TECHNISCHE UNIVERSITÄT DRESDEN

HZDR

Fakultät Maschinenwesen Inst. Verfahrenstechnik u. Umwelttechnik, Prof. Transportprozesse an Grenzflächen

Prof. Dr. rer. nat. et Ing. habil.
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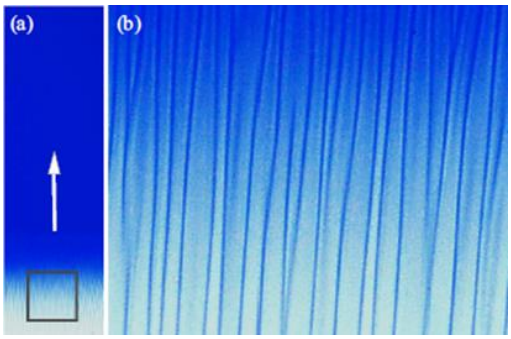
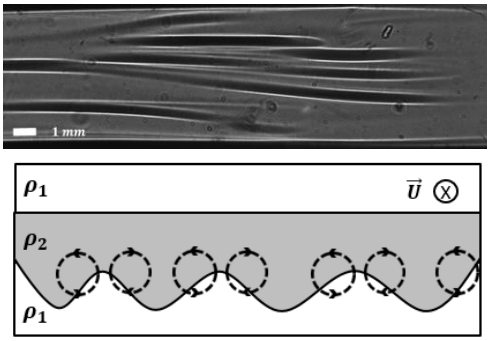
Experimental investigation of a buoyancy driven instability during a horizontal miscible displacement

Diplomarbeit/Beleg/SHK

Flow instabilities comprise a field of research that constantly calls for new challenges. They are present in numerous technological applications (porous media, reactive mass transfer, CO2 capturing). The potential intern/diplomand will be asked to experimentally investigate a density-driven instability in horizontal Hele-Shaw geometries. The main quest would be to decipher the effect of the geometry, fluid properties (μ, ρ) and flow conditions (*Pe)* on the existence and scaling of the instability.





The trainee is expected to:

- Conduct experiments with parameter variation of the flow conditions and fluid properties.
- Image post-processing.
- Comparison with existing experiments & literature.

Requirements:

- Study in process engineering, chemical engineering, mechanical engineering (or relative field)
- Basic fluid dynamics and transport phenomena knowledge
- Experience in flow visualization and image processing is highly valued but not a prerequisite
- Motivation, interest in the field, lab skills, ability to solve problems, good academic track records

Conditions:

- duration min. 3 month, start: ca. Apr 2022, workplace: TU Dresden

References

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DRESDEN concept
Exzellenz aus Wissenschaft und Kultur

[1] Haudin et al. (2014) Phys. Fluids **26**(4) 044102 doi.org/10.1063/1.4870651