

Table S1. Physical and chemical characteristics of dispersed oil samples, bed permeability and the critical velocity selected for bed coalescence PCA analysis

Exp. No.	μ , mPas	ρ , kg/m ³	N_b , mg KOH/l	M , kg/kmol	σ , mN/m	γ , mN/m	E , %vol	ε	$K_0 \cdot 10^9$, m ²	V_k , m/h
1	9.180	905.9	1.130	150.0	33.80	28.91	56.25	0.1334	5.390	55.97
2	9.180	905.9	1.130	150.0	33.80	28.91	56.25	0.1334	2.430	40.47
3	9.180	905.9	1.130	150.0	33.80	28.91	56.25	0.1334	1.130	39.87
4	9.180	905.9	1.130	150.0	33.80	28.91	56.25	0.1334	0.380	32.10
5	9.180	905.9	1.130	150.0	33.80	28.91	56.25	0.1334	0.180	51.77
6	10.32	879	0.130	300.0	32.40	30.16	54.17	0.0645	5.390	53.88
7	10.32	879	0.130	300.0	32.40	30.16	54.17	0.0645	2.430	32.08
8	10.32	879	0.130	300.0	32.40	30.16	54.17	0.0645	1.130	33.37
9	10.32	879	0.130	300.0	32.40	30.16	54.17	0.0645	0.380	37.86
10	10.32	879	0.130	300.0	32.40	30.16	54.17	0.0645	0.180	52.76
11	43.35	915.5	1.420	410.0	18.80	26.56	99.92	0.1612	5.390	59.20
12	43.35	915.5	1.420	410.0	18.80	26.56	99.92	0.1612	2.430	51.12
13	43.35	915.5	1.420	410.0	18.80	26.56	99.92	0.1612	1.130	51.42
14	43.35	915.5	1.420	410.0	18.80	26.56	99.92	0.1612	0.380	51.94
15	43.35	915.5	1.420	410.0	18.80	26.56	99.92	0.1612	0.180	52.24
16	168.9	918.9	1.710	520.0	30.50	27.72	70.00	0.1905	5.390	78.74
17	168.9	918.9	1.710	520.0	30.50	27.72	70.00	0.1905	2.430	51.77
18	168.9	918.9	1.710	520.0	30.50	27.72	70.00	0.1905	1.130	51.50
19	168.9	918.9	1.710	520.0	30.50	27.72	70.00	0.1905	0.380	52.29
20	168.9	918.9	1.710	520.0	30.50	27.72	70.00	0.1905	0.180	51.57