

PhD Position 2: Compartmentalized nanoreactors for multi-step catalysis

School of Materials Science and Engineering

Nanyang Technological University (NTU), Singapore

The KRG Lim lab (<https://krglimlab.github.io/>) at Nanyang Technological University (NTU) is starting in August 2027. We are looking for a highly motivated **PhD candidate** to join our group to work on **compartmentalized catalysts for multi-step catalytic cascades**.

Expected Intake: August 2027

Research Area: Nanomaterials, colloidal materials, heterogeneous catalysis

Supervisor: Prof. Kang Rui Garrick Lim (cs-garrick.lim@ntu.edu.sg)

Funding: NTU Research Scholarship, fully funded for 4 years

Project Description:

Why is this project important?

In multi-step reaction networks, steering reaction outcomes towards a desired product requires multiple catalytically active reaction sites working cooperatively with nanoscale intimacy. Designing colloidal architectures to direct reactant flow through a pre-determined sequence (and placement) of active sites while leveraging nanoparticle proximity effects will enable us catalytic outcomes beyond the sum of its individual parts.

What will you achieve in this project?

Design and **sol-gel synthesis** of hierarchical hollow nanoreactors. **Incorporating** catalytic nanoparticles into nanoreactors. **Evaluating** these catalysts in batch and/or fixed bed reactors. **Characterization** of catalysts. **Collaborate** with academic and industrial partners to **enhance your work's impact**.

Who are we looking for?

- Bachelor's/Master's in **Materials Science/Chemical Engineering/Chemistry**
- Research background and interest in colloidal synthesis, nanomaterials, catalysis

Application Instructions (Apply from 1 October 2026 – 31 January 2027)

1. Check our lab webpage (<https://krglimlab.github.io/>)
2. Email Prof. Garrick Lim (cs-garrick.lim@ntu.edu.sg) your CV, academic transcript, brief research summary, and contact information of two references
3. Apply at NTU portal (<https://www.ntu.edu.sg/admissions/graduate/admissionguide>). In your application's proposed faculty, choose "Others" and fill " Prof. Garrick Lim (MSE)".