

Master's or Bachelor's thesis / Internship

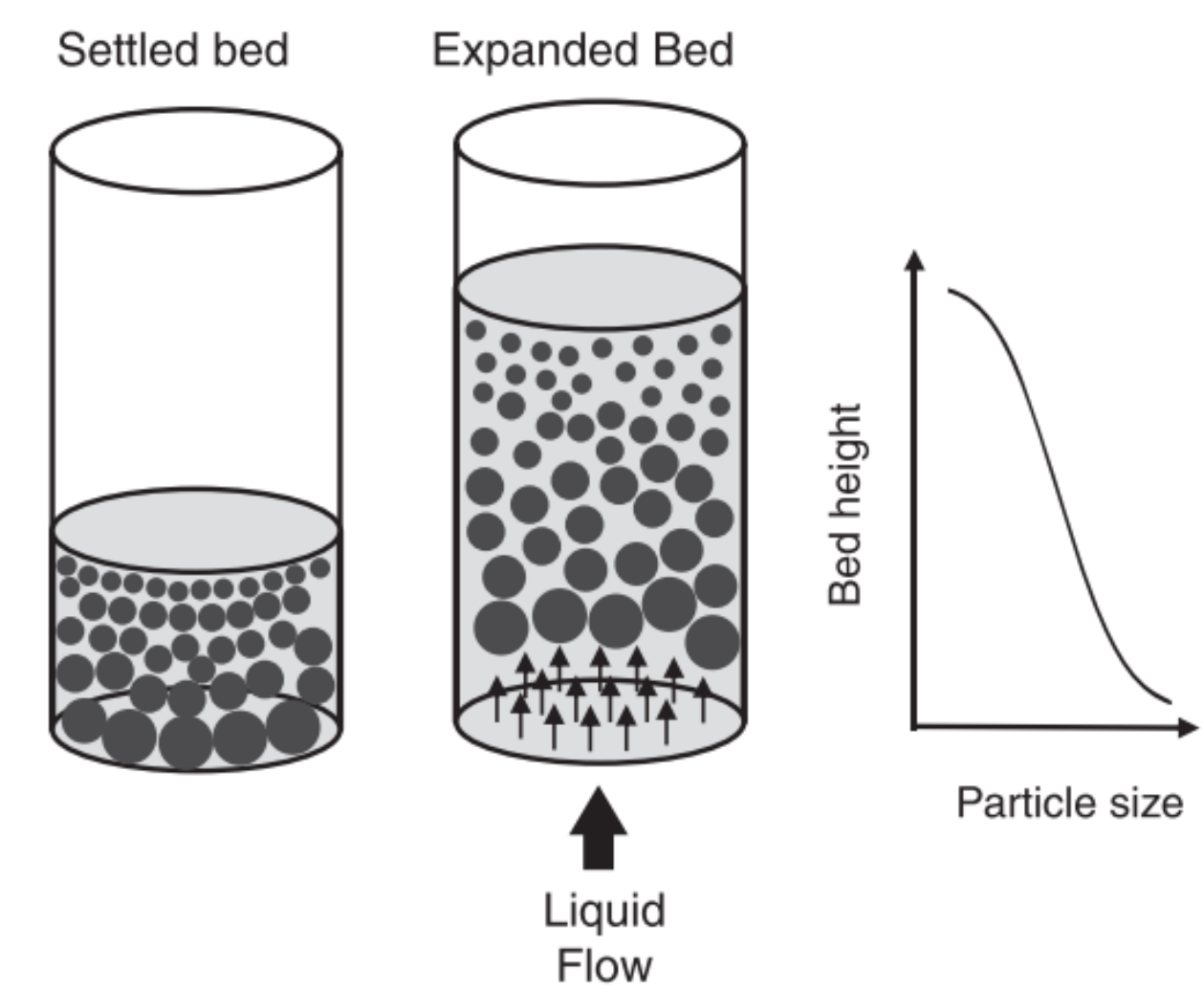
Construction of an EBC inlet

Keywords: CAD model, 3D printing, simulation, Expanded Bed Chromatography

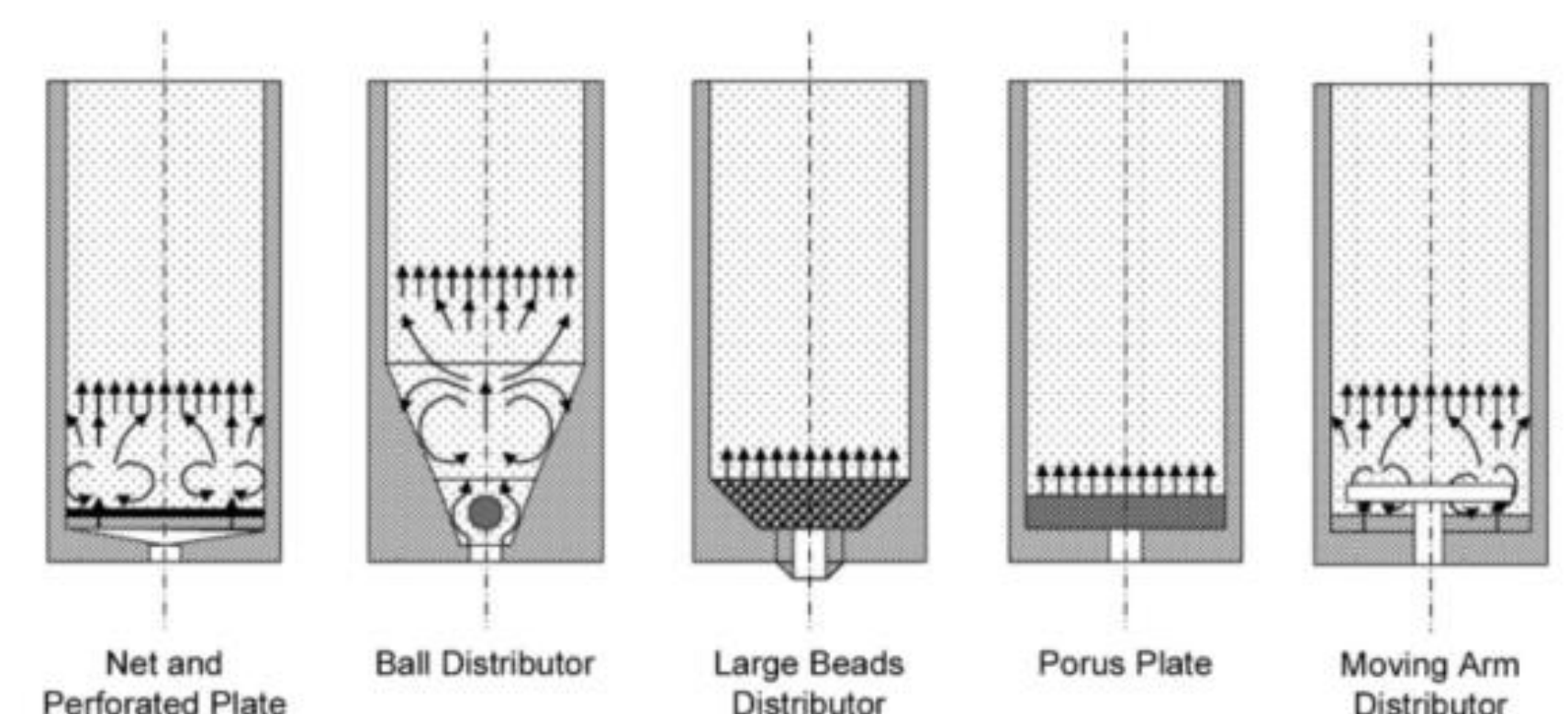
Project Description

Expanded Bed Chromatography (EBC) is a technique used for purifying substances such as proteins from a crude feedstock. The separation matrix consists of particles of various sizes within a vertically arranged column. For the purification, the particles are fluidized from below with a liquid. Based on their size, density, and the flow rate, the particles ascend to specific levels, forming a stratified expanded bed.

For stable bed expansion, a uniform fluid distribution across the inlet's column diameter is essential. Currently, a porous plate is used, which shows nonuniform fluid distribution. Therefore, a new inlet design is sought that is compatible with commercial column systems and doesn't show dead zones.



Koppejan et al. (2018), DOI: 10.1002/jctb.5595.



Jin (2015),
https://www.ispe.gr.jp/ISPE/02_katsudou/pdf/201510_en.pdf

Profile

- Structured and independent way of working
- Joy of learning
- Experiences in CAD modeling

- Starting date: From now
- Language: English, German

Tasks

- Designing 3D models of different inlet designs through CAD software
- Simulation of the flow distribution through the inlets into the column
- Building the inlets, e.g., through 3D printing
- Experimental validation of the simulations