

Getting To Know Our Students

Mah Chin Hao, PhD student



Chin Hao

is currently a full-time PhD student at the Natural Sciences and Science Education (NSSE) Academic Group.

What attracted you to a higher degree programme at NIE?

It started with my undergraduate days in Nanyang Technological University's School of Physical and Mathematical Sciences (SPMS). In 2011, I joined SPMS's summer research programme under the supervision of Professor Gan Leong Huat, who had a collaboration with Assistant Professor Roshan Deen in Natural Sciences and Science Education (NSSE) Academic Group. I began doing research in both the SPMS lab and in the NSSE chemistry lab until Professor Gan retired. By then, I had already commenced my mini final year project under Assistant Professor Roshan.

Under his supervision, I started to understand and develop an interest in polymer, a course which I previously had not excelled in. With Assistant Professor Roshan's excellent guidance and teaching, I became keen in research and in exploring the applicability of polymer into the real world. Hence, I continued my final year project again with Assistant Professor Roshan and finally enrolled in a 4-years accelerated Direct PhD programme under his supervision.

What is your research on?

My current research is on the stimuli-responsive hydrogel system where altering certain parameters like temperature, pH, ionic strength or even magnetic field, can change the behaviour and response of the hydrogel. Right now, I have completed the initial section on the characterisation of the hydrogel and moved onto the application, using my synthesised hydrogel and applying them in wastewater treatment, metal ions removal and dye removal. Another challenge I am working on is to master the technique of using a sophisticated equipment - Transmission Electron Microscopy (TEM) on nano-size materials - to reduce the macro-size hydrogel into nano-size nanogel.

What impact do you wish to make with your research?

As my hydrogel has a similar structure to one of the medicine-derivatives, I would wish to venture into drug-loading and to use it as drug delivery agent. I would also like it to be used for wastewater treatment where it will contribute to recovering clean water for wider usage.

How would you describe your interactions with NIE staff members?

I enjoy the sharing sessions and exchange of ideas with NSSE academic members. The professors are willing to listen to our problems, and always offer advice to the best of their knowledge to tackle the problems. Some professors even go the extra mile to look through numerous textbooks/journal papers to help me solve the difficulties I encounter in my research.

Other NIE faculty members are just as friendly, approachable and caring. Sometimes they would ask about my research progression as well as my general wellbeing in NIE. The non-academic and laboratory staff are helpful and caring too. It is an honour to be able to enrol as an NIE PhD student, to learn and progress in such supportive environment.

How will the programme prepare you for your career progression?

Numerous presentations and sharing sessions, where I can practise and simplify sophisticated technical jargons into laymen English terms; allowing the audience to become interested and to understand what my research is all about. This technique is extremely useful for an academic faculty member or even in attracting investors/collaborators.

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