

PhD Positions at nM²-Lab 2024

Position

The design and investigation of novel magnetic nanocomposites for environmental applications

Place: Disciplinary Domain of Science and Technology, Faculty of Technology, Department of Materials Science and Engineering, Uppsala university, Sweden.

Call deadline: 29.11.2024

Web site: [WISE Doctoral \(Phd\) position in Solid State Physics](#)

Supervisor: Prof. Tapati Sarkar and Prof. Davide Peddis

Magnetic nanocomposites have garnered significant attention. Their tunable properties allow for precise control over morpho-structural and magnetic response across multiple fields. In this context this PhD project aims to synthesize and characterize functional magnetic nanocomposites and investigate their potential as nano-adsorbents and photocatalysts for the removal of pollutants from water via adsorption and/or catalysis. Solution-based synthesis techniques will be used to synthesize nanocomposites that will contain magnetic components, preferably iron oxides, to enable magnetic separation. The synthesized materials will be characterized by morphological/structural analysis, surface investigations, and detailed magnetic measurements. The catalytic properties of the nanocomposites and their adsorption efficiencies will be investigated to determine their ability to remove water contaminants by measuring adsorption isotherms and performing kinetic studies. The project also includes the development of a magnetic separator system for separation experiments to measure the possibility of recycling and reusing the synthesized materials.

The project is a collaboration between the Division of Solid State Physics and Division of Nanotechnology and Functional Materials, at the Department of Materials Science, Uppsala University, and the University of Genoa, Italy. There will be opportunities to interact with other research groups within the WISE program by actively participating in conferences and workshops organized by WISE and as a member of the WISE Graduate School.

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