

Research, Informatics and Graduate Studies

<https://sites.gtiit.edu.cn/research/positions/gs-2024008/>

PhD/Master (MSc) Positions in the Lab. of Precise Catalytic Organic Transformations (GS-2024008) – Group of Assoc. Prof. Sehoon Park

Description

The Chemistry Program (the Prof. Sehoon Park group) is looking for **2 PhD/Master students** to conduct research projects **in the field of synthetic and organometallic chemistry**, which particularly involved in transition metal-catalyzed dearomative functionalizations of N-heteroarenes.

Project Details

My research direction driving toward discovery of new reactivity to molecules particularly in organo(metallic) catalysis is largely based on synthetic and mechanistic organometallic chemistry that involves substrate scope study, kinetics, synthesis/isolation/characterization of active or resting catalytic species, and collaborative DFT calculations. The *first* research program is the development of well-defined and highly modular transition metal catalytic systems for dearomative multiple hydrofunctionalizations of simple, unactivated pyridines to provide unprecedented functionalized N-heterocycles, which can be useful building blocks particularly in drug discovery and development. The specific target catalysis include ligand-controlled regiodivergent double hydroelementation (E = Si, B, Ge, Sn, S, P, etc.), asymmetric double hydroelementation, and asymmetric tandem triple hydrofunctionalizations. The *second* research program is to accomplish hydroelementation of simple arenes with H[E] reducing agents (E = Si, B, Ge, Sn) via tandem partial hydrogenation-hydroelementation strategy that has been unprecedented. A range of nanoclusters (NC) of (initially) Rh and Ir, and (later) 1st-row transition metals in combination with modular ligands as a stabilizing agent are assumed to hydrogenate simple arenes to partially reduced cyclohexenes. The resultant cyclohexenes are reduced subsequently via facile (asymmetric)hydroelementation reaction (E = Si, B, Ge, Sn) catalyzed by well-defined organo(metallic) species to eventually furnish the functionalized (chiral)cycloalkanes in one-pot.

Keywords

Dearomatization, Organic synthesis, Transition metal catalysis, Multiple functionalizations, Asymmetric reduction

Selection Criteria

- Bachelor or Master degree (or equivalent) in Chemistry with average GPA min. 85% (**essential**); excellent English communication ability or good GRE score (min. 80% in *quantitative part* and 3.0 in the *analytical part*; GRE code 4213 GTIIT) (**essential**).
- Strong background in synthetic organic chemistry (preferred)
- Ability to author scientific reports (ppt) and scientific publications (preferred)
- -The MSc or Ph.D. candidate must fulfill the requirements for admission to the Technion Graduate School and needs to comply with its regulations leading to the PhD/Master degree:
<https://graduate.technion.ac.il/en/prospective-students/>

Application and Contact:

Position

PhD/Master

Program

Chemistry

Contact

Assoc. Prof. Sehoon Park

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[Web Page Link](#)

Date posted

September 10, 2024

Location

Guangdong Technion – Israel Institute of Technology (GTIIT), China & Technion-Israel Institute of Technology, Israel.

[Fees & Finance](#)

How to Apply

- Application deadline: until the position is filled.
- Send CV to: sehoon.park@gtiit.edu.cn with CC to ruibin.wang@gtiit.edu.cn (project manager).
- For your reference, please visit the Park group homepage in <https://sites.gtiit.edu.cn/parkgroup/>.