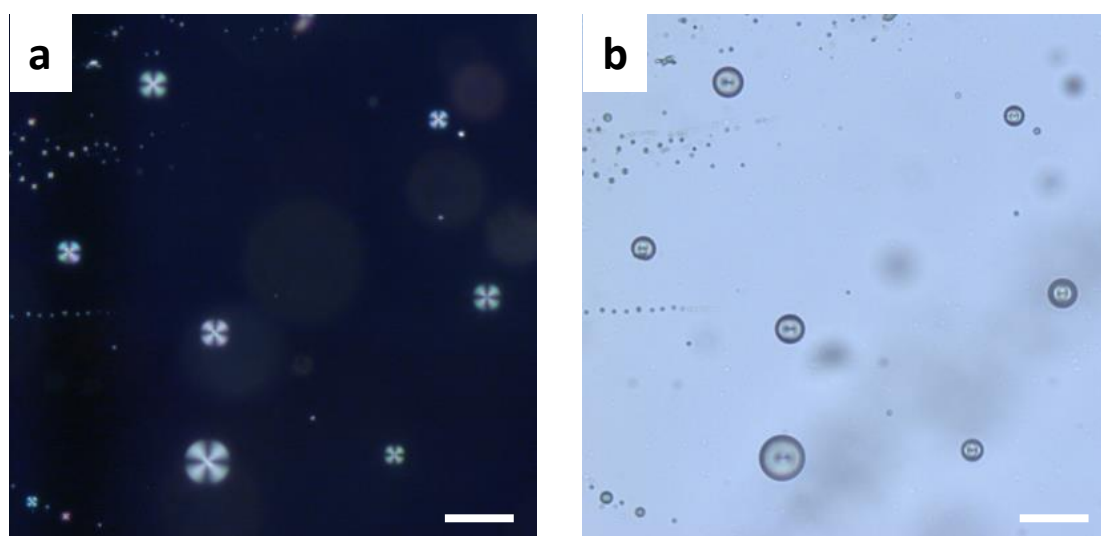


# Supporting Information (SI)

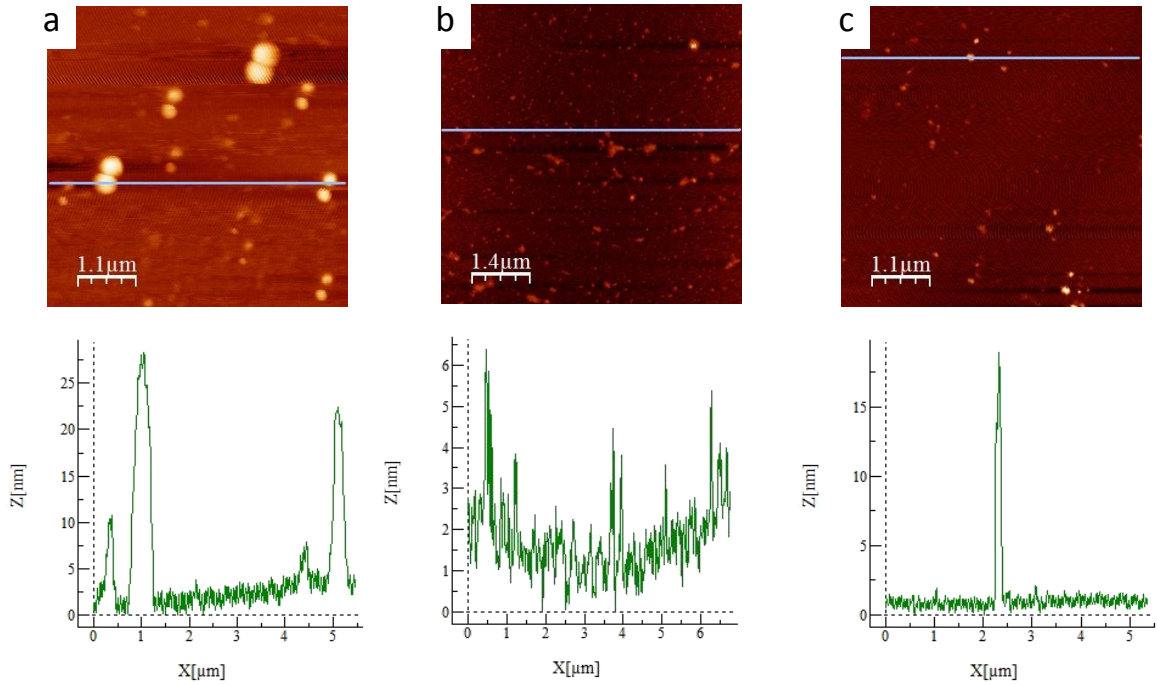
## Poly (L-lysine)-Coated Liquid Crystal Droplets for Sensitive Detection of DNA and its Applications in Controlled Release of Drug Molecules

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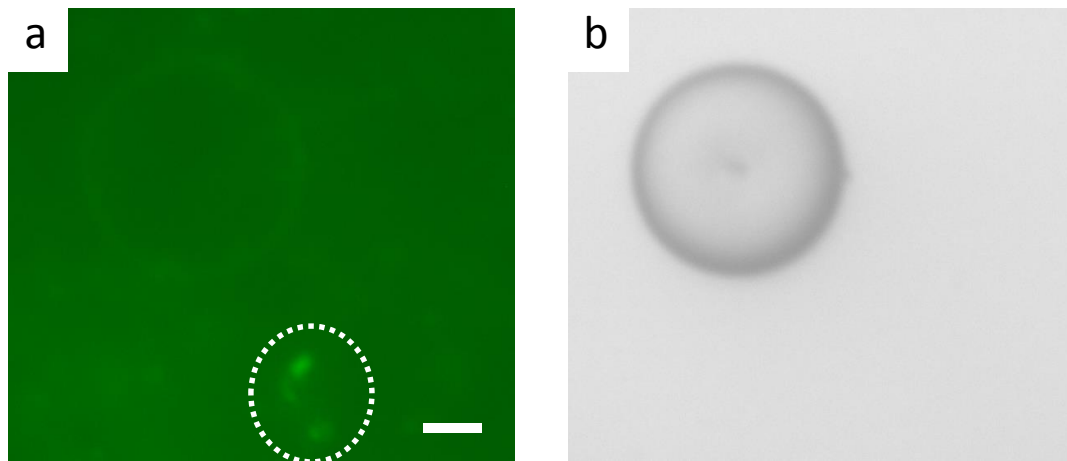
<sup>†</sup>Department of Chemical Sciences, Indian Institute of Science Education and Research Mohali (IISERM), Knowledge City, Sector-81, SAS Nagar, Mohali 140306, India.



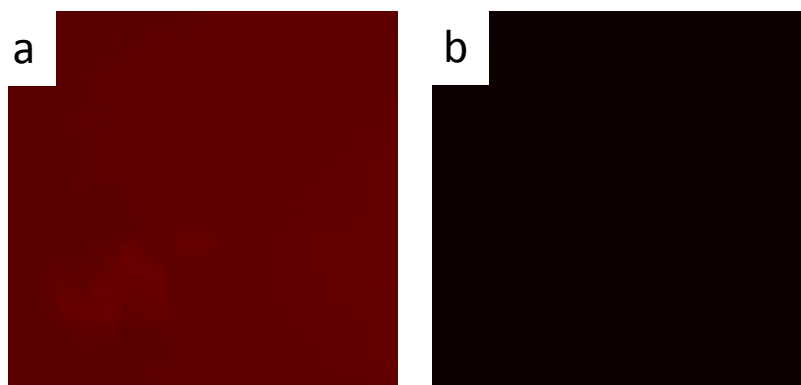
**Figure S1.** Polarized (a) and corresponding bright field (b) microscopy images of PLL modified 5CB droplets after 84 days. The PLL coating on LC droplets is stable as confirmed by the radial configuration of the LC droplets. The zeta potential value was measured as 25.0 mV confirming the presence of cationic PLL at LC droplets. Scale bar = 50  $\mu\text{m}$ .



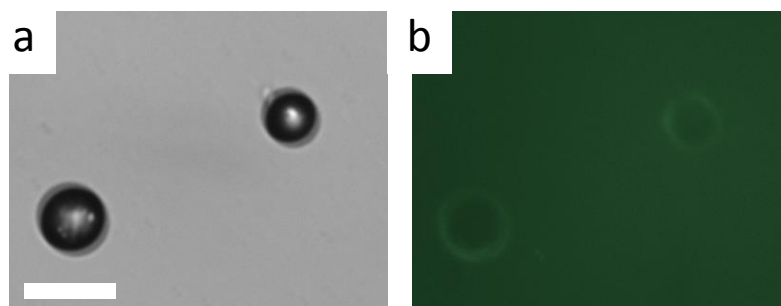
**Figure S2.** AFM topography for the (a) polyplex (complexes of PLL and ssDNA), (b) ssDNA and (c) PLL onto hydrophilic mica substrate. (a) shows nanopolyplexes of PLL and ssDNA. The respective height profiles corresponding to the lines drawn on the images are shown below.



**Figure S3.** Epi-fluorescence microscopic image (a) and corresponding bright field image (b) of PLL-coated 5CB droplet suspended in tris buffer after pre-incubated mixture of PLL and 50 μM FAM tagged fluorescent ssDNA . Scale bar = 10 μm.

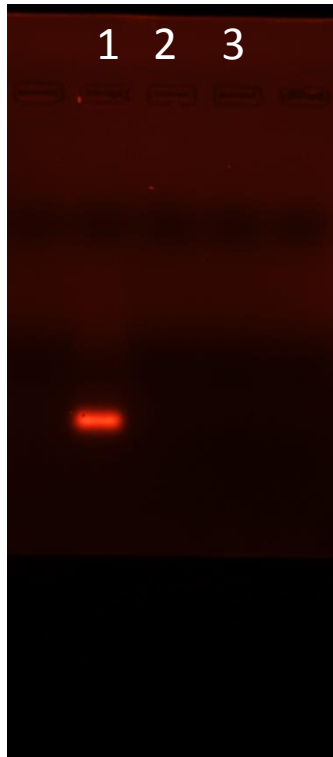


**Figure S4.** Epifluorescence image of pre-incubated solution of propidium iodide loaded FAM tagged (a) double stranded DNA showing red fluorescence (b) single stranded DNA showing no fluorescence at same exposure time.



**Figure S5.** Bright field (a) and corresponding epi-fluorescence microscopic image (b) 460 nm excitation filter and a 534 nm emission filter of PLL-5CB droplets after incubation with PI-(FAM-DNA) complex after 6 days confirming bipolar configuration of 5CB droplets along with the presence of FAM-DNA at the surface of 5CB droplets. Scale bar = 20  $\mu\text{m}$ .

Hybridization of ssDNA with its c-ssDNA was confirmed by gel electrophoresis using DNA-ethidium bromide assay. In figure S1, the bright fluorescent spot in the well 1 under UV confirms the hybridization of the two strands, whereas absence of fluorescence in another well (where only ssDNA is present or ssDNA with its non-complementary ssDNA is added) confirms the absence of ds-DNA.



**Figure S6:** Gel electrophoresis (DNA and ethidium bromide assay): Well 1 contains single strand DNA sequence and its complementary ssDNA. Well 2 contains only ssDNA and well 3 contains ssDNA with its non complementary ssDNA sequence.