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Type: **Oral Presentation**

Pore-scale imaging of hydrogen in porous media

Tuesday, 31 May 2022 14:50 (15 minutes)

Green hydrogen geological storage and production is a strategy for mitigating greenhouse gas emissions and climate change. However, there is still a lack of serious mechanisms research of how hydrogen trapping and migrations in the porous media of the rock when considered the buoyancy effect can not be ignored. Through a series of microCT in situ two-phase drainage and imbibition experiments on a sandstone sample, we demonstrate that the pore-scale phase configurations, curvatures, and contact angles are different for hydrogen compared to other traditional gas (e.g. nitrogen). In addition, we found that hydrogen is less wetting gas, and its buoyance forces can be higher than the capillary forces, where the capillary trapping mechanisms will be invalid.

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Country

United Kingdom

References

Time Block Preference

Time Block B (14:00-17:00 CET)

Participation

In person

Primary authors: ZHANG, Yihuai; BIJELJIC, Branko (Imperial College); BLUNT, Martin (Imperial College London)

Presenter: ZHANG, Yihuai

Session Classification: MS06-A

Track Classification: (MS06-A) Physics of multiphase flow in diverse porous media