Andrew R. **McCluskey**

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Education

University of Bath(UBath)/Diamond Light Source(DLS)   *BATH/HARWELL-OXFORD, UK*

PHD IN CHEMISTRY   *SEPT. 2015 - MAR. 2019*

- Undertaking a PhD supervised by Prof. Karen Edler (UBath), Prof. Stephen Parker (UBath), Dr Andrew Smith (DLS) and Dr Jonathan Rawle (DLS).
- Developing computational methodologies and software to improve the analysis of small angle scattering, reflectometry, and grazing incidence small angle scattering.
- Applying classical atomistic and coarse-grained simulations to the study of soft matter systems.
- Implementing high performance optimisation algorithms to rationalise experimental scattering data.
- Collaborative project co-funded by Diamond Light Source and the University of Bath.
- Participated in small angle scattering and reflectometry at Diamond Light Source and ISIS Neutron and Muon Source.

University of Edinburgh   *EDINBURGH, UK*

MCHEM IN MATERIALS CHEMISTRY WITH A YEAR IN INDUSTRY   *SEPT. 2010 - JUN. 2015*

- Degree Classification: **First Class**
- Spent one year learning practical soft matter chemistry/physics skills in industry at Cytec Industries.
- Masters research project: Collagen self-assembly using cryo-TEM.

Research Experience

The Nudelman Group, University of Edinburgh   *EDINBURGH, UK*

MASTER'S PROJECT STUDENT   *SEPT. 2014 - APR. 2015*

- Continued work from summer, investigating collagen self-assembly.
- Significant independent use of the cryogenic transmission electron microscope.
- Presented work at a national conference (First Joint Meeting of the Scottish Microscopy Group & Microscopy Society of Ireland) as well as regularly at group meetings.

SUMMER RESEARCH STUDENT   *JUL. 2014 - SEPT. 2014*

- Using cryogenic transmission electron microscopy to investigate self-assembly of collagen.
- Gained an appreciation of basic concepts from biochemistry and biophysics.
- Lead to work that continued during Master's project.

Cytec Industries   *STAMFORD, USA*

TEMPORARY RESEARCH INTERN   *JUN. 2013 - JUN. 2014*

- Spent fourth year of Master's course in the Alumina group at Cytec Industries.
- Conducted research on the functionalisation and application of polyelectrolyte emulsions.
- Gained an understanding of common soft matter concepts, including colloid theory, and surfactant science.
- Developed skills related to statistical analysis, including significance testing and design of experiments.
- Presented work at group meeting and wrote monthly reports to keep group members updated on progress.

Teaching Experience

University of Bath   *BATH, UK*

PHYSICAL CHEMISTRY TUTOR   *SEPT. 2015 - PRESENT*

- Running physical chemistry tutorials for first year natural sciences undergraduate students.
- Covering topics including intermolecular forces, kinetics, spectroscopy, and thermodynamics.
- Pioneered the use of Jupyter Notebooks in tutorials to both aid in the students understanding of the physical chemistry while introducing programming concepts.

COMPUTATIONAL LABORATORY DEMONSTRATOR   *JAN. 2016 - PRESENT*

- Helping first and second year undergraduate students as they undertake the laboratory exercises, with a focus on the teaching of basic programming skills in Python.
- Helped to develop laboratory exercises to develop skills in Microsoft Excel, an understanding of classical molecular dynamics simulations, and to introduce Python programming for data analysis.

MATHEMATICS FOR CHEMISTRY LECTURER   *SEPT. 2016 - MAR. 2017*

- Delivery of workshops in fundemental mathematical concepts for chemists, ensuring that all chemistry first year students had consistent mathematical background.

X-RAY & NEUTRON TECHNIQUES FOR CHEMISTS LECTURER   *JAN. 2016 - PRESENT*

- Delivery of workshops devoted to the analysis of small angle scattering and reflectometry as a component of a final year undergraduate course.

- Contributed a series of practical workshop designed to introduce PhD student from through-out the university of Unix and programming.
- Included leading a "Introduction of Python" workshop, based on Software Carpentry materials.

ISIS Neutron Training Course   *HARWELL-OXFORD, UK*
Lecturer   *MAR. 2017 - PRESENT*

- Twice invited to lecture at the ISIS Neutron Training Course.
- Developed and delivered a one hour lecture introducing classical molecular dynamics simulations and showing how they can be applied to neutron scattering.
- Further prepared in interactive tutorial presenting how molecular dynamics simulation could be applied to the analysis of neutron reflectometry data.

SASSIE Training Course   *VARIOUS, UK*
Demonstrator   *MAR. 2017 - PRESENT*

- Aided in the demonstration of the SASSIE biological small angle scattering package at training events for PhD students and Postdocs.

Python in Chemistry   *BATH, UK*
Contributor   *NOV. 2017 - PRESENT*

- Actively contributing to the Python in Chemistry blog developed by the University of Bath.
- Resource designed to introduce chemistry students to aspects of programming, using Python and Jupyter Notebooks.
- Developing teaching resources that introduce my basic concepts from programming, such as functions, loops, and plotting.

Memberships & Committees ─────────────────────────────

RSC/IOP Neutron Scattering Group Committee
PhD Representative   *JUN. 2017 - PRESENT*

- Served as a member of the NSG Committee offering the insight of student members.

UK Research Software Engineer Association
Member   *JUN. 2017 - PRESENT*

- A member of UKRSE, a community and awareness organisation for the UK's Research Software Engineers.

Royal Society of Chemistry
Associate Member (Postgraduate)   *SEPT. 2010 - PRESENT*

- Member of the RSC since start of undergraduate.
- Took part in a young member focus group for the RSC Scottish Regional Steering Group.

Funding Awarded ─────────────────────────────

2018/08/28   **Travel Fund to Attend VICEPHEC18**,   University of Bath Travel Fund for Teaching Development – £135
2018/08/28   **Group Bursary to Attend VICEPHEC18**,   Royal Society of Chemistry Teriary Education Group Bursary – £70
2017/04/11   **Research Student Travel Grant**,   Armourers & Brasiers' Gauntlet Trust – £900

Prizes ─────────────────────────────

2018/10/12   **IUCr Journals Prize for the Best Student Lecture**,   SAS2018
2018/06/14   **The Computational Prize – Best Oral Presentation**,   University of Bath Bolland Symposium
2018/05/17   **Nominated for Faculty Teaching Assistant Award**,   University of Bath Faculty of Science
2017/06/12   **Best Talk Award – Sponsored by Santander**,   University of Bath Faculty of Science Graduate School Research Afternoon

Publications ─────────────────────────────

5. McCluskey, A. R., Symington, A. R., Grant, J., Morgan, B. J., Parker, S. C., & Edler, K. J., 2018. Introducing classical molecular dynamics simulation to users of scattering. *(In Preparation)*

4. McCluskey, A. R., Grant, J., Smith, A. J., Rawle, J. L., Barlow, D. J., Lawrence, M. J., Parker, S. C., & Edler, K. J., 2018. Applying molecular simulation to the analysis of lipid monolayer reflectometry. *(In Preparation)*

3. McCluskey, A. R., Sanchez-Fernandez, A., Edler, K. J., Parker, S. C., Jackson, A. J., Campbell, R. A., & Arnold, T., 2018. Bayesian determination of the effect of a deep eutectic solvent on the structure of lipid monolayers. *(Submitted)*. arXiv:1810.07616

2. McCluskey, A. R., Morgan, B. J., Edler, K. J., & Parker, S. C., 2018. pylj: A teaching tool for classical atomistic simulation. *J. Open Source Educ.*, 1(2), 19. DOI: 10.21105/jose.00019

1. McCluskey, A. R., & Edler, K. J., 2018. Model-dependent small-angle scattering for the study of complex organic materials. *Curr. Org. Chem.*, 22(8), 750-757. DOI: 10.2174/1875692115666170612104439