# Experimental and numerical investigations on supercritical $CO_2$ and brine flow in porous media

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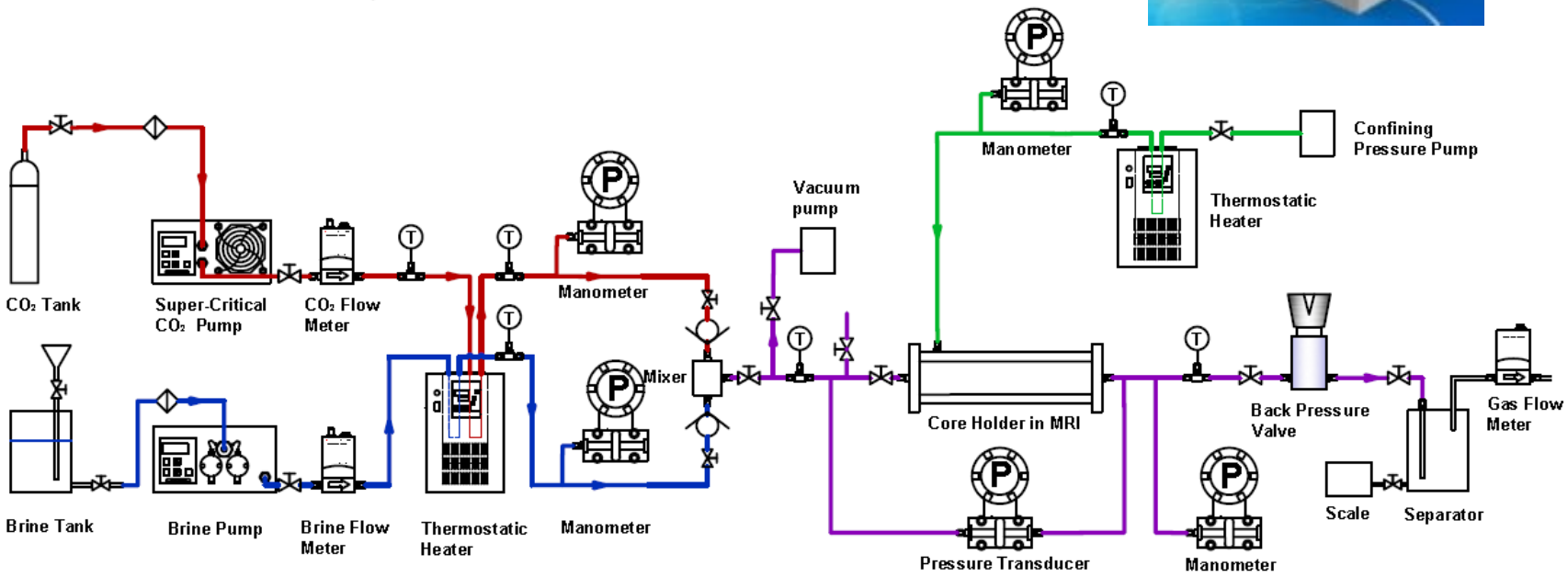
# Experimental system



# Experimental result

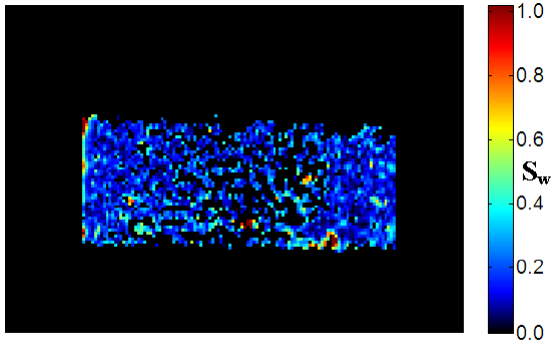



Fig. 3 Bounded water image

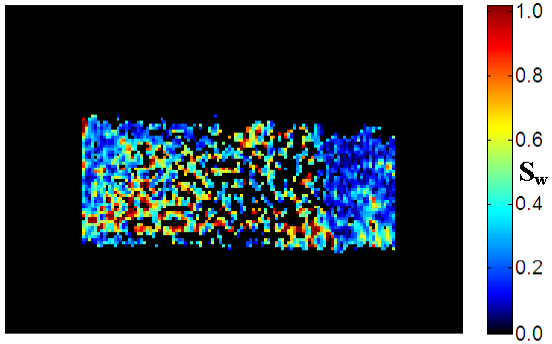



Fig. 4 water saturation image with $CO_2$-water ratio 3:2

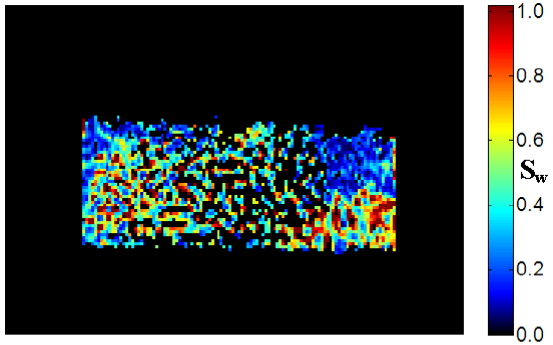



Fig. 5 water saturation image with $CO_2$-water ratio 1:4

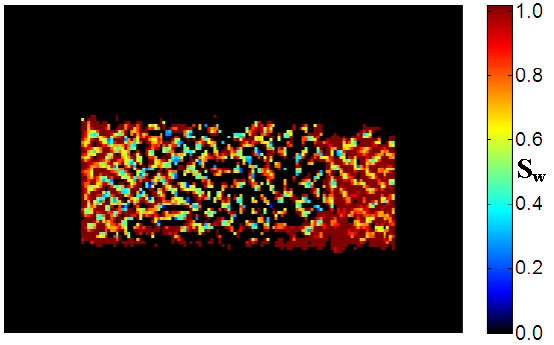



Fig. 6 water saturation image with saturated water

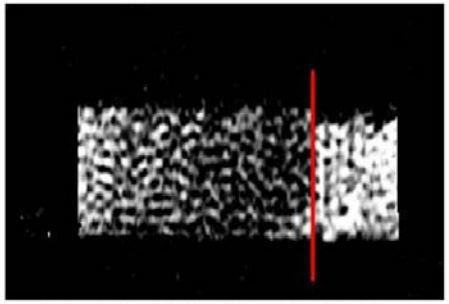


Fig. 7 Fissure defect position image

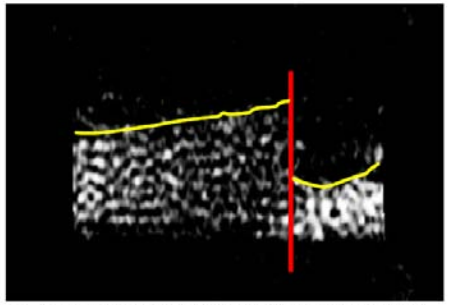


Fig. 8 Water saturation gray image with $CO_2$-water ratio 1:4

# Numerical investigations Pore-scale

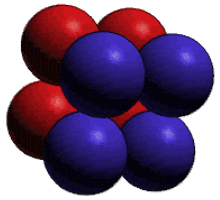
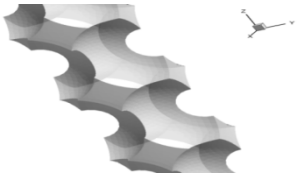


Fig. 1 Simple Cubic Arrangement



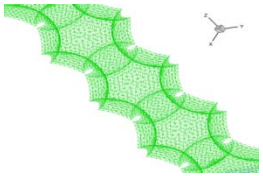


Fig. 2 The calculation model and grids for the fluid domain

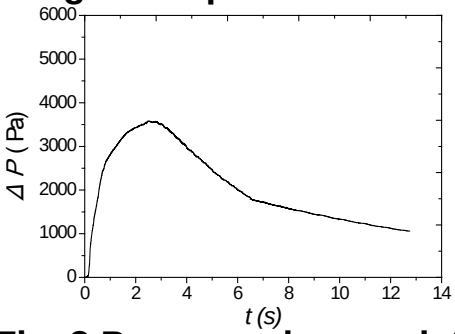



Fig. 3 Pressure drop variation with injection time

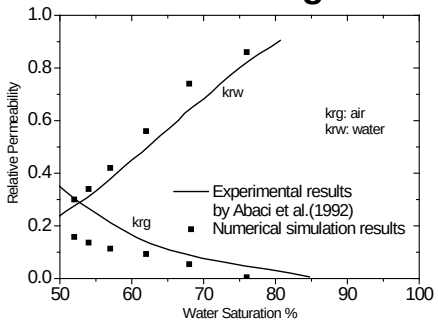



Fig. 4 Relative permeability – saturation relation of air-water

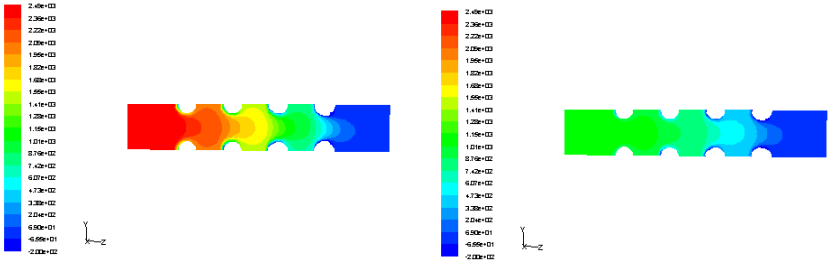


Fig. 5 Pressure distribution in centre cross section at t=5s and t=12s

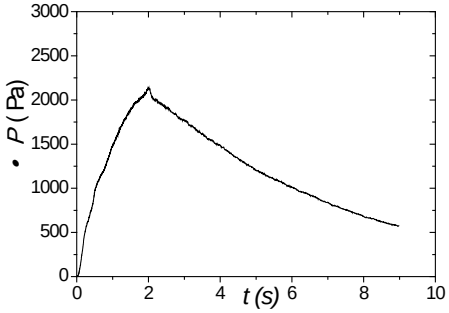



Fig. 6 Pressure drop variation with injection time

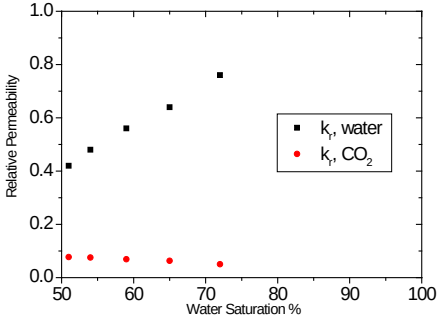



Fig. 7 Relative permeability – saturation relation of supercritical $CO_2$-water

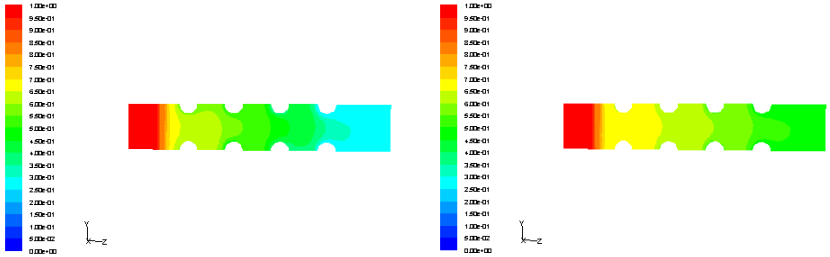


Fig. 8 Volume fraction of water in center cross section at t=4s and 9s


Thank you!