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ORCID: [0000-0002-4171-7572](https://orcid.org/0000-0002-4171-7572), WoS ResearcherID: [O-2975-2016](https://www.researcherid.com/rid/O-2975-2016), Scopus ID: [57113719900](https://scopusid.com/57113719900)

EDUCATION:

2018 – 2020 Ph.D. in Chemistry

School of Chemistry, University of Birmingham, Birmingham, United Kingdom

2016 – 2018 Ph.D. in Chemistry (registration transferred to University of Birmingham)

Department of Chemistry, University of Warwick, Coventry, United Kingdom

Ph.D. Thesis: "Tuning the membrane properties of functional polymersomes developed by aqueous polymerization-induced self-assembly (PISA)"

Supervisor: Prof. Rachel K. O'Reilly

2014 – 2016 M.Sc. in Polymer Science – (Grade: 9.78/10 – 1st class)

Department of Chemistry, National and Kapodistrian University of Athens, Athens, Greece

Master's Thesis: "Synthesis, characterization and self-assembly of stimuli-responsive copolymers of poly(ethylene oxide), poly(L-histidine) and poly(L-cysteine) for the encapsulation of anticancer drugs and their controlled release"

Supervisor: Prof. Hermis Iatrou

2010 – 2014 B.Sc. in Chemistry – (Grade: 7.98/10)

Department of Chemistry, National and Kapodistrian University of Athens, Athens, Greece

Diploma Thesis: "Encapsulation of anticancer drugs into polypeptide-based nanostructures"

Supervisor: Prof. Hermis Iatrou

PROFESSIONAL EXPERIENCE:

Sep 2021 – present Research Associate

Department of Chemistry, University of Sheffield, Sheffield, United Kingdom

Supervisor: Prof. Steven P. Armes

Project: "Engineering of bio-mimicking, dynamic and shape-shifting block copolymer nanostructures via aqueous polymerization-induced self-assembly (PISA)"

Jul 2020 – Jun 2021 Research Fellow

Department of Chemistry, University College London (UCL), London, United Kingdom

Supervisor: Prof. Giuseppe Battaglia

Project: "Engineering of superselective block copolymer nanostructures with controlled morphology, surface properties and functionality for biomedical applications"

RESEARCH INTERESTS & EXPERTISE:

- Controlled polymerization techniques (i.e., reversible addition-fragmentation chain-transfer (RAFT) polymerization, ring-opening metathesis polymerization (ROMP), ring-opening polymerization (ROP))
- Visible light-mediated and oxygen-tolerant polymerization techniques in aqueous media
- Bio-inspired, sustainable and stimuli-responsive polymers and colloids
- Self-assembly of amphiphilic block copolymers in aqueous media *via* polymerization-induced self-assembly (PISA) and conventional methodologies
- Protein-, (poly)peptide- and amino acid-based nanomaterials
- Polymeric nanoreactors for cell/organelle mimicry and enzyme-mediated catalysis and therapy
- Drying behavior of complex multiphase aerosol droplets

TEACHING, SUPERVISION & MENTORING EXPERIENCE:

- Teaching Assistant, School of Chemistry, University of Birmingham, UK, *Courses:* Organic Chemistry II Practical Demonstrating (October 2018 – December 2018), Organic Chemistry III Practical Demonstrating (February 2019), Year 3 Mini-Project on Polymer Chemistry Practical Demonstrating and Marking (November 2019)
- Teaching Assistant, Department of Chemistry, University of Warwick, UK, *Course:* Inorganic Chemistry III Practical Demonstrating (October 2016 – December 2016)

- Course Certificate on “Preparing to Teach in Higher Education” awarded by University of Warwick, UK (November 2016)
- During my current employment as Research Associate at the Department of Chemistry, University of Sheffield (UK), I am acting as peer-to-peer thesis mentor for 3 Ph.D. students and I have co-supervised 2 MChem students.
- During my Ph.D. studies at the School of Chemistry, University of Birmingham (UK) and the Department of Chemistry, University of Warwick (UK), I had co-supervised 3 Ph.D. students, 1 M.Sc. student, 2 MChem students and 1 B.Sc. summer project student.
- During my M.Sc. studies at the Department of Chemistry, National and Kapodistrian University of Athens (Greece), I had co-supervised 2 B.Sc. diploma project students.

PROFESSIONAL SERVICE & OUTREACH ACTIVITY:

- Communications Manager for the Early Career Colloid (ECCo) Network (May 2022 – present)
- Presider (Session Chair) for the ACS PMSE Division at the ACS Fall 2021 National Meeting (August 2021)
- Ambassador of the Society of Chemical Industry (SCI) (May 2021 – present)
- Graduate Network Committee Member of the United Kingdom & Ireland Controlled Release Society (UKICRS) (January 2018 – November 2020)

- Registered UK STEM Ambassador – over 25 hours of outreach service (June 2020 – present)
- Mentor of 3 Year 10/11 students (November 2021 – January 2022) and 2 Year 12/13 students (March 2022 – June 2022) through the *Brightside* mentoring scheme
- Member of UCL’s *Ask the Expert* outreach programme (February 2021 – June 2021)
- Member of UCL’s organizing team for the *Pint of Science 2021* festival (December 2020 – May 2021)
- Member of the Chemistry Zone for *I’m a Scientist, Stay at Home* online STEM activity (May 2020 – July 2020)

- Reviewer for the following scientific journals (No. of reviews in brackets): *Journal of the American Chemical Society*, ACS (5), *Chemistry of Materials*, ACS (1), *ACS Macro Letters*, ACS (1), *Macromolecules*, ACS (3), *Polymer Chemistry*, RSC (3), *Journal of Polymer Science*, Wiley (1), *Polymer*, Elsevier (1), *Polymers*, MDPI (1) and *Nanomaterials*, MDPI (3)
- Invited Guest Editor for *Polymers* (MDPI) (November 2020 – June 2021)

OTHER CERTIFICATES:

- Course Certificates on “*Material Behavior*” and “*Material Processing*” by Georgia Institute of Technology, USA (July 2017)
- Soft Matter Cryo-TEM Certificate by Eindhoven University of Technology (TU/e), Netherlands (March 2017)

AWARDS & FUNDING:

- **Post-Doctoral Fellowship** funded by the Engineering and Physical Sciences Research Council (EPSRC) (Grant No. EP/W022214/1) (January 2023 – present)
- **Rideal Travel Bursary** to attend the 36th European Colloid & Interface Society Conference (ECIS) in Chania, Greece, Sir Eric Rideal Trust (June 2022)
- **2022 JEOL USA Image Contest Winner** (May 2022)
- **2022 PMSE Future Faculty Scholar**, ACS PMSE Division (March 2022)
- **2022 ACS Global Outstanding Graduate Student Award in Polymer Science and Engineering**, ACS PMSE Division and CME (March 2022)
- **RSC Researcher Development Grant** (Grant No. D20-977) (January 2022)
- **Best Oral Presentation Award** at the 13th Hellenic Polymer Society International Conference, Greece (December 2021)
- **Post-Doctoral Fellowship** funded by the Engineering and Physical Sciences Research Council (EPSRC) (Grant No. EP/R003009/1) (September 2021 – December 2022)
- **Macro Group UK Jon Weaver PhD Prize 2020** (August 2021)
- **2020/21 Zouhair Atassi PhD Prize**, School of Chemistry, University of Birmingham (July 2021)
- **Katharine Burr Blodgett Award 2021**, UK Joint Colloids Group (May 2021)
- **2021 JEOL USA Image Contest Winner** (May 2021)
- **Post-Doctoral Fellowship** funded by the Engineering and Physical Sciences Research Council (EPSRC) (Grant No. EP/R024723/1) (July 2020 – June 2021)
- **Best Poster Prize** at the Macro Group UK Young Researchers Meeting (YRM) 2020 (June 2020)

- **Excellence in Graduate Polymer Research Award**, ACS POLY Division (March 2020)
- **Ottewill International Travel Scholarship 2020** to attend the ACS Spring 2020 National Meeting & Expo in Philadelphia, PA, USA (March 2020)
- **Beamtime proposal** at Diamond Light Source, UK (Proposal No. SM25031), Co-Investigator (January 2020)
- **Biomaterials & Soft Matter Best Poster Prize (RSC)** at the 14th International Conference on Materials Chemistry (MC14) in Birmingham, UK (July 2019)
- **Macro Group UK DH Richards Memorial Travel Bursary** to attend the 2019 Polymers Gordon Research Conference (GRC) in South Hadley, MA, USA (June 2019)
- **Ph.D. Scholarship** funded by the European Research Council (ERC) Consolidator Grant (Grant No. 615142) (October 2016 – June 2020)
- **Distinction Award** from the Hellenic Ministry of Education, Lifelong Learning and Religious Affairs (October 2010)

LIST OF PEER-REVIEWED PUBLICATIONS:

29. Thomas, M.; **Varlas, S.**; Xie, Y.; Wilks, T. R.; O'Reilly, R. K. *Manuscript in preparation.*
28. *†**Varlas, S.**; †Johnson, E. C.; Norvilaite, O.; Neal, T. J.; Leggett, G. J.; Armes, S. P. *Manuscript in preparation.*
27. Miclotte, M. P. J.; **Varlas, S.**; Reynolds, C. D.; Rashid, B.; Chapman, E.; O'Reilly, R. K. Thermoresponsive Block Copolymer Core-Shell Nanoparticles with Tunable Flow Behavior in Porous Media. *ACS Appl. Mater. Interfaces* **2022**, *14*, 54182-54193. ([link](#))
26. Dorsman, I. R.; Chan, D. H. H.; Cunningham, V. J.; Brown, S. L.; Williams, C. N.; ***Varlas, S.**; Armes, S. P. Synthesis of crystallizable poly(behenyl methacrylate)-based block and statistical copolymers and their performance as wax crystal modifiers. *Polym. Chem.* **2022**, *13*, 5861-5872. ([link](#))
25. Jimaja, S.; **Varlas, S.**; Foster, J. C.; Taton, D.; Dove, A. P.; O'Reilly, R. K. Stimuli-responsive and core cross-linked micelles developed by NiCCo-PISA of helical poly(aryl isocyanide)s. *Polym. Chem.* **2022**, *13*, 4047-4053. ([link](#))
24. ***Varlas, S.**; Neal, T. J.; Armes, S. P. Polymerization-induced self-assembly and disassembly during the synthesis of thermoresponsive ABC triblock copolymer nano-objects in aqueous solution. *Chem. Sci.* **2022**, *13*, 7295-7303. ([link](#))
23. ***Varlas, S.**; Maitland, G. L.; Derry, M. J. Protein-, (Poly)peptide-, and Amino Acid-Based Nanostructures Prepared via Polymerization-Induced Self-Assembly. *Polymers* **2021**, *13*, 2603. ([link](#))
22. Miclotte, M. P. J.; Lawrenson, S. B.; **Varlas, S.**; Rashid, B.; Chapman, E.; O'Reilly, R. K. Tuning the Cloud-Point and Flocculation Temperature of Poly(2-(diethylamino)ethyl methacrylate)-Based Nanoparticles via a Postpolymerization Betainization Approach. *ACS Polym. Au* **2021**, *1*, 47-58. ([link](#))
21. †**Varlas, S.**; †Hua, Z.; Jones, J. R.; Thomas, M.; Foster, J. C.; O'Reilly, R. K. Complementary Nucleobase Interactions Drive the Hierarchical Self-Assembly of Core-Shell Bottlebrush Block Copolymers toward Cylindrical Supramolecules. *Macromolecules* **2020**, *53*, 9747-9757. ([link](#))
20. †Foster, J. C.; †Grocott, M. C.; Arkinstall, L. A.; **Varlas, S.**; Redding, M. J.; Grayson, S. M.; O'Reilly, R. K. It is Better with Salt: Aqueous Ring-Opening Metathesis Polymerization at Neutral pH. *J. Am. Chem. Soc.* **2020**, *142*, 13878-13885. ([link](#))
19. **Varlas, S.**; Lawrenson, S. B.; Arkinstall, L. A.; O'Reilly, R. K.; Foster, J. C. Self-assembled nanostructures from amphiphilic block copolymers prepared via ring-opening metathesis polymerization (ROMP). *Prog. Polym. Sci.* **2020**, *107*, 101278. ([link](#))
18. Keogh, R.; Blackman, L. D.; Foster, J. C.; **Varlas, S.**; O'Reilly, R. K. The Importance of Cooperativity in Polymer Blending: Toward Controlling the Thermoresponsive Behavior of Blended Block Copolymer Micelles. *Macromol. Rapid Commun.* **2020**, *41*, 1900599. ([link](#))
17. Jimaja, S.; **Varlas, S.**; Xie, Y.; Foster, J. C.; Taton, D.; Dove, A. P.; O'Reilly, R. K. Nickel-Catalyzed Coordination Polymerization-Induced Self-Assembly of Helical Poly(Arylisocyanide)s. *ACS Macro Lett.* **2020**, *9*, 226-232. ([link](#))
16. **Varlas, S.**; Keogh, R.; Xie, Y.; Horswell, S. L.; Foster, J. C.; O'Reilly, R. K. Polymerization-Induced Polymersome Fusion. *J. Am. Chem. Soc.* **2019**, *141*, 20234-20248. ([link](#))
15. †Karatzas, A.; †Haataja, J.; Skoulas, D.; Bilalis, P.; **Varlas, S.**; Apostolidi, P.; Sofianopoulou, S.; Stratikos, E.; Houbenov, N.; Ikkala, O.; Iatrou, H. Macromolecular Architecture and Encapsulation of the Anticancer Drug Everolimus Control the Self-Assembly of Amphiphilic Polypeptide-Containing Hybrids. *Biomacromolecules* **2019**, *20*, 4546-4562. ([link](#))
14. **Varlas, S.**; Foster, J. C.; O'Reilly, R. K. Ring-opening metathesis polymerization-induced self-assembly (ROMPISA). *Chem. Commun.* **2019**, *55*, 9066-9071. ([link](#))

13. **Varlas, S.**; Foster, J. C.; Georgiou, P. G.; Keogh, R.; Husband, J. T.; Williams, D. S.; O'Reilly, R. K. Tuning the membrane permeability of polymersome nanoreactors developed by aqueous emulsion polymerization-induced self-assembly. *Nanoscale* **2019**, *11*, 12643-12654. ([link](#))
12. **Varlas, S.**; Foster, J. C.; Arkinstall, L. A.; Jones, J. R.; Keogh, R.; Mathers, R. T.; O'Reilly, R. K. Predicting Monomers for Use in Aqueous Ring-Opening Metathesis Polymerization-Induced Self-Assembly. *ACS Macro Lett.* **2019**, *8*, 466-472. ([link](#))
11. Foster, J. C.; **Varlas, S.**; Couturaud, B.; Coe, Z.; O'Reilly, R. K. Getting into Shape: Reflections on a New Generation of Cylindrical Nanostructures' Self-Assembly using Polymer Building Blocks. *J. Am. Chem. Soc.* **2019**, *141*, 2742-2753. ([link](#))
10. †Couturaud, B.; †Georgiou, P. G.; **Varlas, S.**; Jones, J. R.; Arno, M. C.; Foster, J. C.; O'Reilly, R. K. Poly(Pentafluorophenyl Methacrylate)-Based Nano-Objects Developed by Photo-PISA as Scaffolds for Post-Polymerization Functionalization. *Macromol. Rapid Commun.* **2019**, *40*, 1800460. ([link](#))
9. **Varlas, S.**; Georgiou, P. G.; Bilalis, P.; Jones, J. R.; Hadjichristidis, N.; O'Reilly, R. K. Poly(Sarcosine)-Based Nano-Objects with Multi-Protease Resistance by Aqueous Photoinitiated Polymerization-Induced Self-Assembly (Photo-PISA). *Biomacromolecules* **2018**, *19*, 4453-4462. ([link](#))
8. Foster, J. C.; †**Varlas, S.**; †Couturaud, B.; Jones, J. R.; Keogh, R.; Mathers, R. T.; O'Reilly, R. K. Predicting Monomers for use in Polymerization-Induced Self-Assembly. *Angew. Chem. Int. Ed.* **2018**, *57*, 15733-15737. ([link](#))
7. **Varlas, S.**; Blackman, L. D.; Findlay, H. E.; Reading, E.; Booth, P. J.; Gibson, M. I.; O'Reilly, R. K. Photoinitiated Polymerization-Induced Self-Assembly in the Presence of Surfactants Enables Membrane Protein Incorporation into Vesicles. *Macromolecules* **2018**, *51*, 6190-6201. ([link](#))
6. Foster, J. C.; **Varlas, S.**; Blackman, L. D.; Arkinstall, L. A.; O'Reilly, R. K. Ring-Opening Metathesis Polymerization in Aqueous Media using a Macroinitiator Approach. *Angew. Chem. Int. Ed.* **2018**, *57*, 10672-10676. ([link](#))
5. †**Varlas, S.**; †Blackman, L. D.; Arno, M. C.; Houston, Z. H.; Fletcher, N. L.; Thurecht, K. J.; Hasan, M.; Gibson, M. I.; O'Reilly, R. K. Confinement of Therapeutic Enzymes in Selectively Permeable Polymer Vesicles by Polymerization-Induced Self-Assembly (PISA) Reduces Antibody Binding and Proteolytic Susceptibility. *ACS Cent. Sci.* **2018**, *4*, 718-723. ([link](#))
4. Liarou, E.; **Varlas, S.**; Skoulas, D.; Tsimblouli, C.; Sereti, E.; Dimas, K.; Iatrou, H. Smart polymersomes and hydrogels from polypeptide-based polymer systems through α -amino acid N-carboxyanhydride ring-opening polymerization. From chemistry to biomedical applications. *Prog. Polym. Sci.* **2018**, *83*, 28-78. ([link](#))
3. Blackman, L. D.; **Varlas, S.**; Arno, M. C.; Fayter, A.; Gibson, M. I.; O'Reilly, R. K. Permeable Protein-Loaded Polymersome Cascade Nanoreactors by Polymerization-Induced Self-Assembly. *ACS Macro Lett.* **2017**, *6*, 1263-1267. ([link](#))
2. Bilalis, P.; Tziveleka, L.-A.; **Varlas, S.**; Iatrou, H. pH-Sensitive nanogates based on poly(L-histidine) for controlled drug release from mesoporous silica nanoparticles. *Polym. Chem.* **2016**, *7*, 1475-1485. ([link](#))
1. Bilalis, P.; **Varlas, S.**; Kiafa, A.; Velentzas, A.; Stravopodis, D.; Iatrou, H. Preparation of hybrid triple-stimuli responsive nanogels based on poly(L-histidine). *J. Polym. Sci. Polym. Chem. Part A* **2016**, *54*, 1278-1288. ([link](#))

† Denotes equal author contribution. * Denotes corresponding authorship.

CONFERENCE PRESENTATIONS & PROCEEDINGS:

To date, I have delivered **16 oral presentations** (including **8 invited talks** and **1 "Best Oral Presentation" prize**) and **14 poster presentations** (including **2 "Best Poster" prizes**) as the leading presenter in national, international and online conferences and meetings. A full list of my oral and poster presentations can be provided upon request.

Conference Proceedings:

6. **Varlas, S.**; Blackman, L. D.; Foster, J. C.; Arno, M. C.; Gibson, M. I.; O'Reilly, R. K. Tuning membrane properties of functional polymersomes developed via aqueous photoinitiated polymerization-induced self-assembly (photo-PISA). *Abstr. Pap. Am. Chem. Soc.* **2020**, *259*, PMSE-0696.
5. **Varlas, S.**; Foster, J. C.; Keogh, R.; Arkinstall, L. A.; Mathers, R. T.; O'Reilly, R. K. Expanding the scope of aqueous ring-opening metathesis polymerization-induced self-assembly (ROMPISA). *Abstr. Pap. Am. Chem. Soc.* **2020**, *259*, PMSE-0695.
4. **Varlas, S.**; Keogh, R.; Xie, Y.; Foster, J. C.; O'Reilly, R. K. Evolution of tubesomes via polymerization-induced polymersome fusion. *Abstr. Pap. Am. Chem. Soc.* **2020**, *259*, POLY-0647.

3. **Varlas, S.**; Foster, J. C.; Georgiou, P. G.; Keogh, R.; Husband, J. T.; Williams, D. S.; O'Reilly, R. K. Tuning the membrane permeability of polymersome nanoreactors developed by aqueous emulsion polymerization-induced self-assembly. *Abstr. Pap. Am. Chem. Soc.* **2020**, 259, POLY-0257.
2. Foster, J. C.; **Varlas, S.**; Arkinstall, L. A.; Keogh, R.; O'Reilly, R. K. Nanostructure synthesis by ring-opening metathesis polymerization-induced self-assembly. *Abstr. Pap. Am. Chem. Soc.* **2019**, 258, 84-POLY.
1. Foster, J. C.; **Varlas, S.**; Arkinstall, L. A.; O'Reilly, R. K. Advances in aqueous metathesis chemistry. *Abstr. Pap. Am. Chem. Soc.* **2019**, 258, 63-PMSE.

PROFESSIONAL MEMBERSHIPS:

- Member of the American Chemical Society (ACS) (January 2019 – present)
- Member of Polymeric Materials: Science and Engineering (PMSE), Polymer Chemistry (POLY) and Colloid & Surface Chemistry (COLL) Divisions (ACS) (January 2019 – present)
- Member of the Royal Society of Chemistry (MRSC) (June 2017 – present)
- Member of Macro Group UK, Biomaterials Chemistry Group and Materials Chemistry Division (RSC) (June 2017 – present)
- Member of the Society of Chemical Industry (SCI) (June 2017 – present)
- Member of the Royal Microscopical Society (RMS) and European Microscopy Society (EMS) (April 2018 – present)
- Member of the Association of Greek Chemists (AGC) (October 2014 – present)

REFERENCES:

Prof. Steven P. Armes

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