

# WILLIAM N. SHARRATT

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## EDUCATION

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### Imperial College London

October 2016 - June 2020

*PhD in Chemical Engineering - EPSRC iCASE (16000164)*

“Microfluidic Polymer Particle and Capsule Formation: From the Molecular to the Macroscale”

- Developed novel microfluidic approaches for precise encapsulation by solvent extraction and ionic crosslinking, paving the way for sustainable, functional polymeric capsules by molecular design
- Developed molecular metrology approaches via neutron and X-ray scattering to resolve the spatio-temporal evolution of droplet precursors from the nano to macroscales
- Delivered industrial impact by co-authored research and technology transfer (microfluidic, scattering and optical imaging approaches) to iCASE sponsor Procter & Gamble

### Princeton University, USA

August 2018 - September 2018

*Visiting Student in Chemical and Biological Engineering*

### University of Bristol

September 2012 - June 2016

*MSci Chemistry with Industrial Experience (First Class with Honours, 78.6 %)*

“Polymer-Surfactant Mixtures at the Air-Water Interface”

## EMPLOYMENT

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### Imperial College London

June 2020 - Present

*Postdoctoral Research Associate (Temporary Contract)*

“Enhancing Machine Learning with Physical Constraints to Predict Microstructure Evolution”

EP/S014985/1

### Infineum UK, Didcot

July 2014 - September 2015

*Year in Industry and Additional Summer Placement*

“Functionalised Methacrylate Copolymers for Friction and Valve Train Wear Reduction”

## PRESENTATIONS

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### Talks

- “Probing Polymer Solution Conformation along Microparticle Formation Pathways with SANS”  
- APS March Meeting, Boston, USA, 2019
- “Microfluidic Solvent Extraction for the Precise Formation of Polymer Particles and Capsules”  
- APS March Meeting, Los Angeles, USA, 2018
- IOP Physical Aspects of Polymer Science, Swansea, UK, 2017

### Posters

- “Conformation and Phase Behaviour of Semiflexible Polyelectrolyte Solutions with Added Salt”  
- IOP Physical Aspects of Polymer Science, Lincoln, UK, 2019
- “Micro- and Nano-Scale Mapping of Directional Solidification in Polymeric Microcapsule Formation”  
- ILL/ESS User Meeting, Grenoble, France, 2018
- SCI Innovations in Encapsulation, London, UK, 2018

## AWARDS & GRANTS

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- Awarded £2,465 **Royal Society of Chemistry Researcher Mobility Grant** for visit to Priestley Lab in Princeton, US in August 2018
- Granted travel bursary from the **Institute of Physics Research Student Conference Fund** to present a contributed talk at the APS March Meeting 2018 in Los Angeles
- Allocated 3 × 2 days of neutron scattering beamtime at international facilities, ISIS (UK) and ILL (France), from 3 successful proposals.

## TEACHING

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### Graduate Teaching Assistant

October 2017 - June 2020

- Tutor for CE1-06 Chemistry (2017/18)
- Tutor for CE1-05 Thermodynamics (2018/19)
- Tutor for CE1-09 Physical Chemistry (2019/20)
- Contributed to Spring Test (CE1-09); assessed/provided feedback on physical chemistry projects.
- Consistently positive SOLE feedback (80-100 % agree and strongly agree in all three courses)

### Secondary School & A-Level Science Tutor

June 2016 - Present

- Prepared and delivered tutorial sessions, from KS3 to A-level, in Chemistry, Physics and Maths

## STUDENT SUPERVISION

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### UG and MSc Student Co-Supervisor

January 2018 - Present

- Supervised experimental research of 5 UG students (Summer/UROP and BSc) and 2 MSc students. Projects focussed on polymer particle formation.

## SERVICE & OUTREACH

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### RSC Chilterns & Middlesex Local Section Committee

November 2017 - Present

- Co-created and organised the 2018 and 2019 "Chemistry Communicators' Challenge" (CCC) events, which promotes science communication within the local section
- Awarded a £1,000 International Year of the Periodic Table Member Networks Grant to support the 2019 CCC event.
- Assisted in running and promotion of other committee members' events including educational challenges, careers & networking evenings and lectures.

### STEM Ambassador

January 2020 - Present

- Volunteered at careers events and mock interviews to aid students in STEM subjects

## PUBLICATIONS

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1. **W. N. Sharratt**, A. Brooker, E. S. J. Robles and J. T. Cabral, *Soft Matter*, 2018, 14, 4453-4463.
2. Y. Aoki, H. Wang, **W. Sharratt**, R. M. Dalgliesh, J. S. Higgins and J. T. Cabral, *Macromolecules*, 2019, 52, 1112-1124.
3. **W. N. Sharratt** and J. T. Cabral, in *Polymer Colloids*, RSC, 2019, pp. 100-147.
4. S. Khodaparast, **W. Sharratt**, H. Wang, E. S. J. Robles, R. Dalgliesh and J. T. Cabral, *J Colloid Interface Sci*, 2019, 546, 221-230.
5. Y. Aoki, **W. Sharratt**, H. Wang, R. O'Connell, L. Pellegrino, S. Rogers, R. M. Dalgliesh, J. S. Higgins and J. T. Cabral, *Macromolecules*, 2020, 53, 4451-4457
6. **W. N. Sharratt**, C. G. Lopez, R. A. O'Connell, S. E. Rogers and J. T. Cabral, *Macromolecules*, 2020, 1451-1463.
7. S. Khodaparast, **W. N. Sharratt**, G. Tyagi, R. Dalgliesh, E. J. Robles and J. T. Cabral, *J Colloid Interface Sci*, 2020, *Accepted*
8. **W. N. Sharratt**, V. E. Lee, R. D. Priestley and J. T. Cabral, *Langmuir*, 2020, *Submitted*
9. R. O'Connell, **W. N. Sharratt** and J. T. Cabral, *Advanced Materials*, 2020, *Submitted*
10. A. Rafique, S. Khodaparast, A. S. Poulos, **W. N. Sharratt**, E. S. J. Robles and J. T. Cabral, *Soft Matter*, 2020, *Submitted*