Western Engineering

Chemical & Biochemical Engineering

M.Eng Research Project

Project title:	Preparation of Superabsorbent Polymers Based on Cellulose from Forestry and Agricultural Waste
Starting date:	January 1, 2025
Supervisor(s):	Sohrab Rohani
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Brief description:	In this project, we are focused on creating superabsorbent polymers (SAPs) that possess an extraordinary capacity to absorb water over 1,000 times their own dry weight. These SAPs are not only exceptional at water absorption but also excel in retaining and releasing water in a controlled manner. SAPs have a wide range of applications, especially in fields like agriculture and personal healthcare. In agriculture, where there is a growing demand for food, SAPs can make a significant impact. With the global population increasing, intensive farming practices require large amounts of arable land, water, and fertilizers. Our SAPs, with their controlled water release capabilities, have the potential to greatly reduce the use of fertilizers and water, while also enhancing soil quality. This innovation is not just about transforming agriculture; it's about addressing the pressing needs of a growing global population. SAPs also have significant potential in personal care products. With a rising global population and longer life expectancy, there is a growing demand for products like baby diapers and adult incontinence items.
Objectives:	Many existing SAPs are made from non-biodegradable fossil fuel-based materials, which poses environmental problems. This is where our project comes in—we aim to tackle this issue by extracting cellulose from agricultural and forestry waste. By modifying this cellulose, we aim to develop SAPs that are more environmentally friendly, contributing to a safer planet.
Required knowledge:	The M.Eng. student will work alone with an experienced PhD student who will provide guidance for the exxperimental execution of the project. Preliminary knowledge in chemistry and chemical engineering is required.

If interested, please contact the supervisor of the project directly for an interview.