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Pattern formation controlled by friction and viscous forces in deformable granular media

Thursday, 3 June 2021 19:30 (15 minutes)

We study the invasion patterns when injecting the water with the injection rate of different magnitude into a layer of dry hydrophobic beads contained in a Hele-Shaw cell. We observed a decrease of characteristic finger width with the increase of granular volume fraction, an increase of number of fingers invaded simultaneously with the increase of injection rate, and an increase of finger width with the increase of the flow rate inside the finger. The invasion patterns are reproduced in simulation, and the theoretical models to explain and predict these observations are developed.

Time Block Preference

Time Block A (09:00-12:00 CET)

References

- [1] James M Campbell, Deren Ozturk, and Bjørnar Sandnes. Gas-driven fracturing of saturated granular media. *Phys. Rev. Appl.*, 8(6):064029, 2017.
- [2] B Sandnes, H A Knudsen, K J Maly, and E G Flekky. Labyrinth patterns in coned granular-fluid systems. *Phys. Rev. Lett.*, 99(3):038001, 2007.

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Session Classification: MS6-B

Track Classification: (MS6-B) Interfacial phenomena in multiphase systems