

Description of Additional Supplementary Files

Supplementary Movie 1

Description: Wrinkling of the pendant drop during injection of a nanoclay dispersion into and subsequent withdrawal from toluene containing surfactant at a rate of 0.2 mL min^{-1} , showcasing rapid NPS interfacial assembly.

Supplementary Movie 2

Description: Pumping aqueous dye at a flow rate of 10 mL h^{-1} through micropatterned liquid-in-liquid channels, with or without the NPS wall present.

Supplementary Movie 3

Description: Mass transfer across the NPS wall while pumping aqueous dye through the micropatterned liquid-in-liquid channel.

Supplementary Movie 4

Description: Continuous-flow liquid-in-liquid microreactor-on-a-chip for in-line catalyzed chemical transformations.