



Enzyme-powered Nano-Robots as Active Drug Delivery Systems

The development of active drug delivery systems will revolutionize the way we treat some diseases and reduce the side effects of extensive drug release in patients. This project aims design of self-propelled nanorobots made of mesoporous silica particles as the main body using enzymes to power their motion. Nanorobots will specifically transport therapeutic agents to target locations in a controllable manner *in vitro* and eventually *in vivo*.

Mesoporous silica is biocompatible and has been approved by the US drug and food administration (DFA) for biomedical use. Nanorobots will be functionalized for specific binding to target cells, and modified for triggering the release of drugs in located targets. Due to the high expectations and fast developement of this field, we aim at validating the nanotoxicity and to transfer this radically new proof-of-concept to the hospital. We seek for Robotic enthusiasts with interest in nanomaterials and drug delivery systems, specially from Chemistry, Materials science and physics. Prior experience in the synthesis of nanoparticles, mesoporous particles or drug delivery systems will be of added value.