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SUPPLEMENTARY INFORMATION

Microfluidic investigation of the deposition of asphaltenes in porous media

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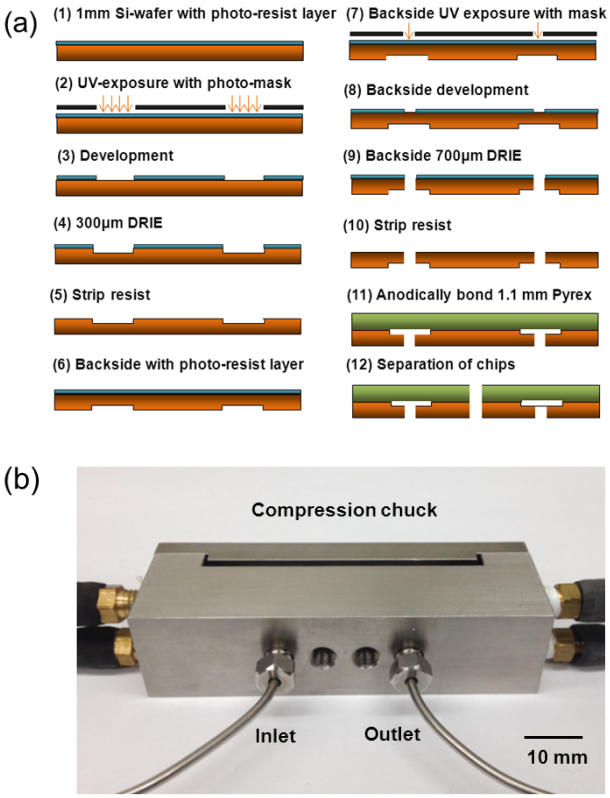

Fig. S1. (a) Schematic fabrication process of the μPBR. (b) Backside view of the packaged system.

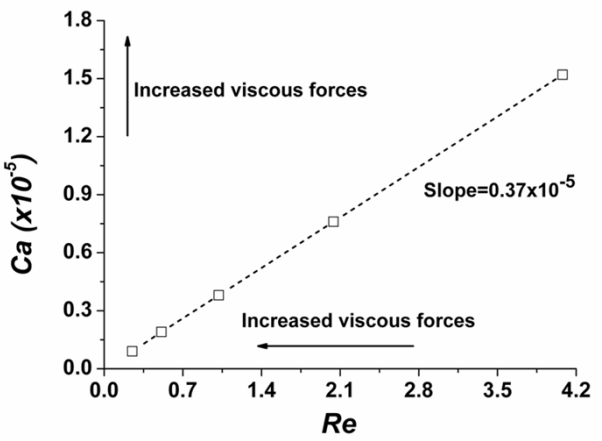

Fig. S2. Dimensionless characterization of Capillary and Reynolds numbers.

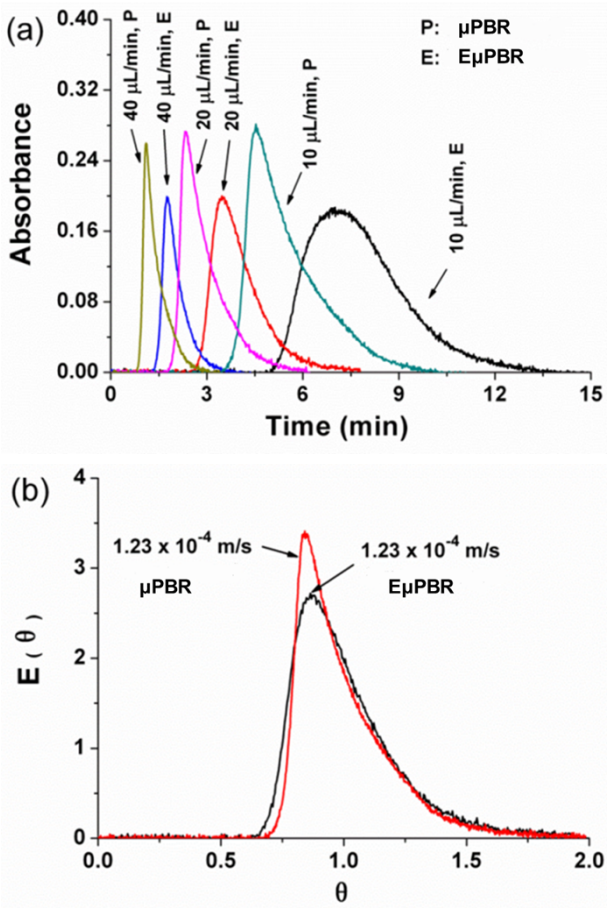

Fig. S3. Residence time distribution measurements of *n*-heptane flow in EμPBR and μPBRs. (a) Absorbance as a function of time at different flow rates ranging from 10.00 to 40.00μL/min, and (b) comparison of *E(θ)* values as a function of dimensionless time *(θ)* at the same velocity of 1.23×10^{-4} m/s in EμPBR and μPBRs.

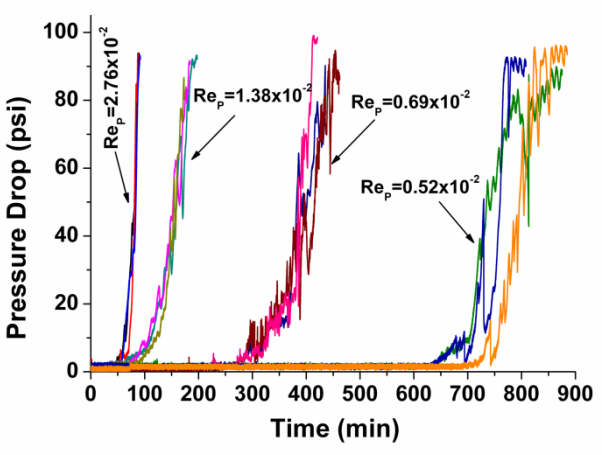

Fig. S4. Influence of flow rates on the pressure drop as a function of time.

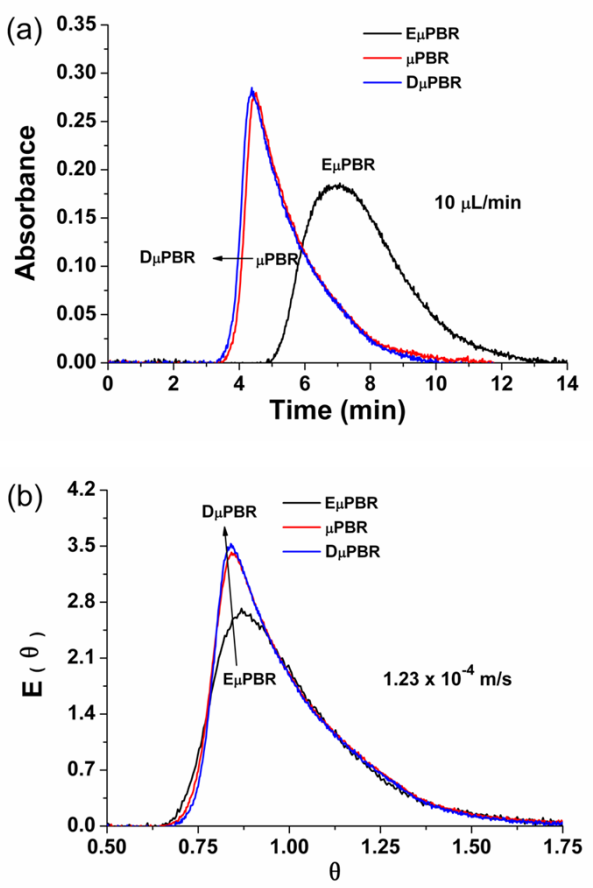

Fig. S5 Residence time distribution measurements of *n*-heptane flow in EμPBR, μPBR, and DμPBRs. (a) Absorbance as a function of time at 10.00μL/min, and (b) comparison of *E(θ)* values as a function of dimensionless time *(θ)* at the same velocity of 1.23×10^{-4} m/s in EμPBR, μPBR, and DμPBRs.

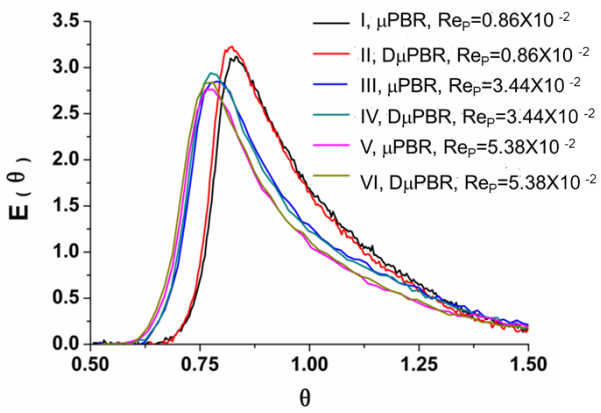

Fig. S6 Comparison of *E(θ)* values as a function of dimensionless time *(θ)* at the Reynolds number of 0.86, 3.44 and 5.38x10^{-2} in a μPBR and DμPBR.

Table S1. Mean volume obtained from residence time distribution measurements

Reactor	F_T (μL/min)	τ (min)	V (μL)	V_{Mean} (μL)
(a)	10.00	7.97±0.046	79.70	
EμPBR	20.00	4.01±0.044	80.20	80.20±0.55
	40.00	2.02±0.015	80.80	
(b)	10.00	5.35±0.025	53.50	
μPBR 1	20.00	2.71±0.034	54.10	53.80±0.30
	40.00	1.35±0.017	53.80	

Table S2. Dispersion within the EμPBR and a μPBR for different flow rates.

	F_T (μL/min)	u or u_i (x10^{-4} m/s)	σ^2 (min^2)	σ_θ^2	$D^*/(uL)$	D^* (x10^{-8} m^2/s)	Bo
(a) EμPBR	10.00	0.62	2.13	0.027	0.0115	1.21	13
	20.00	1.23	0.62	0.026	0.0124	2.59	26
	40.00	2.46	0.17	0.026	0.0134	5.60	52
	80.00	4.92	0.06	0.028	0.0145	12.1	104
	160.0	9.84	0.03	0.031	0.0159	26.6	208
(b) μPBR 1	8.000	1.23	2.63	0.015	0.0075	1.57	45
	10.00	1.54	1.51	0.017	0.0081	2.12	56
	20.00	3.09	0.54	0.019	0.0090	4.73	113
	40.00	6.17	0.16	0.021	0.0103	10.8	225
	80.00	12.3	0.05	0.024	0.0117	24.5	450
	160.0	24.7	0.02	0.027	0.0130	54.5	900

Table S3. Dispersion within EμPBR, μPBR, and DμPBRs for different flow rates..

	F_T (μL/min)	u or u_i (x10^{-4} m/s)	σ^2 (min^2)	σ_θ^2	$D^*/(uL)$	D^* (x10^{-8} m^2/s)	Bo
(a)	10.00	0.62	2.13	0.027	0.0115	1.21	13
EμPBR	20.00	1.23	0.62	0.026	0.0124	2.59	26
(b)	10.00	1.54	1.51	0.017	0.0081	2.12	56
μPBR 1	8.000	1.23	2.63	0.015	0.0075	1.57	45
(c)	10.00	1.63	1.38	0.015	0.0074	2.05	57
DμPBR	7.550	1.23	2.79	0.013	0.0063	1.32	43