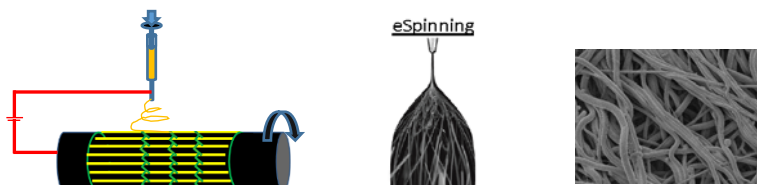


Master project

Rheologically modified chitosan solutions for facilitated electrospinning of chitosan nanofibers



Fabrication of electrospun chitosan (CH) micro or nanofibres is not an easy task. CH solutions are usually highly viscous at low concentrations and it affects the spinnability of chitosan since a higher concentration is required to form fibers. Usually acidic solvents are used to solubilize chitosan. The protonation in acidic solutions changes CH into a polyelectrolyte. High electric field of the electrospinning procedure in combination with such a charged solution results in repulsive forces among ionic groups within the polymer and inhibits the formation of continuous fibres.

Although there are several studies reporting CH fibres for various applications, very little information is available about the obstacles encountered in obtaining desired fibre properties and how to overcome them. In this project, we aim to perform some thermophysical rheological modifications on CH solutions to decrease the viscosity of CH solution and study how it affects better spinnability. You, as the master student, will learn techniques of:

1. Electrohydrodynamic procedures, especially electrospinning
2. Rheological studies on polymeric solutions
3. Electron microscopy imaging (SEM)

Supervisor(s): Fatemeh Ajalloueian, Anja Boisen

Contact: Fatemeh Ajalloueian, faaj@dtu.dk, 345C-118

Location: IDUN center of Excellence, DTU Health Tech

About IDUN

IDUN is a center of excellence funded by the Danish National Research Foundation and the Villum Foundation. The center is divided into two parts: IDUN Drug and IDUN Sensor, focusing on drug delivery and nanomechanical sensors, respectively.