

Supplementary Materials

Video 1. Optically trapping of beads within the exclusion zone. Time between frames is 40 ms (frame rate = 25/min). Carboxylated 2- μm -diameter beads introduced into a Parafilm-based microfluidic device. A group of beads is captured at 1 s. Trap is turned off at 15 s.

Video 2. Kinetics of EZ formation as a function of incubation time. Start of the experiment ($t = 0$ min). Nafion disc in the reactor of a PDMS-based microfluidic device was washed with 1 mM Na_2HPO_4 . Diameter of carboxylated polystyrene beads is 1 μm . Time between frames is 500 ms.

Video 3. Kinetics of EZ formation as a function of incubation time ($t = 60$ min). Time between frames is 500 ms.

Video 4. Kinetics of EZ formation as a function of incubation time ($t = 110$ min). Time between frames is 500 ms.