SUPPORTING INFORMATION

Experimental study of crossover from capillary to viscous fingering for supercritical CO_2 - water displacement in a homogeneous pore network

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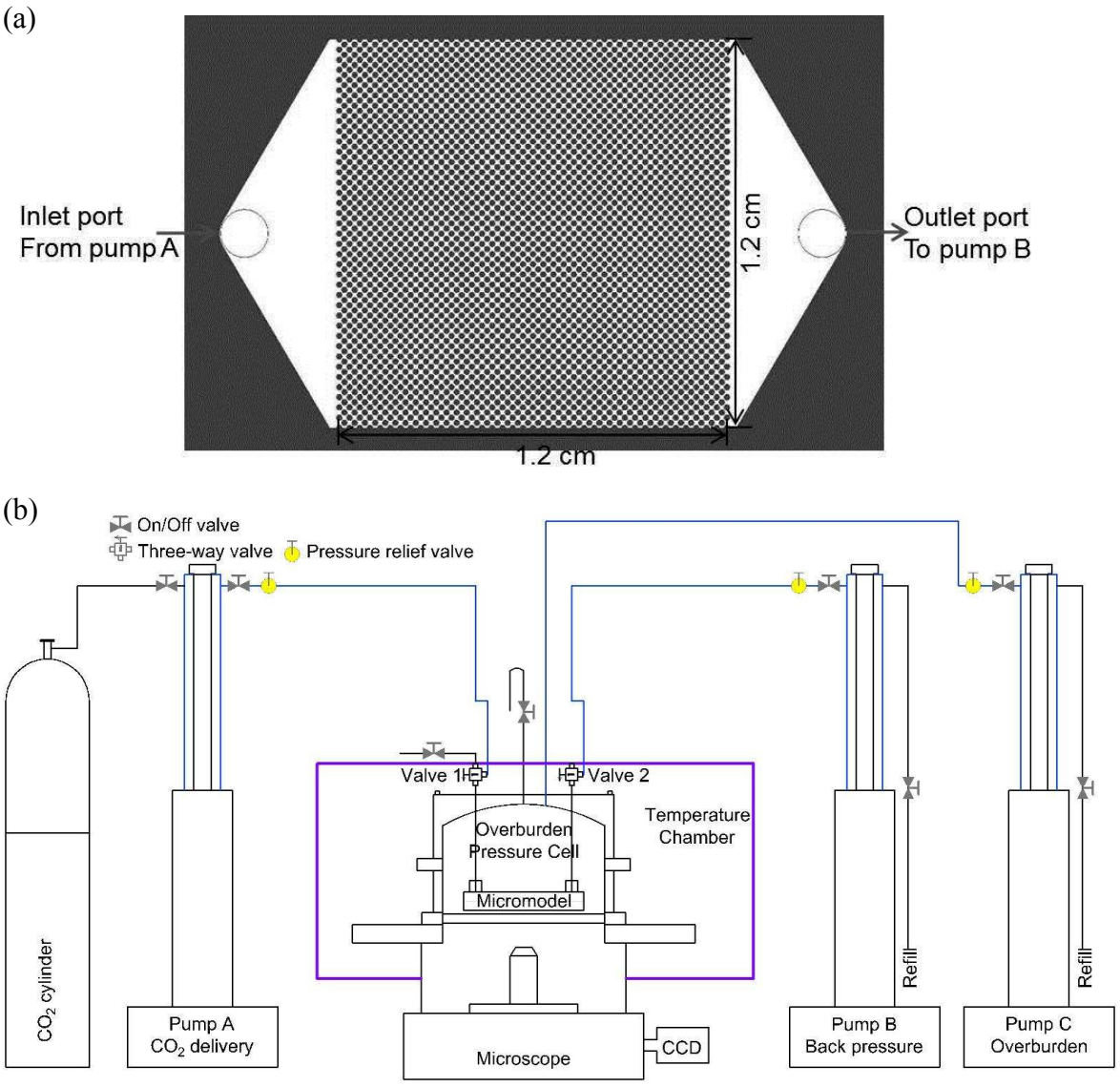


Figure S1. Schematic of (a) the micromodel and (b) the $scCO_2$ - water displacement experiment system. The blue lines indicate heating by circulating hot water. The purple line indicates heating by circulating hot air.

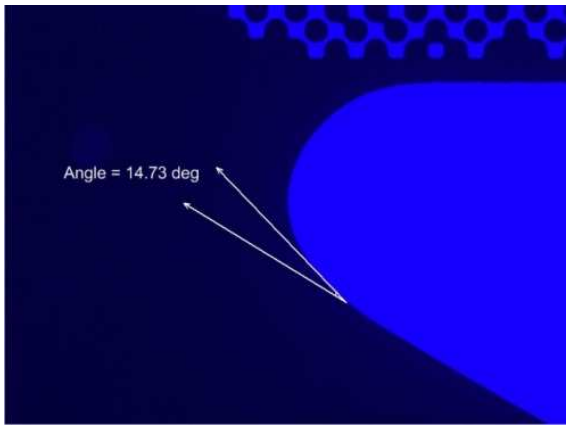
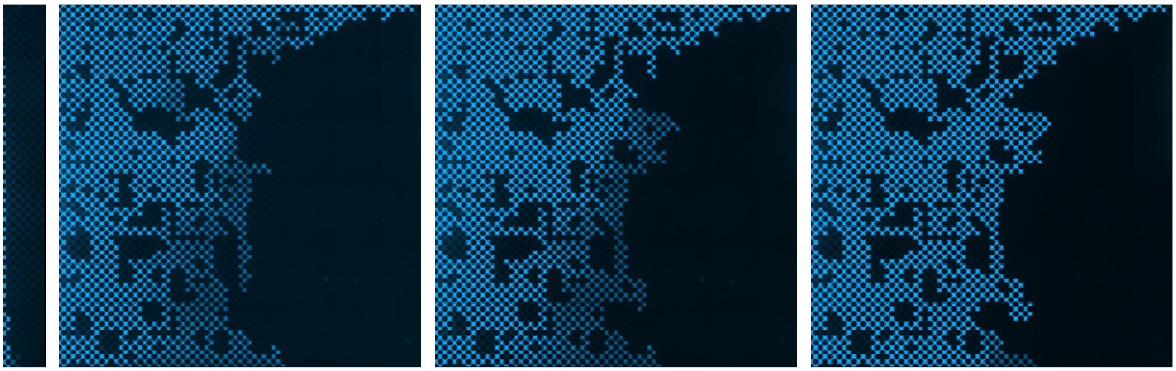


Figure S2. Water - $scCO_2$ contact angle with the micromodel surface measured in the micromodel outlet channel.



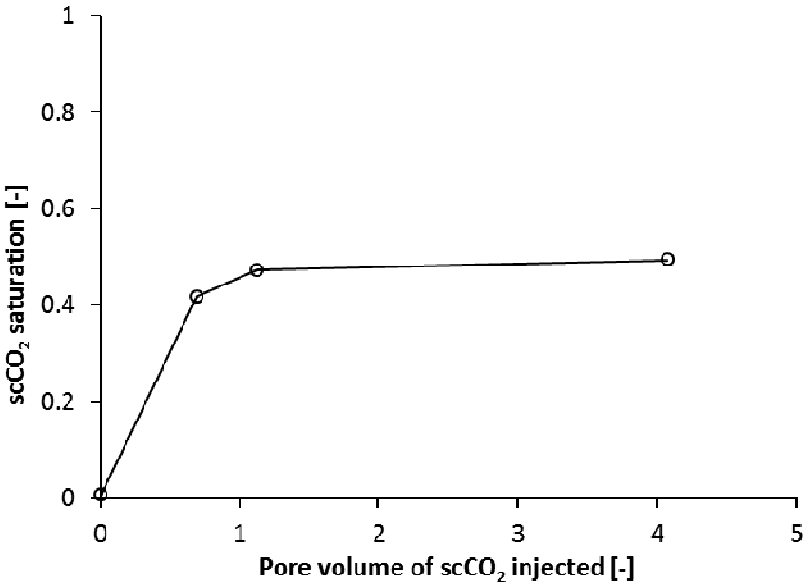


Figure S3. $ScCO_2$ saturation *vs.* injected $scCO_2$ pore volume into the micromodel at log*Ca* = -7.61.

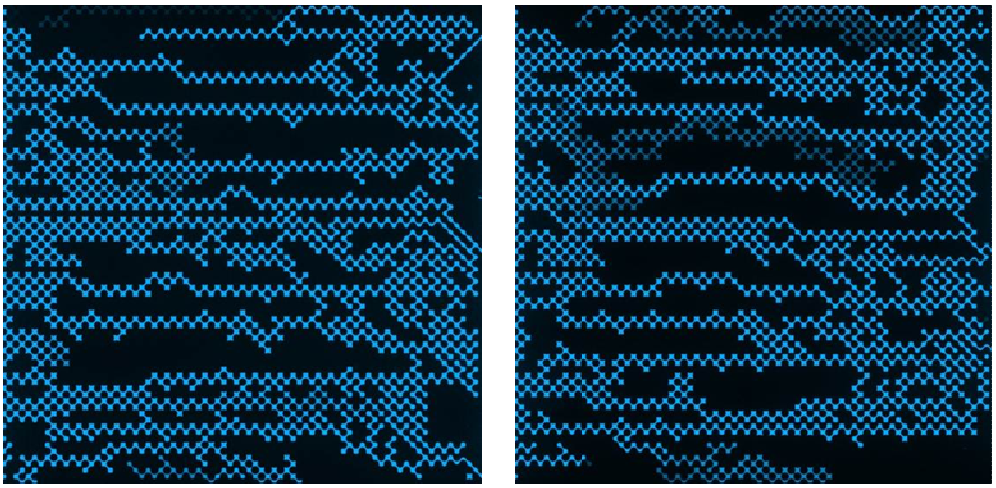


Figure S4. $ScCO_2$ (blue) distribution in micromodel from two replicate experiments at log*Ca* = -4.91. The numbers in paranthesis indicate injected $scCO_2$ pore volumes and average $scCO_2$ saturation, respectively.

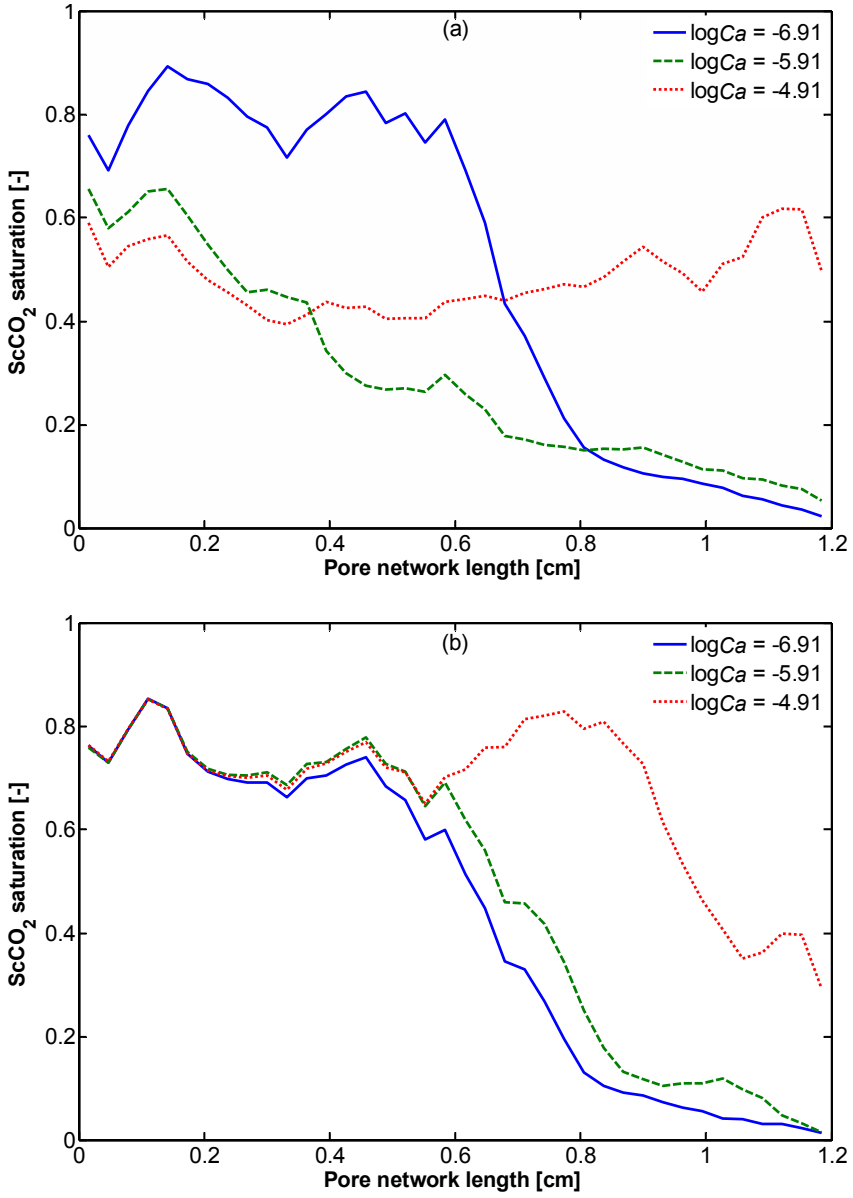


Figure S5. Transverse average $scCO_2$ saturations along the length of the micromodel pore network: (a) discontinuous-rate experiments, (b) continuous-rate experiments.

Table S1. $ScCO_2$ flowrates at various distances from an injection well with an annual injection rate of 1 Mt/yr over a screen length of 15 m.

Parameter	Value	Distance (m)	Darcy velocity [a] (m/d)
Well radius (m)	0.15	0.1	237.3
Aquifer thickness (m)	15	1	51.6
Porosity (-)	0.15	10	5.8
CO_2 density (kg/m^3)	490	100	0.6
Injection rate (m^3/d)	5591	1000	0.06

[a]: Gravity override is neglected in the calculation.