



Contribution ID: 20

Type: **Poster Presentation**

# Characterization of water transport in building porous materials based on an analytical spontaneous imbibition model

*Tuesday, 31 May 2022 09:20 (1h 10m)*

Spontaneous imbibition controls the movement of water into natural and engineered porous such as building and construction materials, including stone, concrete and cement. We measured the sorptivity –the imbibition rate –for a homogeneous Bentheimer sandstone for both initially dry and wet conditions for three replicate experiments and matched the measurements to an analytical model to determine the wetting phase (water) relative permeability. We suggest that using imbibition rate is a robust, quick and accurate way to estimate water relative permeability, for it avoids uncertainties inherent in traditional steady-state measurements. Furthermore, this then allows a complete mathematical treatment of imbibition, to predict the saturation profile as a function of time and the sorptivity for different rock and fluid properties.

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## Country

China

## References

## Time Block Preference

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

## Participation

Online

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**Session Classification:** Poster

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