Andreas Neophytou

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Education

Mar 2019- Present

University of Birmingham

PhD, Chemistry

- The project involves developing software and applying computational methods, largely underpinned by the theory of statistical mechanics, to simulate model colloidal systems and understand their self-assembly.

Sep 2017- Feb 2019

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.
- The aim of the final year research project was to determine whether the use of quaternions in the parameterisation of rotational coordinates could improve the performance of molecular geometry optimisation software.

Research Experience

Jul 2017- Sep 2017

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.
- Provided experience with electronic structure methods for the modelling of nanotubes.
- Provided experience with parallel programming using MPI and OpenMP.

Oct 2015 – May 2016

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 saftey 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

Teaching Associate in the School of Chemistry, University of Birmingham

- Supervise chemistry students during their undergraduate laboratory sessions.
- Prepare the laboratory session, ensuring all equipment is set up correctly.

2014 - 2015

PASS Leader for Biochemists at the University of Birmingham

- Plan one-hour tutorials for a small class of 1^{st} year biochemists.
- Assist the students with any difficulties they have with the course.

Honours and Awards

Jul 2017 | **Natural Sciences Finalist's Prize, University of Birmingham**
Awarded to the student who has shown the best performance in the final year.
Natural Sciences Dissertation / Project Prize, University of Birmingham
Awarded to the student whose project report or dissertation is deemed, by the Board of Examiners, to be outstanding.

Contributed Talks

12 Jul 2020 | **UK Colloids 2020**
Facilitating the Formation of Colloidal Photonic Crystals via Hierarchical Self-Assembly

19 Jul 2021 | **UK Colloids 2021**
Self-Assembly of Colloidal Photonic Crystals Robust to Stacking Faults

Publications

2022 | 1. Flavell, W., **Neophytou, A.**, Demetriadou, A., Albrecht, T. & Chakrabarti, D. Programmed Self-Assembly of Colloidal Single Gyroid for Chiral Photonic Crystals (*in communication*) (2022).

2. **Neophytou, A.**, Chakrabarti, D. & Sciortino, F. Topological Nature of the Liquid-Liquid Phase Transition in Tetrahedral Liquids (*Under Review*). *Nature Physics* (2022).

3. **Neophytou, A.** & Chakrabarti, D. in *Energy Landscapes of Nanoscale Systems* chap. 6 (Elsevier, 2022).

2021 | 4. **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).

5. 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).

6. **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 | 7. 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 | 8. Ou, Z., Luo, B., **Neophytou, A.**, Chakrabarti, D. & Chen, Q. in *Frontiers of Nanoscience* 61–85 (Elsevier, 2019).