



Prof. Dr.-Ing. Markus Schubert
Sara Marchini, M.Sc.
Project: Master Thesis/Internship
markus.schubert@tu-dresden.de
sara.marchini@tu-dresden.de



Development and Characterization of Innovative Ceramic Packings

Our research group is dedicated to advancing technologies in chemical process engineering, focusing on the development of sustainable and efficient material solutions. The use of ceramic packings for absorption and distillation processes is limited by their current design, which is often thick, heavy and costly, leading to decreased hydrodynamic efficiency in industrial applications. Together with our research partner, we want to implement and test novel packings from ceramic sheets based on a novel manufacturing process that are thinner, lighter and more cost-effective. This thesis will explore the potential of these novel ceramic packings and quantify the improvement that they will bring to column operations.

Thesis Objectives:

- Assess the downsides of currently available ceramic packings in a comprehensive literature review.
- Conduct detailed experimental studies to assess the pressure drops and mass transfer coefficients of the newly developed ceramic packings. Comparisons will be made with traditional packings to highlight improvements.
- Evaluate packings of different geometries and porosity.
- Evaluate the structural integrity and durability of the lighter, thinner ceramic materials.

Requirements:

- Currently enrolled in a Master's program in Chemical Engineering, Materials Science or a related field.
- Familiarity with fluid dynamics and chemical process equipment.
- Detail-oriented with analytical thinking, proactive in problem-solving, and motivated by innovation in engineering solutions.

