



WHY IT MATTERS... CHEMICAL ENGINEERING



Loughborough University

Tony Tian

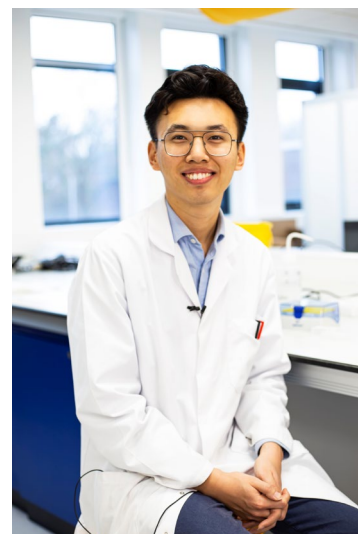
Research Student

To put my research under a big theme, I am currently working to build up the next generation drug in the pharmaceutical industry.

Diseases like cancer have been a major cause for deaths for years and the scientific community has continuously been working to change this fact.

The purity of the drugs treating these diseases is significantly important. If the drug is mixed with some other impurities or even a different form of the same chemical, the drug could change from saving people's lives into murdering lives.

Crystallisation is a traditional purification method and the final crystal product has the advantage of high purity and easiness for storage. Therefore, we want to use the crystallisation method to produce proteins and antibodies with high purity.



Post 16 Education	Higher Education
A Levels Maths, Chemistry, Physics & Further Maths	MEng Chemical Engineering

Why did you choose this research area?

Although crystallisation is an ancient method (humans were already using it ~3000 years ago), it is never been fully understood. My work is a combination of experimental studies and theoretical modelling. Experiments are quite exciting because you can actually see your discovery and I utilise my knowledge from my undergraduate degree to build up my own theories about how my results behave.

Tony's advice: 17 is a golden age and an age of exploration.

Try to explore the school subjects you like, applying to university / college is a big decision and after starting the course, the major you take is quite specialised. I am not saying it's impossible to switch after you start but you will definitely have a better transition if you choose a subject you actually enjoy.

You could explore the world. There are so many opportunities: volunteering, part-time jobs, studying abroad, and even reading a book. This exploration is not just about supporting your university/college application, it also helps you understand yourself and the world a bit better.





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Tony's experience as a student

The workload for my undergraduate degree was, honestly intense.

It is a combination of projects and lectures, giving you an opportunity to work in different groups and with different kinds of people.

My favourite subject was first year Chemistry. This subject is notoriously famous for how hard it is; the rumour is that the average mark for this course is 16 out of 100*. Interestingly this subject really reflects the distinction between studying in college and studying at university. The course name is so simple and sounds like the subject we studied at GCSE or A Level and when you take the course, you feel like you know what is going on. Even when you actually look at the exam questions, you feel like this is something you tried before, then the reality hits you hard! However we had an amazing lecturer who is great at teaching and explaining the material.

Then I realised: university is teaching me a method instead of just the knowledge. You have to really understand how it works and how it can be applied to actually do well. You can't just simply copy the equations you got from lectures, you have to make assumptions and then adapt when encountering real questions (kind of like life).

* On a side note, most universities will scale your grade based on the overall performance of the whole year. Though the average may be low, your final score may still be high.

Tony's Career

I am currently a PhD student doing research on protein crystallisation. The methods and basic knowledge taught in my undergraduate help me tremendously in my research. However, I want to specially mention an opportunity that I was offered during my undergraduate studies that led me to here; when I finished the second year of my undergraduate I got the chance to conduct research about crystallisation of amino acids in US. I absolutely enjoyed my time there and realised I wanted to do more research about it. As a result, when I graduated, I actually looked for an experimental based study of crystallisation.

Loughborough University offers undergraduate degrees in

Chemical Engineering

All Loughborough's undergraduate degrees offer the opportunity to take a placement year.