



**Technische Universität Berlin**



Technische Universität Berlin offers an open position:

## **Student assistant (40 hours per month)**

**Fakultät III: Prozesswissenschaften, Institut für Prozess- und Verfahrenstechnik, FG Dynamik und Betrieb technischer Anlagen**

**Reference number:** III-SB-0053-2025 (starting at the earliest possible / limited to 14.04.2028 / closing date for applications 01/08/25)

### **Working field:**

As part of the trilateral DFG project "CarDiBi", the upgrading of biogas through reactive CO<sub>2</sub> absorption in Rotating Packed Beds (RPBs) is being investigated. RPBs belong to the class of HiGee (High Gravity) technologies, which are characterized by rotating internal components (e.g., packing elements). The rotation generates high centrifugal forces, which enable significant process intensification.

Within the scope of the project, a rigorous steady-state non-equilibrium (rate-based) model is to be developed for the systematic investigation of CO<sub>2</sub> absorption in such a system. The model will then be assessed for robustness via a sensitivity analysis and validated through experimental investigations using an in-house RPB setup. To this end, an existing unit for purifying a gas stream (CH<sub>4</sub>/CO<sub>2</sub>) must be modified for operation within an ATEX-compliant environment, followed by the execution of absorption experiments.

The student will have the opportunity to gain in-depth experience in both the comprehensive modeling of a process engineering system and the commissioning of such an apparatus. The student is expected to provide support with the following project tasks:

- Contributing to development, simulation, and numerical investigation of robustness for the reactive CO<sub>2</sub> absorption from biogas in Rotating Packed Beds (RPBs) using the software MOSAICmodeling and AMPL. (55%)
- Supporting the planning, setup, and execution of experimental work, e.g., for model validation (35%)
- Literature research (e.g., on topics such as non-equilibrium modeling, mass transfer, absorption) (10%)

### **Requirements:**

Must criteria:

- Solid knowledge of (process) modeling of chemical or process engineering systems/equipment (e.g., separation units such as columns, or reactors)
- Basic understanding of process engineering and mass transfer operations (e.g., absorption or distillation)
- Basic experience in conducting laboratory experiments or operating technical systems
- Good command of German and/or English or desire to acquire the missing knowledge

Can criteria:

- Basic knowledge of numerical methods
- Basic programming skills (e.g., in Python, MATLAB, or similar)

**Party responsible for specialist area / point of contact for job posting:** Prof. Dr.-Ing. Jens-Uwe Repke / Mary Messer - sekr@dbta.tu-berlin.de

**Period of employment:** immediately limited to 14.04.2028

**Apply to:** sekr@dbta.tu-berlin.de

Please submit your written application including cover letter, your CV, certificate of enrollment, and where applicable, current transcript of records, with the reference number to the place of employment indicated above.

In the interest of promoting equality opportunities for men and women, applications from women with suitable qualifications are particularly encouraged.

The vacancy is also available on the internet at <https://www.personalabteilung.tu-berlin.de/menue/jobs/>

