

Supplementary Information

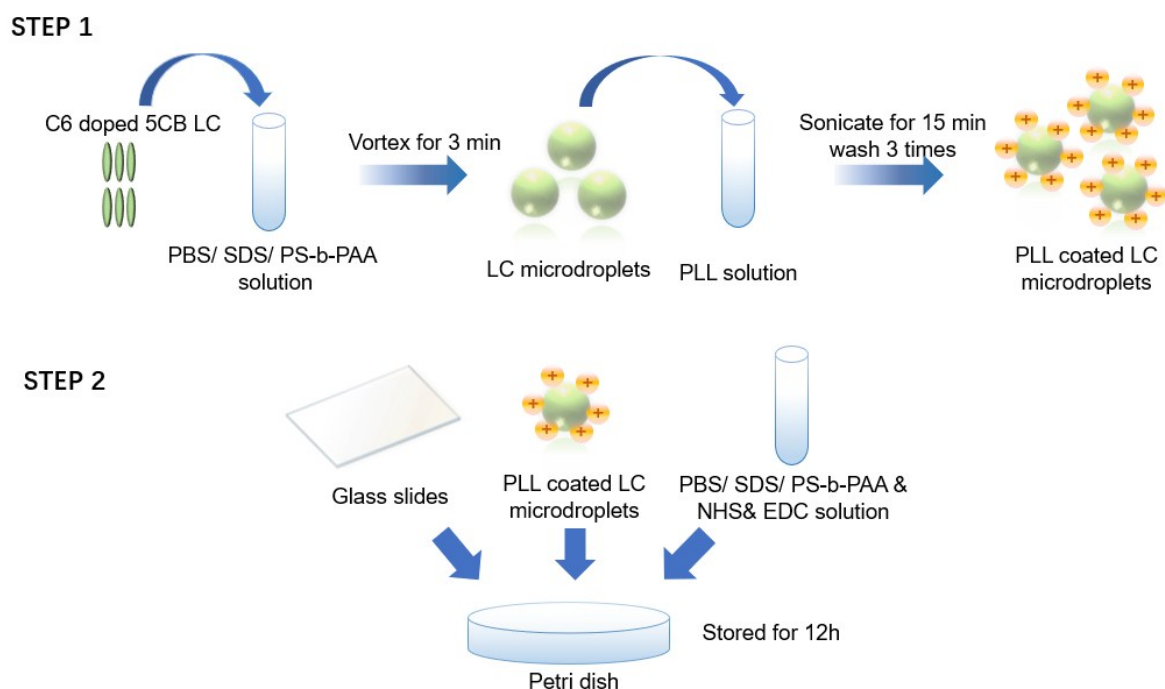


Figure S1. Preparation of liquid crystal microdroplet. Step 1 shows the preparation of PLL coated LC microdroplets. To immobilize the microdroplets on the glass slides, 5CB microdroplets were added into PBS/SDS/PS-b-PAA solution with NHS/EDC and stored under room temperature for 12 hours (as shown in Step 2).

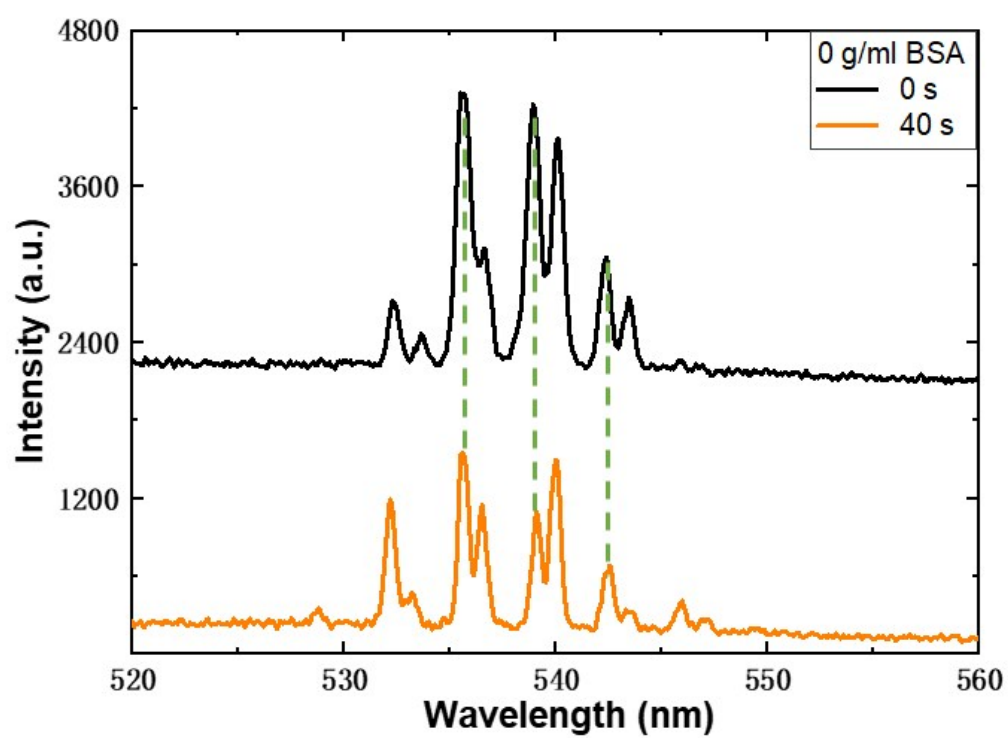


Figure S2. Spectrum under 0 mg/ml BSA (only PBS solution), as a control experiment. Only a small wavelength shift ($\ll 0.1\text{nm}$) was detected.

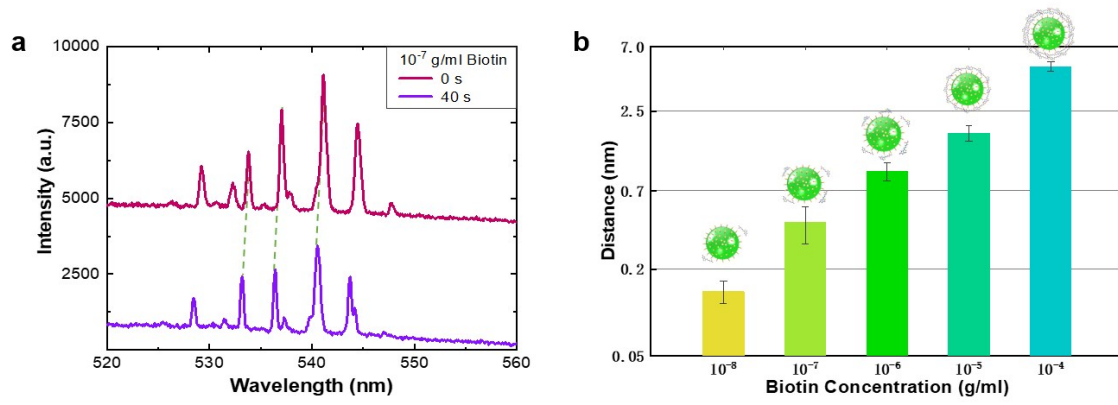


Figure S3. By taking advantage of the specific binding between streptavidin and biotin, streptavidin was coated on LC microdroplet surface to capture/bind with biotin molecules in the surrounding solution. **(a)** WGM lasing spectra of LC microdroplet before and after applying 10^{-7} g/ml of biotin. **(b)** Summary of lasing wavelength shift under various concentrations of biotin. $\alpha=0.0061$; $k=0.38229$; Limit of detection= 4.7×10^{-10} g/ml.