

Master thesis in nanotoxicology research

Master thesis at the Division of Nanotechnology and Functional Materials, Department of Engineering Sciences, the Ångström Laboratory. Starting from January 2018.

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.

One of the research areas of the division deals with the safety aspects of nanomaterials. Our national and international projects aim at evaluating the human health toxicological hazard of nanomaterials as well as to develop new classes of nanomaterials with nanosafety as a fundamental part of the development process.

Project and work description: Nanocellulose is a nanomaterial that has gained increased attention for industrial and biotechnological applications in the last decade. The current project is part of the multidisciplinary project Forest for Future, which investigates the integration of nanocellulose in packaging applications, producing and modifying nanocellulose for functional reinforcement of plastic matrices. The safety aspects of nanocellulose are important and must be considered at an early stage thus the project identifies methodologies and strategies to ensure the environmental and health safety during the development and introduction of chemically modified nanocellulose materials onto the market.

During this master thesis project you will take part of the toxicology studies of chemically modified nanocellulose materials. These investigations will be carried out mainly through *in vitro* assays using several transformed human cell lines, evaluating cytotoxicity, inflammation and oxidative stress; in combination with standard material characterization techniques such as scanning electron microscopy (SEM), transmission electron microscopy (TEM) and zeta-potential determination.

Qualifications: We are looking for a highly motivated student with previous experience in laboratory work and a background within biotechnology, biology, 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 either of the e-mail addresses below. For more information about the project, please contact the project supervisors.

Project supervisors:

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