- We propose a phase field model to simulate $CO_2$ fracturing, where we solve a coupled system consisting of: (i) mass balance with modified Darcy's equation, and (ii) a dissipative potential energy with the phase field.
- $CO_2$ is treated as a compressible fluid under an isothermal condition in a porous medium by using the Span-Wagner equation of state.
- The implementation is verified through three examples. The predicted breakdown pressure agrees well with analytical solutions and, within 30%, with experiments.