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# PhD student position in Nanotechnology with focus on 3D printing of oral dosage forms utilizing microneedle injections

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**Uppsala University is a comprehensive research-intensive university with a strong international standing. Our ultimate goal is to conduct education and research of the highest quality and relevance to make a long-term difference in society. Our most important assets are all the individuals whose curiosity and dedication make Uppsala University one of Sweden's most exciting workplaces. Uppsala University has over 54,000 students, more than 7,500 employees and a turnover of around SEK 8 billion.**

## **Admission to PhD studies in the subject Engineering Science with Specialization in Nanotechnology and Functional Materials.**

The Division of Nanotechnology and Functional Materials (NFM) is part of the Department of Materials Science and Engineering at the Ångström Laboratory. Researchers at NFM have extensive experience in research into additive manufacturing, biocompatibility and nanosafety, organic energy storage, as well as development of functional porous materials.

The Department of Pharmacy at Uppsala University is an interdisciplinary environment at the center of the pharmaceutical arena. With frontline research, first-class education and extensive collaborations we constitute a driving force in the development of our academic field. In this inspiring environment our rich diversity of research groups, several of international prominence, develop and conduct work of great scientific importance. Among our core competences are computational modelling and simulations, in vitro ADME models, advanced in vivo methods and

societal aspects from optimizing the use of drugs in individuals to societal pharmaceutical policies. Together, we form a unique cluster of academic competences within pharmaceutical sciences, playing a key role in shaping the future of pharmacy in both Sweden and globally.

[Read more about our benefits and what it is like to work at Uppsala University](#)

### **Project description**

The project is linked to the **Uppsala Diabetes Centre**, a knowledge forum on diabetes led and run by Uppsala University. This new project will be carried out both at the Division of Nanotechnology and Functional Materials and at the Department of Pharmacy with the aim of producing 3D printed oral dosage forms that utilizes microneedles for administration of insulin and GLP-1 analogues for efficient treatment of diabetes.

In the project we will design and print prototype microneedle-based oral dosage forms suitable for efficient delivery of macromolecular drugs. We also aim to identify a suitable production technique and to identify excipient combinations and to select microneedle-based dosage forms and explore them for loading, release and systemic delivery of APIs. The project will result in proof-of-concept data around microneedle-based delivery of macromolecules.

### **Work duties**

The main duties of doctoral students are to devote themselves to their research studies which includes participating in research projects and third cycle courses. The work duties can also include teaching and other departmental duties (no more than 20%).

The work tasks in this project will include use of additive manufacturing techniques such as two-photon polymerization and extrusion, design and development of formulations, drug loading, drug release, and characterization of dosage forms.

### **Qualification requirements**

Master of Science degree in chemical engineering, pharmacy, materials chemistry, materials science, nanotechnology or related fields.

We require very good oral and written proficiency in English.

### **Additional qualifications**

It is positive, although not a requirement, if the candidate has some experience in one or more of the following fields: CAD, additive manufacturing, drug formulation or characterization techniques

Personal qualities, such as the ability to manage and run scientific projects and to simultaneously interact with other researchers are very important. The applicant needs to be determined, structured and able to work effectively both individually and in groups.

### **Admission requirements**

To meet the entry requirements for doctoral studies, you must

- hold a Master's (second-cycle) degree
- have completed at least 240 credits in higher education, with at least 60 credits at Master's level including an independent project worth at least 15 credits, or
- have acquired substantially equivalent knowledge in some other way.

Rules governing PhD students are set out in the Higher Education Ordinance chapter 5, §§ 1-7 and in [Uppsala University's rules and guidelines](#).

### **Instructions for application:**

Your application should include the following:

- 1) A brief personal letter where you briefly describe yourself, why you want to become a PhD student and why you are suitable for the position
- 2) A CV/résumé (max 2 pages)
- 3) Certified copies of your Master's degree and course grades. Students getting their degree in Spring 2023 are also welcome to apply.

4) Copies (or drafts thereof) of thesis work and other documents, such as publications, which you wish to invoke.

5) Name and contact information to two persons who have agreed to act as references for you, alternatively, letter(s) of recommendation. Your relationship to each of the references should be stated.

### **About the employment**

The employment is a temporary position according to the Higher Education Ordinance chapter 5 § 7. Scope of employment 100 %. Starting date as soon as possible or as agreed upon. Placement: Uppsala.

**For further information about the position please contact:** Dr. Jonas Lindh [jonas.lindh@angstrom.uu.se](mailto:jonas.lindh@angstrom.uu.se) or Professor Christel Bergström, [christel.bergstrom@farmaci.uu.se](mailto:christel.bergstrom@farmaci.uu.se)

**Please submit your application by 15th of May 2023, UFV-PA 2023/1501.**

Are you considering moving to Sweden to work at Uppsala University? [Find out more about what it's like to work and live in Sweden.](#)

Please do not send offers of recruitment or advertising services.

**Submit your application through Uppsala University's recruitment system.**

**Placement:** Department of Materials Science and Engineering

**Type of employment:** Full time , Temporary position

**Pay:** According to local collective agreement for PhD students

**Number of positions:** 1

**Working hours:** 100%

**Town:** Uppsala

**County:** Uppsala län

**Country:** Sweden

**Union representative:** ST/TCO tco@fackorg.uu.se

Seko Universitetsklubben seko@uadm.uu.se

Saco-rådet sacco@uadm.uu.se

**Number of reference:** UFV-PA 2023/1501

**Last application date:** 2023-05-15

**Apply for position**