



Ph.D. Student Position

Magnetically triggered drug nanocapsules in hydrogels

Smart wound dressings require ways to release antimicrobials with precise timing and dose. The dose should be high enough to kill all bacteria present but not be continuously applied to induce antimicrobial resistance. The administration of antibiotics, if needed, should take place days after closing the wound dressing. It can, therefore, not be continuously released.

We have shown that hybrid nanoscale capsules of polymers or lipids with tiny magnets put in their shells can be used to trigger the release and control the release rate using magnetic fields. Magnetic fields are harmless to and penetrate both the body and wound dressings.



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MARIE SKŁODOWSKA-CURIE ACTIONS

Your future job

You will improve the magnetically actuated nanocapsules to make them robust, stable over a long time and demonstrate the encapsulation of potent antibiotics while still controlling their release magnetically.

You will encapsulate the nanocapsules in wound dressing materials and study the effect of antibiotics release on bacteria in contact with the wound dressing and the cytotoxicity effects on cells.

A successful demonstration means implementing the concept in wound dressing prototypes developed by STIMULUS.

What we offer

Work in a transdisciplinary research group of physicists, chemists, and microbiologists, in the Institute for Biologically inspired materials, University of Natural Resources and Life Sciences, Vienna. At your disposal are the state-of-the-art labs of the Institute for Biologically inspired materials, including synthetic chemistry labs, TEM, SEM, confocal microscopy, colloidal techniques, microbiology, and cell culture facilities.

A European, transdisciplinary, structured doctoral education through the Marie Skłodowska-Curie European Training Network STIMULUS. You will spend extended time performing research and receiving training with our partners.

What you should do now

Suppose you are interested, and you have or will finish the equivalent of a European master's degree next year in physics, chemistry, materials science, or related discipline. In that case, you can apply to us by submitting:

- Cover letter including your motivation to apply for the chosen position and research interests
- Curriculum Vitae
- Diploma for the highest finished degree (expected date of graduation if your master's degree is not completed)
- Full transcript of grades for your university studies (with grade key in English)
- Reference letters or reference contact persons

Make sure that you submit all the requested documents, or we will not consider your application. The application should be submitted in English; we might additionally ask you to provide a TOEFL test. You cannot have resided in Austria for more than 12 months during the last 3 years to be eligible.

We especially encourage female applicants, applicants from minority groups, and applicants with disabilities.

You can find more information on the STIMULUS consortium and on the selection process on the [STIMULUS website](#). We plan the interviews for the second half of February 2021, with the possibility to start soon after that. **Applications are welcome until the 31st of January 2021.**

Employment conditions

- 40 hours per week for 36 months.
- Gross salary: € 2,929/month (following the terms of the collective agreement for university staff, B1), plus additional mobility (€ 1,200/month) and (when applicable) family allowance (€ 500/month).

Contact and submission of applications

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