



Contribution ID: 381

Type: Oral Presentation

## A 6M Digital Twin for Reservoirs

*Tuesday, 1 June 2021 15:55 (15 minutes)*

Modeling and simulation of flow, transport and geomechanics in the subsurface porous media is an effective approach to help make decisions associated with the management of subsurface oil and gas reservoirs, as well as in other wide application areas including groundwater contamination and carbon sequestration. Accurate modeling and efficient, robust simulation have always been the main purposes of reservoir researches, and a 6M digital twin (multi-scale, multi-domain, multi-physics and multi-numeric numerical modeling and simulation of multi-component and multi-phase fluid flow in porous media) is designed, equipped with the following six pronounced features, to better digitally model and simulate the engineering processes and procedures in physical reality and further control and optimize such processes and procedures: 1. Efficient and reliable flash calculation; 2. Advanced phase interface modeling; 3. Fully conservative bound-preserving Darcys scale flow simulation; 4. Reactive flow and transport in porous media; 5. Molecular simulation of microscopic mechanisms; 6. High-performance computation based on fully-implicit and bound-preserving algorithms.

### Time Block Preference

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

### References

### Acceptance of Terms and Conditions

[Click here to agree](#)

### Newsletter

### Student Poster Award

**Primary authors:** ZHANG, tao (King Abdullah University of Science and Technology); SUN, Shuyu (King Abdullah University of Science and Technology (KAUST))

**Presenter:** SUN, Shuyu (King Abdullah University of Science and Technology (KAUST))

**Session Classification:** MS7

**Track Classification:** (MS7) Mathematical and numerical methods for multi-scale multi-physics, non-linear coupled processes