Electronic Supplementary Material (ESI) for Lab on a Chip.

Diffusivity measurement with dual chamber diffusion cells

1. The dual chamber diffusion cell is constructed from acrylic. Each chamber is 38.1 mm (= 1.5 inch) in diameter with height 25.4 mm (= 1 inch). On the side, there is a ~10 mm (~0.4 inch) hole (throughout experiments, the hole is covered by ducktape to prevent evaporation except when pipetting) for depositing and withdrawing solutions.
2. The BSA solution is premixed to a concentration of 2 g/L and glycine 1.5 g/L.
3. 28 mL of 2 g/L BSA solution (or 1.5 g/L glycine solution) is added to one chamber and 28 mL pure DI water is quickly added in the other chamber.
4. The dual chamber diffusion cell sits on a shaking incubator at 250 RPM and 25 ℃.
5. For BSA diffusivity measurements, starting 2.5 hours after seeding the solution, 150 μL of solution is taken from both chambers and measured at OD280. For the glycine diffusivity measurement, 150 μL of solution is taken from both chambers and measured for OD200 every 30 min after seeding. Immediately after measurement, the 150 μL solution is pipetted back into the chamber from which it was taken and the loss of solution is negligible.