University of Helsinki

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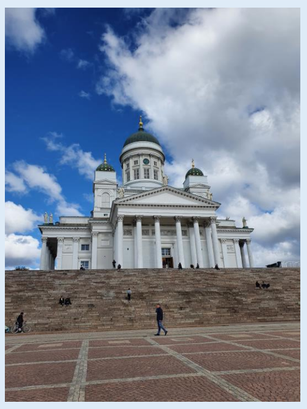
HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
UNIVERSITY OF HELSINKI

Finland

- Finland is found in the north-eastern corner of Europe and is the least densely populated country in the EU.
- Finland gained independence from Russia in 1917 and became an EU member state in 1995.
- Found on the country's south coast, Helsinki is the capital city with a population of 666,000 people.
- Education is highly valued in Finnish culture with Helsinki boasting a network of well-equipped libraries accessible to all
- There are two national parks easily accessible from Helsinki that can be visited throughout the year.
- A visa was required to study in Finland at the cost of 350 euros.



Nuuksio National park



Helsinki cathedral



Chemicum building



Kaisa House library

University of Helsinki

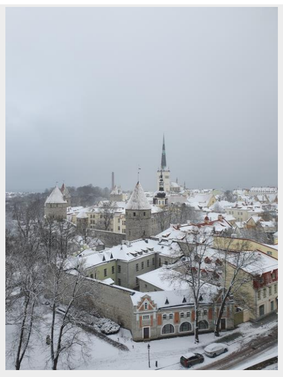
- Founded in 1640, the University of Helsinki is the oldest university in Finland
- It is home to 30,996 students of which 2,240 are international students
- There are 4 separate campuses with the science campus (Kumpula) being only a short bus journey from the city centre
- The chemistry department is in the Chemicum building
- Food is available on campus from “Unicafe” and meals are heavily subsidised for students
- There are excellent sports facilities spread across the campuses

Transport & Travel

- Being a capital city, Helsinki has many transport links to other cities
- Other Finnish cities are easily accessible by train and there are regular ferries to both Stockholm and Tallinn
- There are night trains running from Helsinki up north to Lapland
- The public transport is very reliable with the travel pass permitting the use of buses, trams, metro and trains within Helsinki
- The airport is a 40-minute train journey from the city centre



Lyhdynkantajat statues at Helsinki railway station



Tallinn

Study

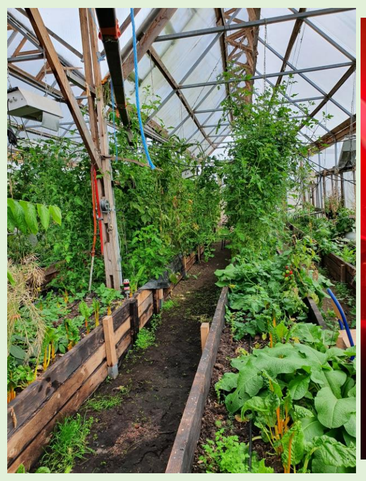
- Courses are taught in Finnish, Swedish and English. There is a wide selection of courses taught in English
- I was excited to be able to take computer science courses alongside chemistry
- There is a larger focus on coursework than at Bath with presentations and homework making up a proportion of the grade
- There are many language courses available. I took the Finnish language course for exchange students
- I completed my SYA project during the second semester in the area of nanocatalysis and was able to take to nanocatalysis course given by the lead professor of the research group

My courses:
- Sampling and sample preparation
- Determination of Metals
- Introduction to Programming
- Introduction to Networking
- Finnish beginners’ course for exchange students
- Nanocatalysis
- Green chemistry: renewable materials and sustainable energy

Social

There is a wide range of student associations and sports societies for you to join.

- I took up Aikido which is a martial art I never knew existed before coming to Finland
- I also joined Friends of the Earth Finland (Maan Ystävät). We held book clubs, had days assisting community-supported agriculture and helped launch a campaign to combat pollinator decline in Helsinki
- There is a large death metal scene in Helsinki. I would recommend going along even if it’s not your cup of tea – Just don’t forget earplugs!
- There is a yearly science faculty cruise to Stockholm which I can highly recommend



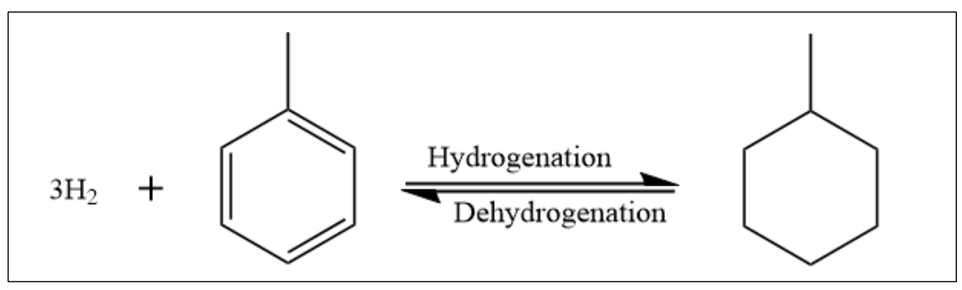




Research:

PLASMON-MEDIATED HYDROGENATION OF TOLUENE VIA SILICA SUPPORTED CORE-SHELL Au-Pt NANOPARTICLES

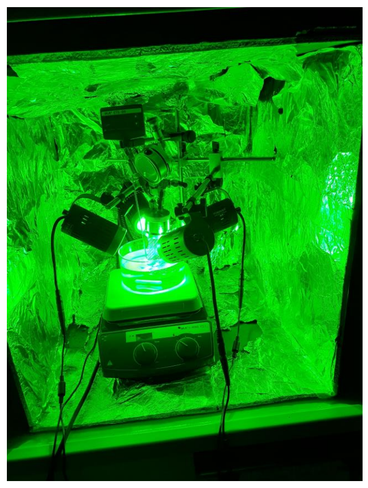
- Plasmonic catalysis utilizes localised surface plasmon resonance (LSPR) within metal nanoparticles to harvest energy from light to drive reactions.
- The plasmon-mediated hydrogenation of toluene to methylcyclohexane (MCH) has potential use as a liquid organic hydrogen carrier (LOHC) to transport green hydrogen.
- Monolayer Pt coverage ($AuPt_{100}/SiO_2$) showed the greatest activity and degree of plasmonic enhancement with 100% selectivity for MCH.
- The impact of the following parameters was investigated:
  - Pt surface loading
  - Temperature
  - H_2 Pressure
  - Reaction time
  - Solvent
  - Pt:tol molar ratio



Toluene hydrogenation reaction scheme

Method
- The catalyst and toluene were added to a pressure vessel containing 4ml of solvent. This was pressurized, placed in an oil bath and illuminated with 525nm light. The amount of toluene converted to methylcyclohexane was determined using GC.

Synthesis of $AuPt_x/SiO_2$ nanoparticles
- Au nanoparticles were synthesized via a reverse Turkevich method. The correct amount of Pt was deposited onto the Au surface and the $AuPt_x$ core-shell nanoparticles were supported on silica overnight.



Plasmonic reaction setup