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## RESEARCH FIELD

Coupled Thermo-Hydro-Mechanical-Chemical (THMC) processes in saturated and unsaturated (fractured) porous media, and upscaling flow and transport parameters from pore or core scale to reservoir scale, using both laboratory experiments, numerical modelling, and field observations.

**Applications:** geothermal energy extraction, geologic waste/energy storage, enhanced oil recovery, and groundwater management.

## EDUCATION

- 2006-2010** Ph.D. in Environmental Engineering, ETH Zurich  
Supervisor: Prof. em. Dr. Wolfgang Kinzelbach
- 2003-2006** M.S. in Thermal Science & Energy Engineering, Univ. of Science & Technology of China (USTC)
- 1999-2003** B.E. in Thermal Science & Energy Engineering, USTC
- 1999-2003** Secondary B.S. in Electronic Engineering & Information Science, USTC

## CURRENT AND PREVIOUS POSITIONS

- 2020-now** Executive Scientific Collaborator I (Permanent Oberassistent), GEG Group, Institute of Geophysics, ETH Zurich
- 2017-2019** Senior Assistant II (Oberassistent), GEG Group, Institute of Geophysics, ETH Zurich
- 2015-2016** Senior Assistant I (Oberassistent), GEG Group, Institute of Geophysics, ETH Zurich
- 2013-2014** Research Fellow, School of Civil Engineering, Univ. of Queensland, Australia
- 2010-2013** Postdoc, Department of Earth Sciences, Univ. of Minnesota, United States

## TEACHING ASSIGNMENT

- Spring semester** **Geofluids** (651-4240-00L), Graduate level, ETH Zurich  
Responsible lecturer since 2017
- Fall semester** **Groundwater** (651-4023-00L), Graduate level, ETH Zurich  
Co-taught in 2015 and 2016; Responsible lecturer since 2017
- Summer** **Geophysical Field Lab** (651-3581-00L), Undergraduate level, ETH Zurich  
Co-taught (the geothermal part) since 2016
- 2004-2006** **Computational Thermal Sciences**, Graduate level, USTC  
Teaching assistant

## MAJOR COLLABORATIONS AND GRANTS

### *Principal investigator*

- 2020-2021** 4D optical quantification on thermally-induced density-driven flow in transparent porous media (**100 kCHF**, Funding agency: SNSF)
- 2019-2020** Recommendation for the sustainable of shallow geothermal energy in Xiong'an (**192 kCHF**, Funding agency: the Swiss Agency for Development and Cooperation (SDC))
- 2017-2021** Solute and particle swarms in bifurcating fractures: A new paradigm in imaging and characterizing flow structures and solute transport in three dimensions (**273 kCHF**, Funding agency: SNSF)
- 2017-2020** Evolution of permeability and porosity due to mineral precipitation in natural and/or artificial granite fractures (**224 kCHF**, Funding agency: ETH Zurich)
- 2006-2006** Innovation Fund of Univ. of Science & Technology of China (**10 kCNY**, Funding agency: USTC)

### *Co-principal investigator*

- 2018-2020** Geosystem Reactive Transport (GREAT) Visualization Lab (**582 kCHF**, Funding agency: SNSF)

**2016-2020** Simultaneous visualization of fluid flow and mineral precipitation in fractured porous media – a novel method with implications for geothermal energy use and carbon storage (**195 kCHF**, Funding agency: ETH Zurich)

*Project executor*

**2018-2021** Stability test of “mud” plug in fractures (**110 kCHF**, Funding agency: Swiss Federal Office of Energy) Sub-contracted from the ZoDrEx: Zonal Isolation, Drilling and Exploitation of EGS Projects

**2016-2019** Acid stimulation in laboratory flow-through experiments (**303 kCHF**, Funding agency: the European Union’s Horizon 2020 )  
Sub tasks in DESTRESS: Demonstration of soft stimulation treatments of geothermal reservoirs

*Project participant*

**2014** Hydraulic connectivity between mines and adjacent river and groundwater systems in the Hunter River Valley (**712 kAUD**, Project PI: Prof. Ling Li, Funding agency: ACARP, Australia)

**2014** Multi-scale, two-phase flow in complex coal seam systems (**595 kAUD**, Project PI: Prof. Ling Li, Funding agency: ARC, Australia)

**2010-2013** An integrated experimental and numerical study: Developing a reaction transport model that couples chemical reactions of mineral dissolution/precipitation with spatial and temporal flow variation in CO<sub>2</sub>/brine/rock system (**1937 kUSD**, Project PI: Prof. Martin O. Saar, Funding agency: U.S. Department of Energy)

**2006-2010** 3D-Visualization and modeling of multi-phase phenomena in porous media (PhD thesis project, Project PI: Prof. Wolfgang Kinzelbach, Funding agency: ETH Zurich)

**2003-2006** A mechanism study of granular segregation (Master thesis project, Project PI: Prof. Qing-Song Wu, Funding agency: CNSF)

## AWARDS

**2011** ETH medal for ETH excellent PhD dissertation

**2008** China Anhui Province Master thesis medal

**2005** Samsung Scholarship

## SUPERVISION OF STUDENTS

*Postdoc (1)*

**2020-now** Pierre Léard, responsible supervision, ETH Zurich

*Doctorate students (7)*

**2018-now** Isamu Naets, responsible supervision, ETH Zurich

**2017-2020** Marina Lima, responsible supervision, ETH Zurich

**2016-2020** Mehrdad Ahkami, responsible supervision, ETH Zurich

**2016-2020** Jin Ma, responsible supervision, ETH Zurich

**2018-2019** Anniina Kittilä, responsible supervision, ETH Zurich

**2013-2014** Ye Ma, daily supervision, Univ. of Queensland

**2011-2013** Benjamin Tutolo, daily supervision, Univ. of Minnesota

*Visiting doctorate students (2)*

**2019-2021** Xintong Wang, from Shandong University (China), responsible supervision at ETH Zurich

**2018-2019** Zhiqiang Li, from Shandong University (China), co-supervision at ETH Zurich

*Master students (3)*

**2018** Isamu Naets, co-supervision with Daniel Vogler, Anozie Ebigbo, Hoda Javanmard, and Martin O. Saar, ETH Zurich

**2018** Riccardo Rosati, co-supervision with Karim Khayrat and Patrick Jenny, ETH Zurich

**2016** Claudia Deuber, co-supervision with Martin O. Saar and Anniina Kittilä, ETH Zurich

*Bachelor students (2)*

**2019** Diego Denzler, co-supervision with Jin Ma, ETH Zurich

**2019** Konrad Eppel, co-supervision with Mehrdad Ahkami, ETH Zurich

## COMMISSIONS OF TRUST

- 2017 Guest Editor, Special Issue in Geofluids ([Fluid Flow in Unconventional Gas Reservoirs](#))  
2018 Guest Editor, Special Issue in Geofluids ([Contribution of Pore-Scale Approach to Macroscale Geofluids Modelling in Porous Media](#))

## TRACK RECORD (\*Corresponding author)

### Total number of publications

- 42 scientific publications in peer-reviewed international journals  
2 editorials  
3 preprints in archives  
58 contributions to international conferences, workshops, and seminars

### Indicators

- Scopus: ~380 citations,  $h_{index} = 11$   
ISI Web of Science: ~360 citations,  $h_{index} = 12$   
Google Scholar: ~706 citations,  $h_{index} = 14$   
ORCID: [0000-0001-6254-2428](#)  
Google scholar ID: [Xiang-Zhao Kong](#)

### Articles in preparation

- [4] **Kong, X.-Z.\***, Ahkami, M., & Saar, M. O. (2021). CO<sub>2</sub> Interfacial Tension and Wettability: A pH and Ionic Strength Interpretation. *Energy & Fuels*. (In Preparation)  
[3] Grimm Lima, M., **Kong, X.-Z.\***, & Saar, M. O. (2021). Evolution of fracture permeability with thermal and mechanical stresses. *Geothermal energy*. (In Preparation)  
[2] Ahkami, M., Naets, I., Saar, M. O., & **Kong, X.-Z.\***. (2021). Progression and depletion of solute in fractured porous media: A laser-induced fluorescence study. *Advances in Water Resources*. (In Preparation)  
[1] Li, Z.-Q., Volger, D., **Kong, X.-Z.**, Saar, M. O., Xue, Y.-G., & Ma, X.-D. (2021). Permeability evolution during induced shear slip events in saw-cut and natural granite fractures. *International Journal of Rock Mechanics and Mining Sciences*. (Rejected)

### Submitted articles

- [3] Wang, X., Li, S., **Kong, X.-Z.**, Xu, Z., & Hu, L. (2021). Mapping karst conduits in a heterogeneous aquifer using hydraulic tomography: The first two-dimensional sandbox validation. *Water Resources Research*. (Submitted)  
[2] Ahkami, M., Penn, A., Naets, I., Müller, C. R., Pruessmann, K. P., Saar, M. O., & **Kong, X.-Z.\***. (2021). Quantification of fracture-matrix flow exchange in fractured porous media using MRI and PIV measurements. *Journal of Fluid Mechanics*. (Rejected)  
[1] Naets, I., Ahkami, M., Saar, M. O., & **Kong, X.-Z.\***. (2021). Shear induced flow path evolution in rough-wall fractures: A Particle Image Velocimetry examination. *Geophysical Research Letters*. (Rejected)

### Editorials

- [2] Romano, E., Jimenez-Martinez, J., Parmigiani, A., **Kong, Xiang-Zhao**, & Battiato, I. (2019). Contribution of Pore-Scale Approach to Macroscale Geofluids Modelling in Porous Media. *Geofluids*, 2019.  
[1] Xia, T., Dontsov, E., Chen, Z., Zhang, F., Wei, M., & **Kong, X.-Z.** (2018). Fluid flow in unconventional gas reservoirs. *Geofluids*, 2018.

## Preprints

- [3] Grimm Lima, M., Schaedle, P., Vogler, D., Saar, M. O., & **Kong, X.-Z.** (2020). A numerical model for formation dry-out during CO<sub>2</sub> injection in fractured reservoirs using the moose framework: Implications for CO<sub>2</sub>-based geothermal energy extraction. In *World Geothermal Congress 2020, Proceedings*. doi: <https://doi.org/10.3929/ethz-b-000410774>
- [2] Ma, J., Saar, M. O., & **Kong, X.-Z.\***. (2019). An image- and BET-based Monte-Carlo approach to determine mineral accessible surface areas in sandstones. *EarthArXiv*. (preprint) doi: [doi.org/10.31223/osf.io/dhygb](https://doi.org/10.31223/osf.io/dhygb)
- [1] Grimm Lima, M., Vogler, D., Schaedle, P., Saar, M. O., & **Kong, X.-Z.\***. (2019). Impact of effective normal stress on capillary pressure in a single natural fracture. *Research Square*. (preprint) doi: [10.21203/rs.2.17644/v1](https://doi.org/10.21203/rs.2.17644/v1)

## Peer-reviewed articles

- [42] Grimm Lima, M., Javanmard, H., Volger, D., Saar, M. O., & **Kong, X.-Z.\***. (2021). Flow-through Drying during CO<sub>2</sub> Injection into Brine-filled Natural Fractures: A Tale of Effective Normal Stress. *International Journal of Greenhouse Gas Control*. doi: [10.1016/j.ijggc.2021.103378](https://doi.org/10.1016/j.ijggc.2021.103378)
- [41] Ma, Y., **Kong, X.-Z.**, Zhang, C., Scheuermann, A., Bringemeier, D., & Li, L. (2021). Quantification of natural CO<sub>2</sub> emission through faults and fracture zones in coal basins. *Geophysical Research Letters*. doi: [10.1029/2021GL092693](https://doi.org/10.1029/2021GL092693)
- [40] Ma, J., Ahkami, M., Saar, M. O., & **Kong, X.-Z.\***. (2021). Quantification of mineral accessible surface area and flow-dependent fluid-mineral reactivity at the pore scale. *Chemical Geology*. doi: [10.1016/j.chemgeo.2020.120042](https://doi.org/10.1016/j.chemgeo.2020.120042)
- [39] Grimm Lima, M., Schädle, P., Green, C., Volger, D., Saar, M. O., & **Kong, X.-Z.\***. (2020). Permeability impairment and mineral precipitation patterns during CO<sub>2</sub> injection into single natural fractures. *Water Resources Research*. doi: [10.1029/2020WR027213](https://doi.org/10.1029/2020WR027213)
- [38] Ma, J., Querci, L., Hattendorf, B., Saar, M. O., & **Kong, X.-Z.\***. (2020). The effect of mineral dissolution on the effective stress law for permeability in a tight sandstone. *Geophysical Research Letters*. doi: [10.1029/2020GL088346](https://doi.org/10.1029/2020GL088346)
- [37] Tutolo, B., Luhmann, A., **Kong, X.-Z.**, Bagley, B., Mitchell, N., Saar, M. O., & Seyfried, W. (2020). Contributions of visible and invisible pores to reactive transport in dolomite. *Geochemical Perspectives Letters*. doi: [10.7185/geochemlet.2022](https://doi.org/10.7185/geochemlet.2022)
- [36] Kittilä, A., Jalali, M., Saar, M. O., & **Kong, X.-Z.\***. (2020). Solute tracer test quantification of the effects of hot water injection into hydraulically stimulated crystalline rock. *Geothermal Energy*. doi: [10.1186/s40517-020-00172-x](https://doi.org/10.1186/s40517-020-00172-x)
- [35] Jia, Y., Wu, W., & **Kong, X.-Z.** (2020). Injection-induced slip heterogeneity on faults in shale reservoirs. *International Journal of Rock Mechanics and Mining Sciences*. doi: [10.1016/j.ijrmms.2020.104363](https://doi.org/10.1016/j.ijrmms.2020.104363)
- [34] Kittilä, A., Jalali, M., Somogyvári, M., Evans, K., Saar, M. O., & **Kong, X.-Z.\***. (2020). Characterization of the effects of hydraulic stimulation with tracer-based temporal moment analysis and tomographic inversion. *Geothermics*, 86, 101820. doi: [10.1016/j.geothermics.2020.101820](https://doi.org/10.1016/j.geothermics.2020.101820)
- [33] Ahkami, M., Parmigiani, A., Di Palma, P., Saar, M. O., & **Kong, X.-Z.\***. (2020). A lattice-boltzmann study of permeability-porosity relationships and mineral precipitation patterns in fractured porous media. *Computational Geosciences*. doi: [10.1007/s10596-019-09926-4](https://doi.org/10.1007/s10596-019-09926-4)
- [32] Ma, J., Queric, L., Hattendorf, B., Saar, M. O., & **Kong, X.-Z.\***. (2019). Toward a spatiotemporal understanding on dolomite dissolution in sandstone by CO<sub>2</sub>-enriched brine circulation. *Environmental Science & Technology*, 53, 12458-12466. doi: [10.1021/acs.est.9b04441](https://doi.org/10.1021/acs.est.9b04441)
- [31] Grimm Lima, M., Volger, D., Queric, L., Madonna, C., Hattendorf, B., Saar, M. O., & **Kong, X.-Z.\***. (2019). Thermally driven fracture aperture variation in naturally fractured granites. *Geothermal Energy Journal*, 7(23). doi: [10.1186/s40517-019-0140-9](https://doi.org/10.1186/s40517-019-0140-9)

- [30] Kittilä, A., Jalali, M., Evans, K., Willmann, M., Saar, M. O., & **Kong, X.-Z.\***. (2019). Field comparison of DNA-labeled nanoparticle and solute tracer transport in a fractured crystalline rock. *Water Resources Research*, *55*(8), 6577-6595. doi: 10.1029/2019WR025021
- [29] Parmigiani, A., Di Palma, P., Leclair, S., Habib, F., & **Kong, X.-Z.\***. (2019). Characterization of transport-enhanced phase separation in porous media using a lattice-boltzmann method. *Geofluids*.
- [28] Ahkami, M., Roesgen, T., Saar, M. O., & **Kong, X.-Z.\***. (2019). High-resolution temporo-ensemble PIV to resolve pore-scale flow in 3D-printed fractured porous media. *Transport in Porous Media*, *129*(2), 467-483.
- [27] **Kong, X.-Z.\***, Deuber, C., Kittilä, A., Somogyvári, M., Mikutis, G., Stark, W., & Saar, M. O. (2018). Tomographic reservoir imaging with DNA-labeled silica nanoparticles: The first field validation. *Environmental Science & Technology*, *52*/23.
- [26] Galindo-Torres, S., Molebatsi, T., **Kong, X.-Z.**, Scheuermann, A., Bringemeier, D., & Li, L. (2015). Scaling solutions for connectivity and conductivity of continuous random networks. *Physical Review E*, *92*(4), 041001.
- [25] Tutolo, B., **Kong, X.-Z.**, Seyfried, W., & Saar, M. O. (2015). High performance reactive transport simulations examining the effects of thermal, hydraulic, and chemical (THC) gradients on fluid injectivity at carbonate CCUS reservoir scales. *International Journal of Greenhouse Gas Control*, *39*, 285–301.
- [24] Tutolo, B., Luhmann, A., **Kong, X.-Z.**, Saar, M. O., & Seyfried, W. (2015). CO<sub>2</sub> sequestration in feldspar-rich sandstone: coupled evolution of fluid chemistry, mineral reaction rates, and hydrogeochemical properties. *Geochimica et Cosmochimica Acta*, *160*, 132–154.
- [23] Ma, Y., **Kong, X.-Z.**, Scheuermann, A., Galindo-Torres, S., Bringemeier, D., & Li, L. (2015). Microbubble transport in water-saturated porous media. *Water Resources Research*, *51*(6), 4359–4373.
- [22] Ma, Y., Yan, G., Scheuermann, A., Bringemeier, D., **Kong, X.-Z.**, & Li, L. (2014). Size distribution measurement for densely binding bubbles via image analysis. *Experiments in fluids*, *55*(12), 1860.
- [21] Luhmann, A., **Kong, X.-Z.**, Tutolo, B., Garapati, N., Bagley, B., Saar, M. O., & Seyfried, W. (2014). Experimental dissolution of dolomite by CO<sub>2</sub>-charged brine at 100 °C and 150 bar: Evolution of porosity, permeability, and reactive surface area. *Chemical Geology*, *380*, 145–160.
- [20] Tutolo, B., **Kong, X.-Z.**, Seyfried, W., & Saar, M. O. (2014). Internal consistency in aqueous geochemical data revisited: applications to the aluminum system. *Geochimica et Cosmochimica Acta*, *133*, 216–234.
- [19] Tutolo, B., Luhmann, A., **Kong, X.-Z.**, Saar, M. O., & Seyfried, W. (2014). Experimental observation of permeability changes in dolomite at CO<sub>2</sub> sequestration conditions. *Environmental science & technology*, *48*(4), 2445–2452.
- [18] **Kong, X.-Z.\***, & Saar, M. O. (2013). Numerical study of the effects of permeability heterogeneity on density-driven convective mixing during CO<sub>2</sub> dissolution storage. *International Journal of Greenhouse Gas Control*, *19*, 160–173.
- [17] Luhmann, A., **Kong, X.-Z.**, Tutolo, B., Ding, K., Saar, M. O., & Seyfried, W. (2012). Permeability reduction produced by grain reorganization and accumulation of exsolved CO<sub>2</sub> during geologic carbon sequestration: A new CO<sub>2</sub> trapping mechanism. *Environmental science & technology*, *47*(1), 242–251.
- [16] **Kong, X.-Z.\***, Tutolo, B., & Saar, M. O. (2013). Dbcreate: A SUPCRT92-based program for producing EQ3/6, TOUGHREACT, and GWB thermodynamic databases at user-defined t and p. *Computers & Geosciences*, *51*, 415–417.
- [15] **Kong, X.-Z.\***, Holzner, M., Stauffer, F., & Kinzelbach, W. (2011). Time-resolved 3D visualization of air injection in a liquid-saturated refractive-index-matched porous medium. *Experiments in fluids*, *50*(6), 1659–1670.
- [14] **Kong, X.-Z.\***, Kinzelbach, W., & Stauffer, F. (2010b). Morphodynamics during air injection into water-saturated movable spherical granulates. *Chemical engineering science*, *65*(16), 4652–4660.
- [13] **Kong, X.-Z.\***, Kinzelbach, W., & Stauffer, F. (2010a). Compaction and size segregation in a liquid-saturated grain packing due to pulsation effect during air injection. *Chemical engineering science*, *65*(9), 2680–2688.
- [12] Stauffer, F., **Kong, X.-Z.**, & Kinzelbach, W. (2009). A stochastic model for air injection into saturated porous media. *Advances in water resources*, *32*(8), 1180–1186.

- [11] **Kong, X.-Z.\***, Kinzelbach, W., & Stauffer, F. (2009). Migration of air channels: An instability of air flow in mobile saturated porous media. *Chemical Engineering Science*, *64*(7), 1528–1535.
- [10] Wang, W.-J., **Kong, X.-Z.**, & Zhu, Z.-G. (2007). Friction and relative energy dissipation in sheared granular materials. *Physical Review E*, *75*(4), 041302.
- [9] **Kong, X.-Z.**, Hu, M.-B., Wu, Q.-S., & Wu, Y.-H. (2006b). Effects of vibration frequency on intruders' position in granular bed. *Physics Letters A*, *356*(4-5), 267–271.
- [8] **Kong, X.-Z.**, Hu, M.-B., Wu, Q.-S., & Wu, Y.-H. (2006a). Effects of bottleneck on granular convection cells and segregation. *Granular Matter*, *8*(3-4), 119–124.
- [7] **Kong, X.-Z.**, Hu, M.-B., Wu, Q.-S., & Wu, Y.-H. (2006c). Kinetic energy sandpile model for conical sandpile development by revolving rivers. *Physics Letters A*, *348*(3-6), 77–81.
- [6] **Kong, X.-Z.**, Hu, M.-B., Wu, Q.-S., & Wu, Y.-H. (2005). Ring-like size segregation in vibrated cylinder with a bottleneck. *Physics Letters A*, *341*(1-4), 278–284.
- [5] Hu, M.-B., **Kong, X.-Z.**, Wu, Q.-S., & Wu, Y.-H. (2005a). Effects of container geometry on granular segregation pattern. *Chinese Physics*, *14*(9), 1844.
- [4] Hu, M.-B., **Kong, X.-Z.**, Wu, Q.-S., & Wu, Y.-H. (2005b). Granular segregation in a multi-bottleneck container: Mobility effect. *International Journal of Modern Physics B*, *19*(10), 1793–1800.
- [3] Hu, M.-B., Wu, Q.-S., **Kong, X.-Z.**, & Wu, Y.-H. (2005). Discharge oscillation of particles from a vertical pipe with capillary outlet. *Chinese Science Bulletin*, *50*(11), 1076–1078.
- [2] Wu, Q.-S., Hu, M.-B., **Kong, X.-Z.**, & Wu, Y.-H. (2007). Particle discharge process from a capillary pipe. In A. Schadschneider, T. Pöschel, R. Kühne, M. Schreckenberg, & D. E. Wolf (Eds.), *Traffic and granular flow'05* (p. 193-202). Springer Berlin Heidelberg. doi: 10.1007/978-3-540-47641-2\_16
- [1] Hu, M.-B., **Kong, X.-Z.**, Wu, Q.-S., & Zhu, Z.-G. (2004). Experimental study of energy absorption properties of granular materials under low frequency vibrations. *International Journal of Modern Physics B*, *18*(17-19), 2708–2712.

## Conference proceedings and abstracts

- [58] **Kong, X.-Z.**, Ma, J., Grimm Lima, M., & Wang, X. (2021). Evolution of fracture permeability induced by THMC-coupled processes. In *Interpore 2021, Abstracts*.
- [57] Naets, I., Ahkami, M., Huang, P.-W., Saar, M. O., & **Kong, X.-Z.** (2021). Using PIV and 3D printing to investigate fluid flow and solute transport in fractured porous media. In *Interpore 2021, Abstracts*.
- [56] **Kong, X.-Z.**, Ma, J., Grimm Lima, M., & Saar, M. O. (2020). Carbonate dissolution in tight sandstones and flow-through drying in fractured granites: The role of stress. In *18th Swiss Geoscience Meeting, Abstracts*.
- [55] Naets, I., Ahkami, M., Saar, M. O., & **Kong, X.-Z.** (2020). PIV examinations on the flow-path evolution induced by shear displacements in rough-wall fractures. In *18th Swiss Geoscience Meeting, Abstracts*.
- [54] Ahkami, M., Naets, I., Saar, M. O., & **Kong, X.-Z.** (2020). Quantification of fracture-matrix fluid exchange in fractured porous media PIV measurements. In *18th Swiss Geoscience Meeting, Abstracts*.
- [53] Ahkami, M., Saar, M. O., & **Kong, X.-Z.** (2020). Laser-Induced Fluorescence (LIF) study of solute transport in 3D-printed fractured porous media. In *Interpore 2020, Abstracts*.
- [52] Grimm Lima, M., **Kong, X.-Z.**, & Saar, M. O. (2020). Evolution of fracture permeability with thermal and mechanical stresses. In *18th Swiss Geoscience Meeting, Abstracts*.
- [51] Grimm Lima, M., Schaedle, P., Vogler, D., Saar, M. O., & **Kong, X.-Z.** (2020). A numerical model for formation dry-out during CO<sub>2</sub> injection in fractured reservoirs using the moose framework: Implications for CO<sub>2</sub>-based geothermal energy extraction. In *World Geothermal Congress 2020, Proceedings*. doi: <https://doi.org/10.3929/ethz-b-000410774>
- [50] Ma, J., Saar, M. O., & **Kong, X.-Z.** (2020). Estimation of effective surface area: A study on dolomite cement dissolution in sandstones. In *World Geothermal Congress 2020, Proceedings*.

- [49] **Kong, X.-Z.**, Kittilä, A., Jalali, M., Somogyvári, M., Evans, K., & Saar, M. O. (2019). Flow path characterization at the grimsel underground rock laboratory using solute tracer tests. In *17th Swiss Geoscience Meeting, Abstracts*.
- [48] **Kong, X.-Z.**, Ma, J., Grimm Lima, M., & Saar, M. O. (2019). Experimentally exploring permeability evolution induced by THMC-coupled processes. In *2019 arma-cupb geothermal international conference, Abstracts*.
- [47] **Kong, X.-Z.**, Ma, J., & Saar, M. O. (2019). Coupled geochemical-mechanical evolution during injection of CO<sub>2</sub>-charged brine into sandstones. In *Goldschmidt 2019, Abstracts*.
- [46] Grimm Lima, M., Vogler, D., Schaedle, P., Saar, M. O., & **Kong, X.-Z.** (2019). Impact of normal effective stress on CO<sub>2</sub> injection into a brine-saturated single fracture with rough surfaces. In *European Geothermal Congress 2019, Proceedings*.
- [45] Ahkami, M., Parmigiani, A., Di Palma, P., Saar, M. O., & **Kong, X.-Z.** (2019). Study on mineral precipitation in fractured porous media using lattice boltzmann methods. In *European Geothermal Congress 2019, Proceedings*.
- [44] Ahkami, M., Roesgen, T., Saar, M. O., & **Kong, X.-Z.** (2019). Flow characterization in fractured porous media using the temporo-ensemble PIV method. In *EGU General Assembly Conference, Abstracts*.
- [43] Ahkami, M., Saar, M. O., & **Kong, X.-Z.** (2019). Fracture-matrix flow interaction characterizations using a temporo-ensemble PIV method. In *Interpore 2019, Abstracts*.
- [42] **Kong, X.-Z.**, Ahkami, M., Roesgen, T., & Saar, M. O. (2018). High-resolution temporo-ensemble PIV to resolve pore-scale flow in 3d-printed fractured porous media. In *AGU Fall Meeting, Abstracts*.
- [41] **Kong, X.-Z.**, Parmigiani, A., Di Palma, P., Leclair, S., & Saar, M. O. (2018). Dynamics of phase exsolution in porous media. In *16th Swiss Geoscience Meeting, Abstracts*.
- [40] Grimm Lima, M., Vogler, D., Schaedle, P., Saar, M. O., & **Kong, X.-Z.** (2018). Impact of normal effective stress on CO<sub>2</sub> injection into a brine-saturated single fracture with rough surfaces. In *16th Swiss Geoscience Meeting, Abstracts*.
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