BSc/MSc-project

Title: Fabrication of biodegradable microcontainers for controlled oral drug delivery

Description: The classical dosage form for oral drug delivery is macro-sized tablets. Typically, these tablets disintegrate in the intestine and the drug is released into the intestinal fluid. A substantial amount of the drug is flushed through the system and never reaches the intestinal mucosa which is the actual location for drug absorption. We develop new microdevices for drug delivery in the intestine. Small microcontainers with dimensions in the order of 100-500 µm are supposed to attach to the intestine wall and deliver the drug directly to the mucosa.

The goal of this project is to continue our research on fabrication of microcontainers with biodegradable polymers and to load the devices with a model drug (Indomethacin). After this the open side of the containers is coated with polymers that are specifically dissolved at pH corresponding to the one in the gastrointestinal tract. The triggered drug release will be characterized using optical and scanning electron microscopy. Finally, the drug release from the containers will be characterized using a microdissolution system.

Responsible institution: DTU Nanotech

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Allowed no of students per report: MSc: 1; BSc: 1-2

DTU supervisor: Assoc. Prof. Stephan Sylvest Keller