Experience with PostgreSQL – searching and creating databases
- Udemy certificate of completion "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 "karlgriffin.com" was built using a combination of these methods

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)

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

SPORT

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)

REFERENCES

Available upon request