UNIVERSITY OF AMSTERDAM
Van 't Hoff Institute for Molecular Sciences

Shaping the Future of Topological Organic Materials

Master or Bachelor thesis project

>> Are you a creative thinker fascinated by organic compounds of unusual shapes? <<
>> Do you want to create such molecules in the laboratory and explore their properties? <<

We want to hear from you!

Our research group in the Van't Hoff Institute for Molecular Sciences at the University of Amsterdam explores the impact of topography or topology on the properties of organic molecules and materials. We design, synthesize, and study organic compounds with unusual shapes that allow us to understand fundamental concepts in chemistry. We are excited to discover new phenomena that emerge as a consequence of the three-dimensional shape or curvature of organic molecules. Our work typically combines multi-step organic synthesis, quantum-chemical calculations that we use to predict and understand our synthesis and experiments, and steady-state or time-resolved spectroscopy. We constantly strive to learn new techniques to unlock new possibilities in our research.

In your Project, you will be able to synthesize beautifully colored chiral covalent organic cages or curved aromatic macrocycles and help us to understand the fundamental processes in organic solar cells, to store charges in a Li-ion battery, to capture CO2, to unlock new fluorescent probes for bioimaging, or to bind curved nanoscale objects, such as single-walled carbon nanotubes.

Your project combines the synthesis of the building blocks and their assembly to target compounds and provides you with a great training in the state-of-the-art synthetic methods. Optionally, you may learn how to investigate the optical and redox properties, solid state superstructures and porosity, or supramolecular interactions of your compounds with interesting molecular guests in a solution or in the solid state. You can use spectroscopy or quantum chemical calculations to pursue such endeavours.

We look for smart, dedicated BSc and MSc students with a passion for organic chemistry who enjoy creating molecules with their hands, like to learn and discuss chemistry, engage work and people with enthusiasm, and show strong team orientation and problem-solving skills.

>> If you found yourself in our description and are excited to work with us, let us know!
<< Also, feel free to reach out if you have any questions.

t.solomek@uva.nl | Dr. Tomáš Šolomek, HIMS, University of Amsterdam, **Office C2.257**