

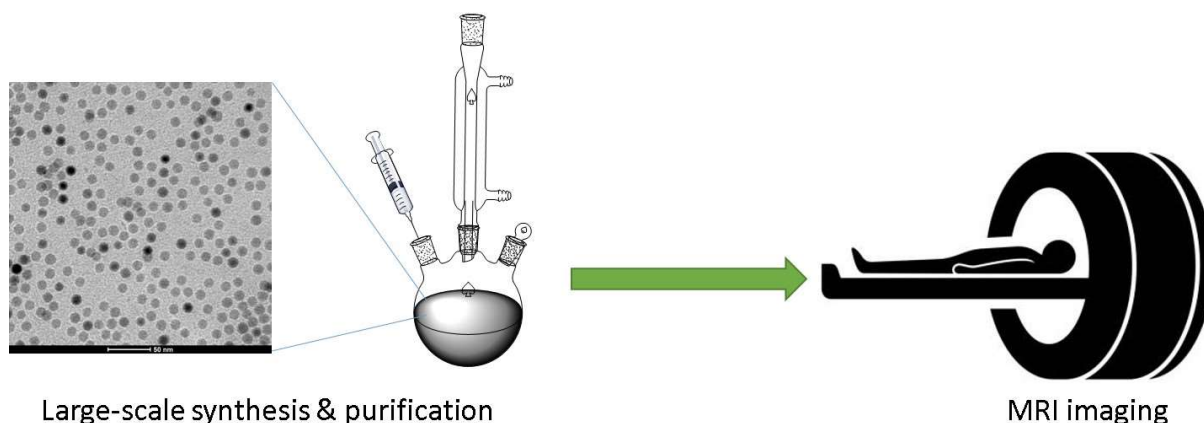
Master thesis student sought for:

Synthesizing nanoparticle contrast agents for medical imaging

For those seeking new challenges in applied nanoscience and nanomedicine

Currently, mainly gadolinium-based contrast agents are used to enhance image contrast in clinical magnetic resonance imaging (MRI). Gadolinium-based contrast agents are toxic and there is an urgent need to replace them with biocompatible and more versatile contrast agents such as superparamagnetic iron oxide nanoparticles (SPIONs) that can also be used in advanced therapies. There are methods available for large-scale synthesis of high quality SPIONs, but they require surface modification by removal of the coating they have after synthesis and replacement with a biocompatible polymer coating. However, there is a lack of suitable methods for purification of surface-modified particles. Existing methods have low throughput, are costly, have adverse environmental effects due to use of hazardous organic solvents.

The goal of this project is the development of a new method for large-scale purification of ultra-stable SPIONs for MRI with a fully automated method. This effort is part of an ongoing project to develop the next-generation imaging contrast agents together with the Department of Biomedical Imaging and Image Guided Therapy at the Medical University of Vienna (AKH).



Large-scale synthesis & purification

MRI imaging

Suggested start date: 1.2.2018

Place: Institute for Biologically Inspired Materials, Department of Nanobiotechnology, Muthgasse 11, 1190 Wien.

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