

## Science and Engineering Research Program Project Description



**Institute:** Institute of Multiphase Processes

**Project title:** Magnetic hydrogels for tissue engineering

**Project description:** The integration of magnetic nanoparticles into hydrogels allows precise control of the distribution of cells and bioactive molecules, while responding to external magnetic fields for targeted delivery of therapeutic agents. Hydrogels are essential for tissue engineering due to their biocompatibility, biodegradability, and tunable physical properties. In addition, natural extracts from medicinal plants possess multiple therapeutic properties due to their bioactive compounds, including anti-inflammatory, antioxidant, antibacterial and regenerative effects. The aim of this project is to incorporate natural extracts into magnetic hydrogels and characterise their physical, chemical and release properties. The student in this project will be involved in the preparation of the hydrogel in all process steps as well as in the final characterisation. The student will also be involved in the evaluation and interpretation of the data.

**Required skills:** laboratory work, statistical analysis, literature research.

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