

Angela Harper

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📁 [harpaf13.github.io](https://github.com/harpaf13)



Education

- 2018– **Ph.D. Physics**, *University of Cambridge*, UK.
Supervised by Prof. Michael Payne and Dr. Andrew J. Morris
- 2017–2018 **MPhil Physics**, *University of Cambridge*, UK.
Supervised by Dr. Andrew J. Morris
- 2013–2017 **B.S. with Honors, Physics**, *Wake Forest University*, USA.
Supervised by Prof Oana Jurchescu

Academic Background

- 2017–2018 **MPhil Dissertation “*Ab Initio* Studies of Metal Phosphide Anode Materials”**,
Dr. Andrew J. Morris, University of Cambridge, UK.
- Used density-functional theory (DFT) to study two classes of transition metal phosphides for their potential applications as **high capacity Li-ion battery anodes**
 - Collaborated with **the Grey Group** (Cambridge, UK) to synthesise the predicted anode materials
 - Used the **CASTEP DFT code**, and *ab initio* random structure searching (**AIRSS**) method to identify novel crystal structures
- 2015–2017 **Undergraduate Physics Honors Thesis “Laser Printed Flexible Electronics”**,
Prof. Oana D. Jurchescu, Wake Forest University, USA.
- **Fabricated and characterised organic field effect transistors** comprised of novel organic semiconductor materials.
 - Designed an experimental procedure for **laser printing organic semiconducting material** on flexible substrates.
- Summer 2016 **NSF MRSEC REU “Understanding the Solute/Solvent Effects on Processing of Hybrid Organic-Inorganic Perovskites using Density Functional Theory”**,
Prof. Paulette Clancy, Cornell University, USA.
- Studied the solution processing of Hybrid Organic-Inorganic Perovskites using DFT, with the **Orca and LAMMPS simulation programs**.
 - Collaborated with **Dr. Joshua Choi at Virginia Tech** modelling sulfoxide solvents for use in perovskite processing.
- 2013–2015 **Undergraduate Research “Active Site Profile Clustering of the Peroxiredoxin Superfamily of Proteins”**, *Prof. Jacquelyn Fetrow*, Wake Forest University, USA.
- Developed a protocol to **computationally cluster protein sequence information**, to elucidate the relationship between structure, sequence, and function of proteins using **Python, on a Linux cluster**
 - Spent the summer of 2015 at **University College London** working with Prof. **Christine Orengo** on the FunFHMMer protocol

Selected Awards

2018	HPC Midlands ⁺ Grant	1.2M core hours of computing time on Athena
2018	Gates Scholarship	International Award for PhD funding at Cambridge
2018	Winton Scholarship for the Physics of Sustainability	PhD funding at Cambridge
2017	LeRoy Apker Award	For distinguished undergraduate work in Physics from APS
2017	Churchill Scholarship	National Award for MPhil funding at Cambridge
2017	Speas Award	WFU Award for top physics student
2016	Barry Goldwater Scholarship	National award for science undergraduate
2013	Stamps Scholarship	B.S. undergraduate funding at WFU

Selected Presentations

August 2018	Poster presentation (2 nd place) at CASTEP Workshop
April 2018	Poster presentation at AIP Interfaces in Energy Materials Meeting
March 2018	LeRoy Apker invited award presentation at APS March Meeting
March 2017	Honors thesis presentation at the Senior Showcase WFU
January 2017	Poster presentation (1 st place) at Harvard National Research Conference

Volunteer Work

2018–	STEMNetwork Mentor for the Cambridgeshire Area, volunteering at local science advocacy events
2018–	Volunteer feeding those in need through the St. Vincent de Paul Society
2013–	Ambassadors in Admissions for WFU, gave tours during undergraduate and contacts accepted students as an alumna
2016	Used Java and AndroidStudio to design an app for trail marking in the Appalachian Mountains, supervised by Dr. David John
2014–2017	Helped create the WFU Women in STEM mentoring program , and became president of the organisation in 2016
2014–2017	<i>Sigma Pi Sigma</i> Physics Honors Society Member, became president of the Society of Physics Students volunteer organisation in 2016

Teaching Experience

2018–	Maths 1A	tutored groups of 1-3 students with weekly meetings and graded papers for maths ranging from calculus to ordinary differential equations
2015–2017	Introductory Computer Science	tutored groups of 1-3 students in Java and C++
2015–2017	Introductory Physics	tutored individual students in basic physics
2015–2017	Physics Teaching Assistant	set up labs and graded papers for various physics courses
2015–2017	After School Women in STEM Tutor	Ran science experiment demos for groups of 15+ girls aged 10-13

Publications

5. Peter J Diemer, Angela F Harper, Muhammad R Niazi, Anthony J Petty, John E Anthony, Aram Amassian, and Oana D Jurchescu. Laser-printed organic thin-film transistors. *Advanced Materials Technologies*, 2(11):1700167, 2017. doi: [10.1002/admt.201700167](https://doi.org/10.1002/admt.201700167).
4. Benjamin J Foley, Justin Girard, Blaire A Sorenson, Alexander Z Chen, J Scott Niezgoda, Matthew R Alpert, Angela F Harper, Detlef-M Smilgies, Paulette Clancy, Wissam A Saidi, et al. Controlling nucleation, growth, and orientation of metal halide perovskite thin films with rationally selected additives. *Journal of Materials Chemistry A*, 5(1):113–123, 2017. doi: [10.1039/C6TA07671H](https://doi.org/10.1039/C6TA07671H).
3. Angela F Harper, Janelle B Leuthaeuser, Patricia C Babbitt, John H Morris, Thomas E Ferrin, Leslie B Poole, and Jacquelyn S Fetrow. An atlas of peroxiredoxins created using an active site profile-based approach to functionally relevant clustering of proteins. *PLoS computational biology*, 13(2):e1005284, 2017. doi: [10.1371/journal.pcbi.1005284](https://doi.org/10.1371/journal.pcbi.1005284).
2. Stacy T Knutson, Brian M Westwood, Janelle B Leuthaeuser, Brandon E Turner, Don Nguyendac, Gabrielle Shea, Kiran Kumar, Julia D Hayden, Angela F Harper, Shoshana D Brown, et al. An approach to functionally relevant clustering of the protein universe: Active site profile-based clustering of protein structures and sequences. *Protein Science*, 26(4):677–699, 2017. doi: [10.1002/pro.3112](https://doi.org/10.1002/pro.3112).
1. Janelle B Leuthaeuser, John H Morris, Angela F Harper, Thomas E Ferrin, Patricia C Babbitt, and Jacquelyn S Fetrow. Dasp3: identification of protein sequences belonging to functionally relevant groups. *BMC bioinformatics*, 17(1):458, 2016. doi: [10.1186/s12859-016-1295-z](https://doi.org/10.1186/s12859-016-1295-z).