



## **Calculation of matrix fracture flow in different scales with density-dependent processes**

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In solid rock aquifers low matrix permeability is often accompanied with fractures and faults of different scales. Therefore, numerical modelling of such coupled systems is very complex. Density dependent flow of groundwater and mass transport processes are coupled in fractured systems. Therefore, numeric representation of such coupled systems is highly complex. Flow and density dependent flow in fractures have to be modeled along discrete surfaces joint to the common matrix representation. This leads to high demands upon the quality of finite element mesh generation.

This paper presents a strategy to calculate three dimensional finite element meshes, which allows the modelling of density dependent groundwater flow and contaminant transport in a coupled matrix fracture aquifer system.