

The Institute for Experimental Molecular Imaging (ExMI) situated at the [University Hospital Aachen](#) and the [Helmholtz Institute for Biomedical Engineering at RWTH Aachen University](#), is seeking highly motivated students to conduct their master/bachelor thesis under the department of Nanomedicine and theranostics, headed by Prof. Twan Lammers. ExMI focuses on the development of novel contrast agents, imaging techniques and therapeutic approaches to characterize and treat cancer, cardiovascular and inflammatory disorders. The first project is based on ultrasound imaging and microbubbles. Ultrasound is one of the most frequently used imaging modalities in clinical routine. It is real-time, safe, transportable and offers excellent spatial resolution and tissue contrast. With the introduction of microbubbles as contrast agents, ultrasound enables a detailed and quantitative characterization of tissue microvascularisation, perfusion and ischemia delineation to name some. Microbubbles can also carry drugs, release them upon ultrasound-mediated microbubble destruction, and simultaneously enhance vascular permeability to increase drug deposition in tissues. The aim of this project is to load various model drugs such as fluorescent and photoacoustic dyes, chemotherapeutic agents in polymeric microbubbles and to evaluate various parameters that affects drug loading and delivery. The second project focuses on Gadolinium based nanoparticles for theranostics applications. For more details, please contact the undersigned.

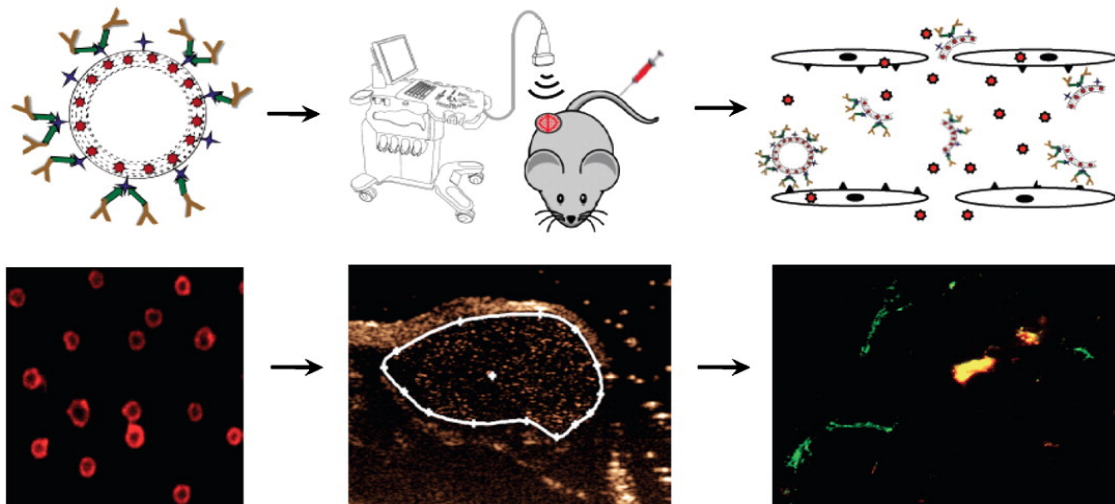


Fig. Schematic setup for image-guided, targeted and triggered drug delivery to tumors using polymer-based MB.

TECHNIQUES YOU WILL BE LEARNING:

- Polymeric microbubble synthesis and characterization
- One-step and two-step loading of model drugs in microbubbles
- B-mode and CEUS (contrast enhanced ultrasound) imaging
- Photo-acoustic imaging
- In-vitro cell culture
- Nanoparticle characterization, release studies, MRI, etc.

Skills / Experience Requirements - high motivation in research - interest in chemistry / biology - pursuing a degree in chemistry, biology, pharmacy, biotechnology or a related field. Please send your full application via e-mail to: vpathak@ukaachen.de