

The Department of Natural Sciences and Sustainable Resources, Institute of Biochemistry, is currently seeking a

Postgraduate Research Associate

Repurposing enzyme activities for polymer degradation (COE Project PhD 3.8)

assigned to research program *Biocatalytic processes for sustainable synthesis* of **Cluster of Excellence (CoE) Circular Bioengineering** <https://www.circularbioengineering.at>

(Reference code 206)

Extent of employment: 30 hours per week

Duration of employment: 1st of November 2025, limited to 31st of October 2029

Workplace: BOKU University, 1190 Vienna, Muthgasse 18

Allocation in compliance with the Collective Agreement for University Staff to job group:
B1

Gross monthly salary: (depending on previous eligible experience) at least: € 2.786,10
(payable 14 times per year)

About the Position:

Enzymes are highly powerful and potent tools in nature. In this project we want to repurpose ROS producing enzymes for potential use in degradation of synthetic polymers. Candidate enzymes will be thoroughly studied to understand their structure function relationship to the fullest in order to have a solid basis for engineering approaches that ultimately yield highly efficient and stable “blockbuster” enzymes.

Background: The degradation of biopolymers requires a suite of specific enzymes secreted by plant biomass degrading microorganisms. For synthetic polymers, especially the difficulty to depolymerize polyolefines, like polyethylene or polypropylene, such specific enzymes have not been evolved by organisms yet. Instead of combining a series of enzymes with different activities, the proposed strategy involves enzymes producing reactive compounds that start depolymerization reactions of recalcitrant polymers. Bacterial ROS producing oxidoreductases will act as a starting point in this project.

Aims: In this project, enzymes producing ROS species, hypohalous acids and other radicals will be screened, produced, characterized and engineered. Special focus will be put on the thermal and turnover stability of these “blockbuster” enzymes and various methods will be used to

engineer stable producers of highly reactive species. The produced enzymes will be distributed in the COE to be studied with biopolymers in Program 1 and polyolefines in Program 3.

Methods:

- Genomic-, microorganism- and activity screening methods
- Enzyme expression and purification
- Biochemical characterization (protein analysis and kinetic measurements)
- Protein engineering methods
- Application in processes and process engineering

Required skills and qualifications

- Diploma degree in Chemistry, Biotechnology, Molecular Biology or other equivalent university degree
- Language skills: very good English skills
- Experience with molecular biology and protein biochemistry (cloning, protein expression, purification, enzymatic assays, etc.)
- Excited to work in molecular enzymology

Applications can be submitted until: 21st of October 2025

University of Natural Resources and Life Sciences Vienna seeks to increase the number of its female faculty and staff members. Therefore qualified women are strongly encouraged to apply. In case of equal qualification, female candidates will be given preference unless reasons specific to an individual male candidate tilt the balance in his favour.

People with disabilities and appropriate qualifications are specifically encouraged to apply.

Please send your job application to Personnel Management, University of Natural Resources and Life Sciences, Peter-Jordan-Straße 70, 1190 Vienna; E-Mail: recruiting@boku.ac.at.

(Reference code: 206)

- Please use this **Application form – PhD-positions**
- Please note that we will not be able to process your application without this form and unless it is sent to recruiting@boku.ac.at
- Following additional documents have to be submitted as .pdf files:
 - Curriculum vitae
 - Copy of certificates from the applicant's bachelor and master/diploma studies
 - A translation of the documents is necessary if the original documents are not in English or German

For information on the further application procedure – online hearing and interviews – see
<https://www.circularbioengineering.at/jobs>

We regret that we cannot reimburse applicants travel and lodging expenses incurred as part of the selection and hiring process.

www.boku.ac.at