



## M.Sc., Ph.D., and Post-Doctoral Positions Available at the Technion – Israel Institute of Technology

The inorganic & materials chemistry laboratory (IMCL) at the Technion – Israel Institute of Technology (<http://www.deruiterlab.com>) is looking for excellent students at all levels.

Research within the laboratory focusses on **supramolecular surface chemistry**, and in particular, the self-assembly of inorganic metal complexes on conductive surfaces for electrocatalysis. Using non-covalent interaction to self-assemble supramolecular materials is an attractive approach towards addressing challenging problems pertinent to global energy concerns. Highly structured materials will be generated via a sequence dependent Layer-by-Layer (LbL) assembly strategy with various inorganic building blocks. By using LbL assembly, materials of variable thickness can be generated, vastly increasing the surface area for catalytically relevant transformations. The LbL assembly is facilitated by non-covalent interactions that involve pyridine-metal coordination chemistry, cyclodextrin host-guest interactions, and hydrogen bonding. The used molecular catalysts are based on first-row transition metals that are modified with supramolecular connectors, enabling their incorporation into larger supramolecular architectures.

Successful candidates will work in a multi-disciplinary team within the inorganic & materials chemistry laboratory (<http://www.deruiterlab.com>) or within some of the excellent research centers present on the Technion Campus:

1. Grand Technion Energy Program center (GTEP; <https://gtep.technion.ac.il/>).
2. Russel Berry Nanotechnology Institute (RBNI; <https://rbni.technion.ac.il/>)

The aim the project will be developing new self-assembled materials suitable for water oxidation, oxygen reduction, hydrogen evolution, and carbon dioxide. Electrocatalytic reduction to ammonia is also within the scope of the program but is one of the future targets.

Accordingly, we are looking for excellent candidates (M.Sc., Ph.D, and Post-Doctoral) to fulfill three positions within our laboratory:

1. **Synthetic Inorganic Chemists.** We are looking for students with a background or interest in synthetic inorganic and organometallic chemistry. Emphasis is on the synthesis and characterization of first-row transition metal complexes that are modified with supramolecular connectors. A background with manipulation air-sensitive compounds is preferred, as well as with modern spectroscopic techniques.

2. **Electrocatalysis Expert:** Experience with various electrochemical techniques – both in solution and on the surface – is preferred. Quantitative analysis of gas evolution during electrocatalysis and benchmarking of surface-confined supramolecular catalysts is envisioned. The project is highly multidisciplinary and involves cooperating with synthetic, surface, and materials chemists.
  
3. **Supramolecular Chemist:** Students experienced with self-assembly and supramolecular chemistry are encouraged to apply, preferably with experience in surface characterization techniques such as AFM, XRR, and XPS. A background in synthetic (in)organic chemistry is highly desirable for modification of the molecular catalyst and surface modification of the inorganic substrates.

Students that fit any of these requirements are encouraged to apply directly to Assist. Prof. Graham de Ruiter ([graham@technion.ac.il](mailto:graham@technion.ac.il)). Applications should include a CV, a list of grades (M.Sc. or Ph.D.), and a desired starting date. The search will continue until all positions are filled.

Best Regards

Assist. Prof. Graham de Ruiter