

## Education

# Andreas Neophytou

Mar 2019 - Mar 2023  
Sep 2017 - Feb 2019

### University of Birmingham

#### PhD, Chemistry – Designing Colloidal Open Crystals & Empty Liquids

- The project involved the development of computational methods, underpinned by the theory of statistical mechanics, to model colloidal systems and understand their self-assembly.

#### University of Birmingham

##### M.Sc. by Research, Chemistry

- The aim of the project was to design a model system of patchy colloidal rods (*in-silico*) that are able to crystallise into photonic crystals.

2012 - 2017

#### University of Birmingham

##### B.Sc. Natural Sciences with a Year in Computer Science, Class I (81%)

- Double major, focusing on Biochemistry and Chemistry.
- Final year research project explored the use of quaternions as rotational coordinates to improve the performance of molecular geometry optimisation software.
- Awarded prizes for achieving the highest overall marks for the cohort in the final year and having the “best” final year research project.

## Research Experience

Jan 2022 - Jan 2023

#### School of Engineering and Applied Science

- Hosted by Professor Vinothan Manoharan.
- The project focused on developing computational models, in collaboration with the Manoharan group, to understand the physics underpinning the successful self-assembly of viral capsids in *in-vitro* experiments.

Jul 2017 - Sep 2017

#### Fellow in Applied Physics, Harvard

#### PRACE Summer of High Performance Computing Participant

- 2-month project at the Computing Centre of the Slovak Academy of Sciences.
- The project goal was to parallelise the band structure calculations of nanotubes using MPI.

Oct 2015 - May 2016

- Provided experience with parallel programming using MPI and OpenMP.

#### IMechE Railway Challenge Team Member for the University of Birmingham

- Work with other team members to construct a working locomotive.
- Experience in soldering of printed circuit boards and the design of hydrogen safety protocols.

Jul 2014 - Sep 2014

#### Leukaemia & Lymphoma Summer Research Project, University of Birmingham

- 10-week project funded by the Leukaemia & Lymphoma Research charity.
- The project goal was to see how miRNA expression changes in leukaemic cells following combined treatment with bezafibrate and medroxyprogesterone acetate.
- The project provided experience with various molecular biology techniques and working independently in a research environment.

## Teaching Experience

2018 - 2021	<b>Teaching Associate in the School of Chemistry, University of Birmingham</b> <ul style="list-style-type: none"><li>• Prepare and supervise chemistry students during their undergraduate laboratory sessions.</li></ul>
2014 - 2015	<b>PASS Leader for Biochemists at the University of Birmingham</b> <ul style="list-style-type: none"><li>• Plan and lead one-hour tutorials for a small class of 1st year biochemists.</li></ul>

## Honours and Awards Jul 2022 Langmuir Graduate Student Oral Presentation Awards

### Recipient

	<i>Selected to be one of ten presenters for the special session “Langmuir Graduate Student Oral Presentation Awards Session” at the 96th Annual Colloid and Surface Science Symposium.</i>
Mar 2022	<b>Turing Scheme Grant Recipient</b> <i>Grant awarded to facilitate the undertaking of research at Harvard as a Fellow of the School of Engineering and Applied Sciences in Professor Vinothan Manoharan’s lab</i>
Jul 2017	<b>Natural Sciences Finalist’s Prize, University of Birmingham</b> <i>Awarded to the student who has shown the best performance in the final year.</i> <b>Natural Sciences Dissertation / Project Prize, University of Birmingham</b> <i>Awarded to the student whose project report or dissertation is deemed, by the Board of Examiners, to be outstanding.</i>

## Contributed Talks

11 Jul 2022	<b>96th Annual Colloid and Surface Science Symposium</b> <i>Unravelling the Mysterious Behavior of Tetrahedral Liquids: The Topological Nature of the Liquid-Liquid Phase Transition</i>
19 Jul 2021	<b>UK Colloids 2021</b> <i>Self-Assembly of Colloidal Photonic Crystals Robust to Stacking Faults</i>
12 Jul 2020	<b>UK Colloids 2020</b> <i>Facilitating the Formation of Colloidal Photonic Crystals via Hierarchical Self-Assembly</i>

## Publications

- 2023 1. Williams, L. A., **Neophytou, A.**, Garmann, R. F., Chakrabarti, D. & Manoharan, V. N. Effect of capsid protein concentration on the self-assembly of MS2 coat protein around RNA – *in preparation* (2023).
2. Flavell, W., **Neophytou, A.**, Demetriadou, A., Albrecht, T. & Chakrabarti, D. Programmed Self-Assembly of Colloidal Single Gyroid for Chiral Photonic Crystals – *under review. Advanced Materials* (2023).
- 2022 3. **Neophytou, A.**, Chakrabarti, D. & Sciortino, F. Topological nature of the liquid–liquid phase transition in tetrahedral liquids. *Nature Physics*, 1–6 (2022).
4. **Neophytou, A.** & Chakrabarti, D. in *Frontiers of Nanoscience* 111–128 (Elsevier, 2022).
- 2021 5. **Neophytou, A.**, Chakrabarti, D. & Sciortino, F. Facile self-assembly of colloidal diamond from tetrahedral patchy particles via ring selection. *Proceedings of the National Academy of Sciences* **118** (2021).
6. Xiao, M., Stephenson, A. B., **Neophytou, A.**, Hwang, V., Chakrabarti, D. & Manoharan, V. N. Investigating the trade-off between color saturation and angle-independence in photonic glasses. *Optics Express* **29**, 21212–21224 (2021).

7. **Neophytou, A.**, Manoharan, V. N. & Chakrabarti, D. Self-Assembly of Patchy Colloidal Rods into Photonic Crystals Robust to Stacking Faults. *ACS Nano* **15**, 2668–2678 (2021).
- 2020 8. Rao, A. B., Shaw, J., **Neophytou, A.**, Morphew, D., Sciortino, F., Johnston, R. L. & Chakrabarti, D. Leveraging hierarchical self-assembly pathways for realizing colloidal photonic crystals. *ACS Nano* **14**, 5348–5359 (2020). 2019 9. Ou, Z., Luo, B., **Neophytou, A.**, Chakrabarti, D. & Chen, Q. in *Frontiers of Nanoscience* 61–85 (Elsevier, 2019).