Supplementary Materials

Waterflooding of Surfactant and Polymer Solutions in a Porous Media Micromodel

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Table S1. The value of porosity at different places within the main channel for one sample device.

	1	2	3	4	5	average	Standard deviation
Porosity	0.14	0.21	0.18	0.14	0.10	0.15	0.038

Table S2. The value of pore radius at different places within the main channel for one sample device.

	1	2	3	4	5	average	Standard deviation
Pore radius (um)	19.95	20.46	20.69	20.85	19.67	20.32	0.5

Table S3. Calculated porosity based on bulk measurement for one device with an average glass bead diameter of 55 m.

before (g)	after (g)	mass (g)	volume (m^3)	Channel volume	porosity
14.9763	14.9805	0.0042	1.68×10^{-9}	1.96×10^{-9}	0.14

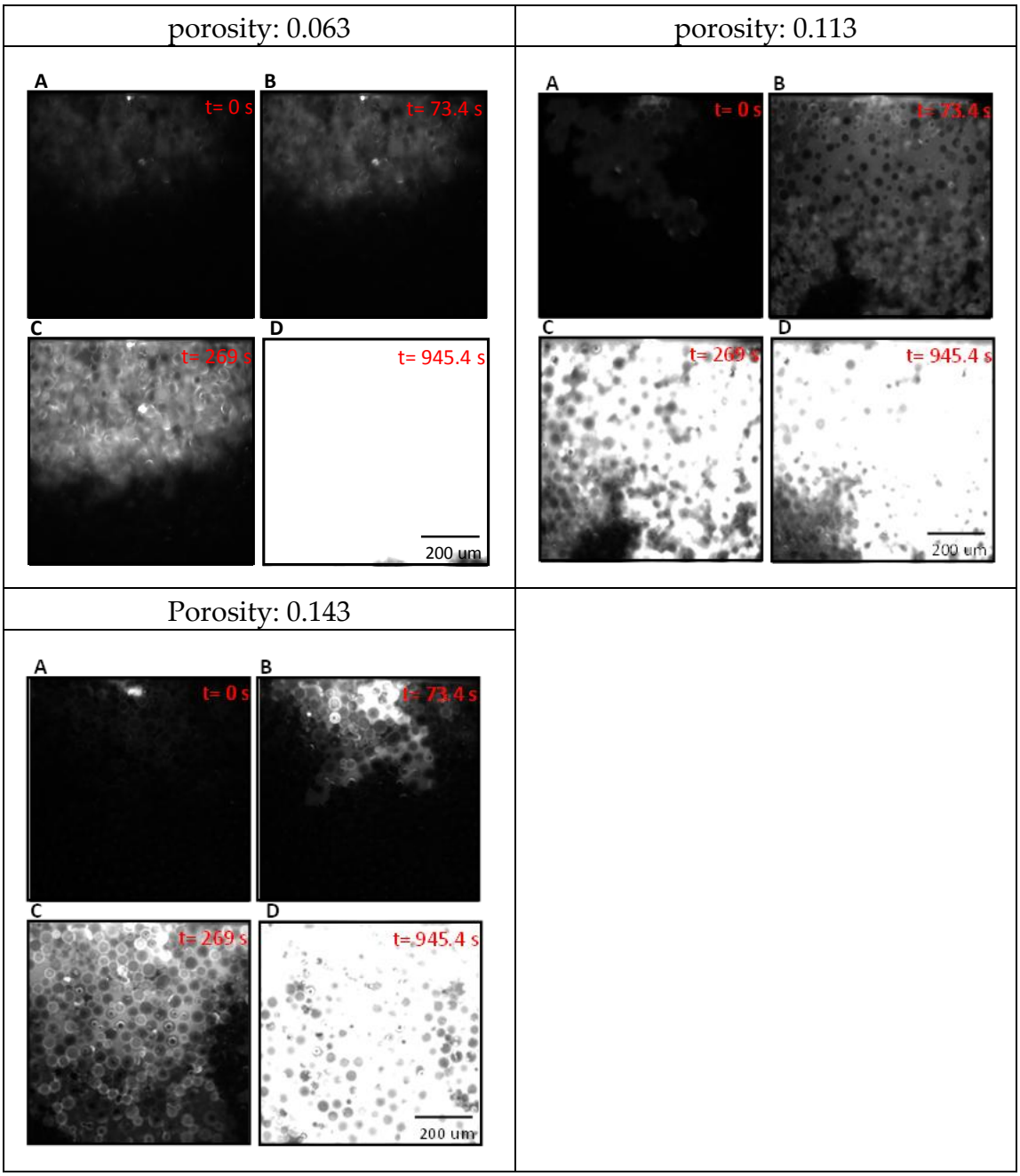

Figure S1. A representative experiment for water at different porosities. Initially (**A**), the main channel full of silicone oil which is black. When the water phase invades the main channel, rhodamine B is used to track the displacement of silicone oil (**B** and **C**) until the whole main channel fluoresces (**D**). These figures clearly show that oil displacement is faster at the higher porosity. In these figures, the white represents rhodamine B and black represents silicone oil.

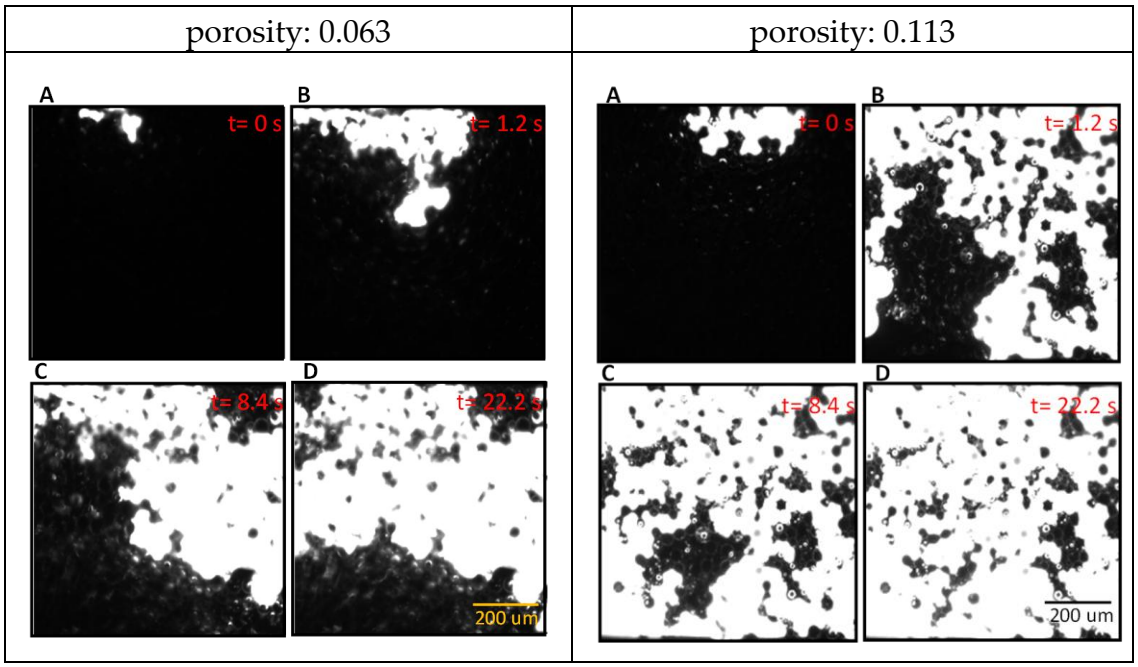

Figure S2. A representative experiment for water with 0.1% SDS at different porosities. Initially (**A**), the main channel full of silicone oil which is black. When the water phase invades the main channel, rhodamine B is used to track the displacement of silicone oil (**B** and **C**) until the whole main channel fluoresces (**D**). These figures clearly show that oil displacement is faster at the higher porosity. Surfactant reduces surface tension that oil is easier to displace; therefore, it takes shorter time to displace most of silicone oil. In these figures, the white represents rhodamine B and black represents silicone oil. The results for 0.143 porosity are shown in Figure 3.

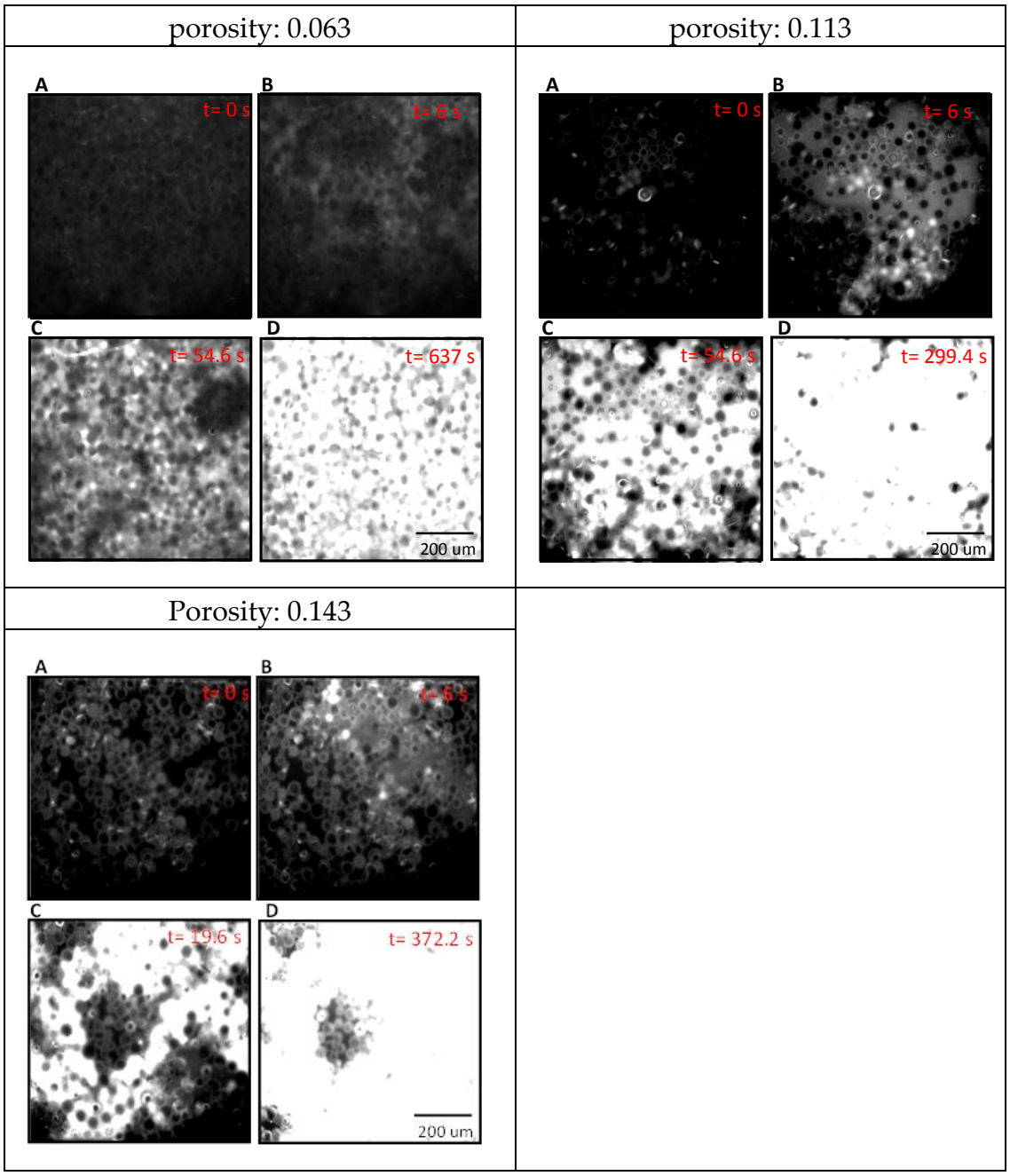

Figure S3. A representative experiment for water with 0.1% PVP at different porosities. Initially (**A**), the main channel full of silicone oil which is black. When the water phase invades the main channel, rhodamine B is used to track the displacement of silicone oil (**B** and **C**) until the whole main channel fluoresces (**D**). These figures clearly show that oil displacement is faster at the higher porosity. There are three small voids not fully displaced by injected fluid at porosity 0.143. The reason for this might be pore structure affect it. In these figures, the white represents rhodamine B and black represents silicone oil.