# PhD Symposium submission (FES):

## 1. Full Name (begin with the first name):

Oriane Oder

## 2. Contact email (Greenwich email address) and other accounts you want to include i.e Research gate, LinkedIn:

o.e.oder@greenwich.ac.uk, Linkedin profile

## 3. Acknowledgement (limit 50-70 words):

I thank the University of Greenwich for the opportunity to carry out this research project with this scholarship.

## 4. A brief summary of your academic/professional background (limit 80-110 words):

Oriane graduated from Aix-Marseille Université (BSc in chemistry, 2016-2019). She worked as an intern in the Institut des Sciences Moleculaires de Marseille for the synthesis of a green catalyst activated by light. She graduated from Université Grenoble Alpes with a MSc in Chemistry for Life Sciences (2019-2021). She performed a 6-month internship at the Departement de Chimie Moleculaire in Grenoble for peptide synthesis and native-chemical-ligation. She is currently a PhD student in supramolecular chemistry, School of Science, University of Greenwich, UK (2021-present) and works as a PGTRA at the University of Greenwich, UK (2019-present).

## 5. Title of your thesis:

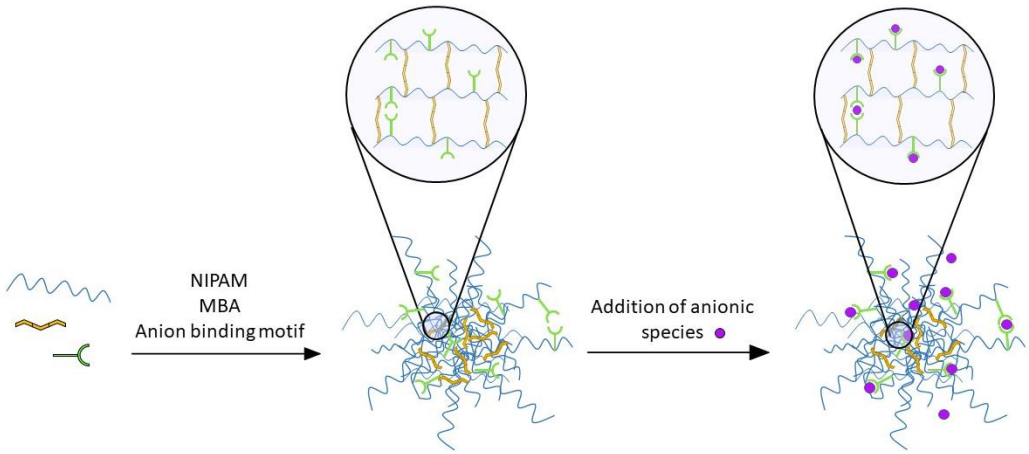
Novel nanomaterials for anion recognition

## 6. A copy of your abstract (limit 200-250 words) and keywords (limit 8 words):

### Anion recognition studies with polymeric nanoparticles in water

Abundant anions in the body, like chloride and sulphate, are the target of many studies involving anion recognition. In the past 30 years, different kinds of anion receptors have been intensively studied including small molecule receptors with the aim of facilitating anion transport in cells or treating diseases induced by anionic dysregulation. Nowadays, the use of some of these receptors in water remains a challenge for anion recognition due to the high solvability of anions in aqueous media and the low solubility of these neutral receptors[1].

To overcome this problem and minimise the binding competition in aqueous media, we synthesised water-soluble crosslinked polymeric nanoparticles containing hydrophobic pockets functionalised with known anion binding motifs[2].




pNIPAM (poly-*N*-isopropylacrylamide) soft materials are known to have tuneable properties so they can be used *in-vivo*. With MBA (*N,N*-methylanebisacrylamide) as a cross-linking agent, and pendant anion binding motifs, these nanomaterials can be used in aqueous media. We will report the results of anion binding studies using these polymeric materials with anions of interest such as phosphates and sulphates. Their selectivity will help find an application in the medical area as sensors, drug carrier or anion transporter. This novelty approach will be extended to a larger series of anions and incorporate other types of anion binding motifs with biologically active properties.

**References:**

1 M. J. Langton, C. J. Serpell and P. D. Beer, *Angew. Chemie - Int. Ed.*, 2016, **55**, 1974–1987.
2 L. Chen, S. N. Berry, X. Wu, E. N. W. Howe and P. A. Gale, *Chem*, 2020, **6**, 61–141.

## Keywords:
Anion recognition, nanoparticles

## 7. The name of your supervisors (the first supervisor's name should appear last):

Pr Joshua Boateng (3rd supervisor)
Dr Bruce Alexander (2nd supervisor)
Dr Ana Castilla (1st supervisor)