

Master's/ Semester Thesis

Scale-Up of Iron Oxide Nanoparticle Synthesis for Magnetic Separation of Biomolecules

Keywords: Iron Oxide Nanoparticles, Magnetic Separation, Biomolecules, Scale-Up, Synthesis

Project Description

Magnetic nanoparticles, particularly iron oxide nanoparticles (IONs), have shown great promise in the field of biotechnology for the separation and isolation of various biomolecules, including proteins, DNA, and other cellular components. The project aims to take this technology to the next level by scaling up the synthesis process to a 20-liter scale. This scale-up is crucial for meeting the growing demand for high-quality, specialized nanoparticles in industrial biotechnology applications. By successfully scaling up the synthesis process, we aim to make magnetic separation techniques more accessible, efficient, and cost-effective. The synthesized nanoparticles will be rigorously analyzed using state-of-the-art analytical techniques to ensure their physicochemical properties meet the requirements for effective magnetic separation in biotechnological settings.

Please send your application along with your CV and current grade transcript to the email address below.

Research objectives

1. Comprehensive literature review on iron oxide nanoparticle synthesis
2. Synthesis scale-up
3. Characterization (e.g. TEM, SQUID, DLS)
4. Synthesis optimization

Profile

- Structured and independent work
 - Creativity and craftyness
 - Bioprocess-, Chemical-, Mechanical-, Medical-, engineering, or similar
- Ideal, but not required:*
- Lab experience

Start: flexible

