

# Hokkaido University – The University of Melbourne Dual PhD Programme on Nanomaterials

## Project Summary

One fully funded project is available, focused on the synthesis of nanomaterials with enhanced interactions with infrared light, for energy and camouflage applications. This Joint PhD project will be primarily based at Hokkaido University with a minimum 12-month stay at the University of Melbourne, Australia.

## Degrees Available for this project

- Doctor of Philosophy (PhD) (Degree of Information or Engineering)

## Available Scholarships

Applicants are automatically considered for a scholarship specifically designed by Hokkaido University and the University of Melbourne, to cover living expenses in Hokkaido and Melbourne and travel expenses: a one-way flight from the country of their origin to Hokkaido University, and a one-way flight from Hokkaido University to the University of Melbourne during the PhD programme.

## Project Details

This project will seek to develop novel nanomaterials that can interact with infrared light to both sense and influence cellular behaviour. These nanomaterials will be of sufficiently small dimensions that they can be taken up in cells or inserted endoscopically. The interaction of these nanomaterials with infrared light, which has high penetration into biological tissues, will then be used to spectroscopically sense local environments, and to deliver phototherapies. Metallic nanomaterials particularly can deliver heat locally within cells when irradiated, with therapeutic potential. To understand cellular response to photothermal therapy, extracellular signal-regulated kinase (ERK) activation and signal propagation will be investigated. The first half of the project will be spent at the School of Chemistry, University of Melbourne, taking advantage of expertise in colloidal nanomaterials synthesis and characterization.

- Online interview may be undertaken with short-listed candidates
- Submit CV and Proof of English competency with Expression of Interest

## Anticipated project start date

Mon 01 Dec 2025

## Due date for application submission

Mid-April 2026

\*Application documents must be received by the Administrative Office of the Graduate School of Information Science and Technology on the day.

\*Expression of Interest must be submitted to either of the supervisors below by Tues 17 February 2026. In case no candidate was selected, the second call will be announced after April 2026.

## Supervisors

[Professor Hiroshi Uji-i](#), Research Institute for Electronic Science, Hokkaido University: [hiroshi.ujii\[at\]es.hokudai.ac.jp](mailto:hiroshi.ujii[at]es.hokudai.ac.jp)

ORCID ID: 0000-0002-0463-9659

[Dr James Hutchison](#), Faculty of Science, the University of Melbourne: [james.hutchison\[at\]unimelb.edu.au](mailto:james.hutchison[at]unimelb.edu.au)

\*Enquiries/expressions of interest shall be addressed to either of the academics.

## Eligibility

Individuals who have a Master's degree or professional degree, or expect to be awarded a Master's degree or professional degree by 30 September 2026

\*Other conditions should be confirmed on the Guidelines for **Ph.D Program Special Selection For International Students Residing Abroad October 2026 Enrollment** at the [Graduate School of Information Science and Technology, Hokkaido University](#), which will be released in February 2026; however the [Application Guidelines for October 2025](#) can be referred for now.

## Offered by

Graduate School of Information Science and Technology, Hokkaido University in collaboration with the University of Melbourne, Australia

## Location

Sapporo, Hokkaido

\*[Laboratory of Nanomaterials and Nanoscopy](#), Research Institute for Electronic Science, Hokkaido University

## Reference

- [PhD Course application information of the Graduate School of Information Science and Technology, Hokkaido University](#)
- [Recruitment by the University of Melbourne](#)