

Thermo-hydro-mechanical- chemical processes in fractured porous media : benchmarks and examples

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Abstrak

The book comprises an assembly of benchmarks and examples for porous media mechanics collected over the last twenty years. Analysis of thermo-hydro-mechanical-chemical (THMC) processes is essential to many applications in environmental engineering, such as geological waste deposition, geothermal energy utilisation, carbon capture and storage, water resources management, hydrology, even climate change. In order to assess the feasibility as well as the safety of geotechnical applications, process-based modelling is the only tool to put numbers, i.e. to quantify future scenarios. This charges a huge responsibility concerning the reliability of computational tools. Benchmarking is an appropriate methodology to verify the quality of modelling tools based on best practices. Moreover, benchmarking and code comparison foster community efforts. The benchmark book is part of the OpenGeoSys initiative, an open source project to share knowledge and experience in environmental analysis and scientific computation.