Electronic Supplementary Material

The construction of pseudo-Janus silica/surfactant assembly and their application to stabilize Pickering emulsions and enhance oil recovery

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Table S1 Main compositions and properties of the crude oil.

Density (g/mL)	Viscosity (mPa s,50 ℃)	Freezing point (℃)	Sulfur (wt%)	Wax (wt %)	Gelatine +Asphaltene (wt%)	Acid number (mgKOH/g)
0.931	539.7	-1.3	0.127	6.7	29.1	3.8

Table S2 Main compositions of the formation brine.

$Na^+ + K^+$ (mg/L)	Mg^{2+} (mg/L)	Ca^{2+} (mg/L)	Cl^- (mg/ L)	SO_4^{2-} (mg/L)	HCO_3^- (mg/L)	CO_3^{2-} (mg/L)
594.2	12.7	33.4	297.4	7.6	879.1	26.9

Table S3 Main parameters of sand pack models.

Number	Porosity [φ]/%	Permeability [k]/mD	Diameter [D]/mm	Length [L]/mm	Initial oil saturation
K_1	42.95	675.15	50.10	600.07	0.74
$K_{2\text{-}1}$	45.45	697.25	50.04	600.12	—
$K_{2\text{-}2}$	21.51	201.39	50.09	600.23	—
$K_{3\text{-}1}$	46.28	705.45	50.11	600.18	0.76
$K_{3\text{-}2}$	20.95	198.78	50.01	600.05	0.68

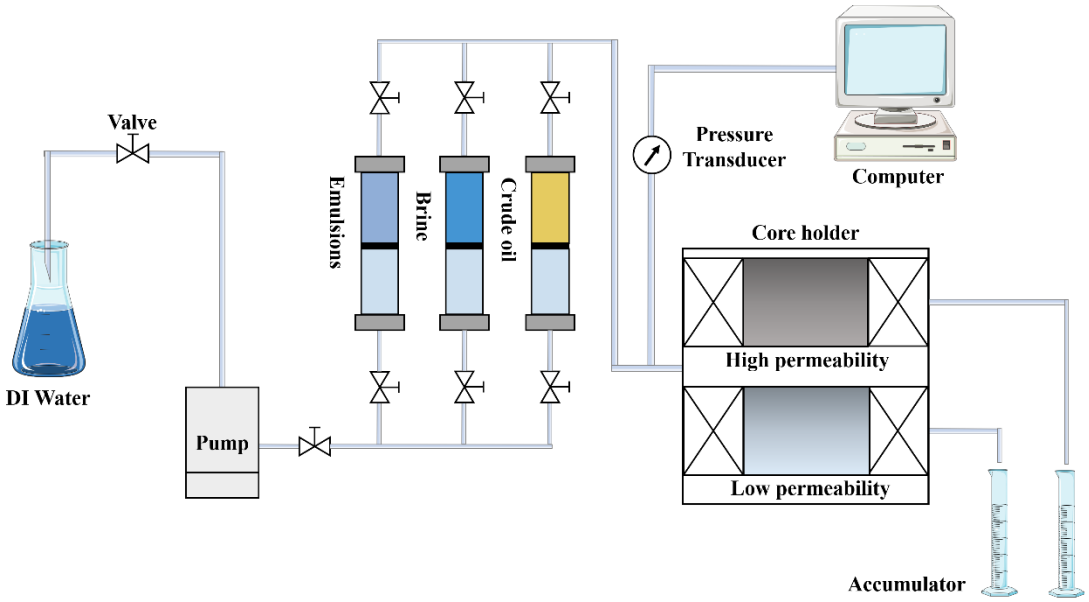

Fig. S1 Schematic of the double-tube sand pack model flooding experiment.

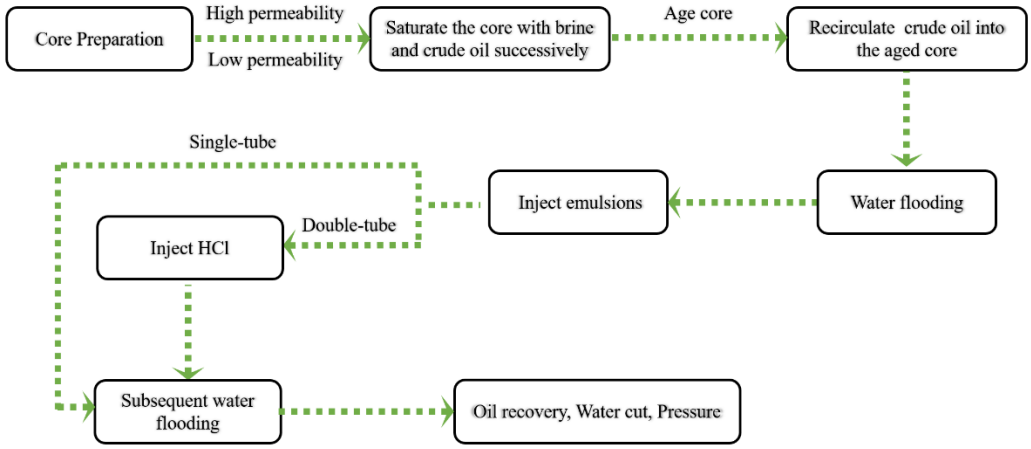

Fig. S2 The flow chart shows the steps of single-tube sand pack model flooding tests applied in this study.

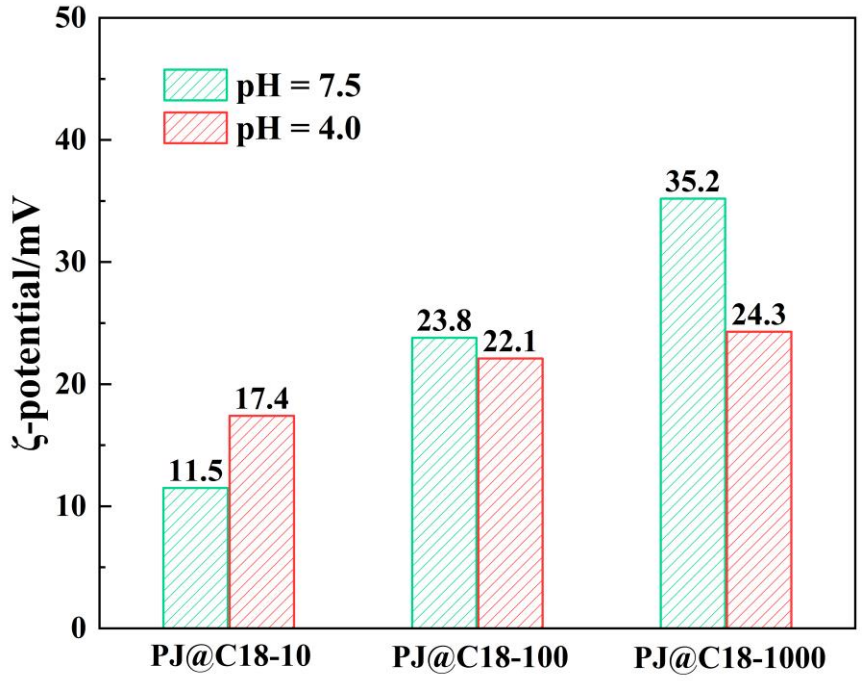

Fig. S3 ζ-potential of three typical PJ@C18 nanoparticles dispersions at different pH.

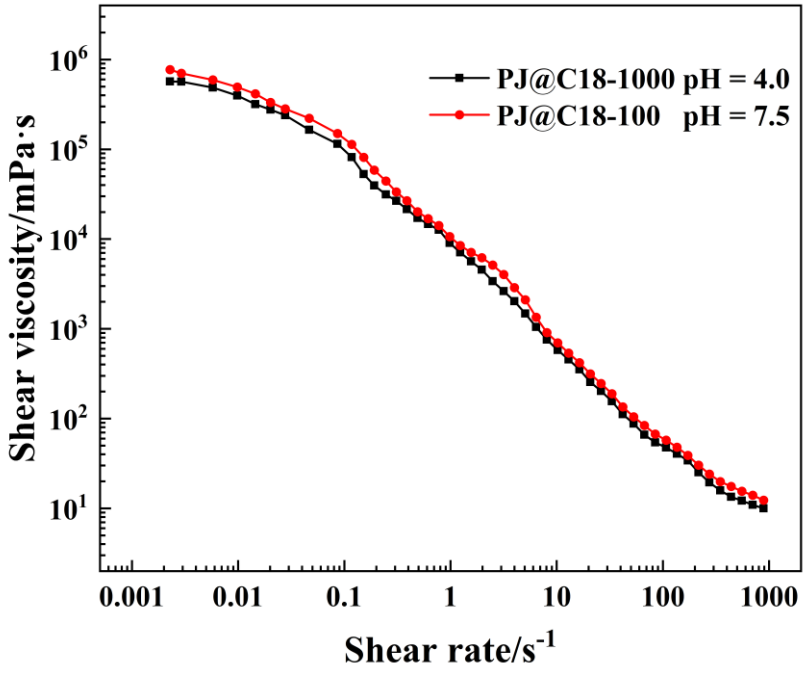

Fig. S4 The shear viscosity of PJ@C18-1000 nanoparticle stabilized emulsions (pH = 4.0) after reversal and PJ@C18-100 nanoparticle stabilized emulsions (pH = 7.5).

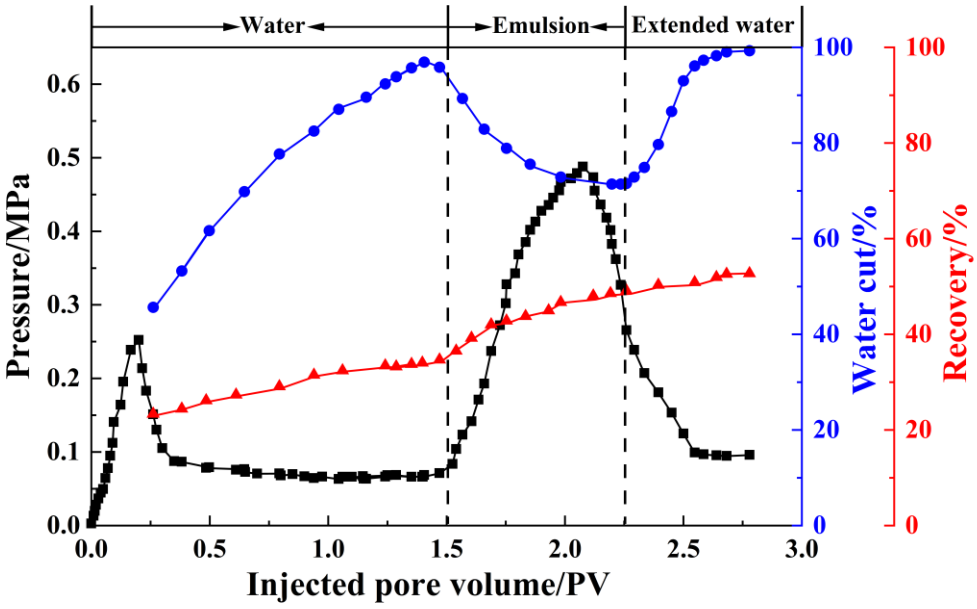

Fig. S5 Results of single-tube sand pack model flooding tests.