Master thesis in nanobiomaterial research

Master thesis at the Division of Nanotechnology and Functional Materials, Department of Engineering Sciences, Ångström Laboratory. Starting from January 2020.

The Division of Nanotechnology and Functional Materials focuses on the development and investigation of nanostructured materials for use in diverse applications ranging from medical devices to energy storage. The multidisciplinary research profile of the group makes it possible to cover a wide range of nanomaterial science aspects from synthesis and characterization of novel materials to biocompatibility and toxicity studies.

Project and work description:
Current trends in wound care research move toward the development of dressings designed to treat different types of wounds and/or to specifically modulate events in the different stages of the wound healing process. In this context, wood derived nanocellulose emerges as an interesting nanomaterial with highly tunable properties that could be of value for wound care applications.

The current project builds on previous developments of novel nanocellulose-based materials that function as platforms for further modifications toward advanced wound healing applications. During this master thesis project you will work with the engineering of these materials, with the specific goal of targeting biological processes that determine the outcome of the oftentimes troublesome healing of chronic wounds. During the project you will take part of modification and characterization of the nanocellulose materials, as well as the evaluation of the response of human dermal and epidermal cells to these materials. This project will employ material characterization techniques such as scanning electron microscopy (SEM), conductimetric titration, zeta-potential determination; as well as biological elements including *in vitro* cell culturing and mapping cell response to materials by cell viability assays, microscopy and quantification of response-specific markers through enzyme-linked immunosorbent assay (ELISA) and fluorescent labeling of cells.

Qualifications: We are looking for a highly motivated student with previous experience in laboratory work and a background within biotechnology, biology, biochemistry, chemistry or equivalent.

Application: Applications should include a CV and transcript of records showing a list of completed courses and a short motivation letter, and are to be sent to Associate Professor Natalia Ferraz (natalia.ferraz@angstrom.uu.se).