Title: Hydraulic Fracture in Poro-Hydro-Elastic Media

Author: Steffen Mauthe Christian Miehe

PII: S0093-6413(16)30178-1
DOI: http://dx.doi.org/doi:10.1016/j.mechrescom.2016.09.009
Reference: MRC 3114

To appear in:

Received date: 25-7-2016
Accepted date: 21-9-2016

Please cite this article as: Steffen Mauthe, Christian Miehe, Hydraulic Fracture in Poro-Hydro-Elastic Media, *<![CDATA[Mechanics Research Communications]]>* (2016), http://dx.doi.org/10.1016/j.mechrescom.2016.09.009

- potentials for the coupled problems of Darcy-Biot-type bulk response of poro-hydro-elasticity coupled to a phase-field approach for fracture

- a phase field modeling approach of brittle fracture in fluid-saturated porous media based on an evolution equation for a regularized crack surface

- new minimization principle for the coupled problem of poro-hydro-elasticity at fracture

- the minimization formulation naturally leads to a new innovative finite element implementation of the coupled problem that is numerically stable and not restricted to a LBB condition

- a formulation that accounts for the extra fluid flow in developing cracks based on a deformation-dependent permeability, scaled by a characteristic reference length

- a representative set of examples of hydraulic driven fracture in porous media