Self-organized patterning through dynamic segregation between DNA and silica nanoparticles

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Additional experimental results

Polarization microscopy

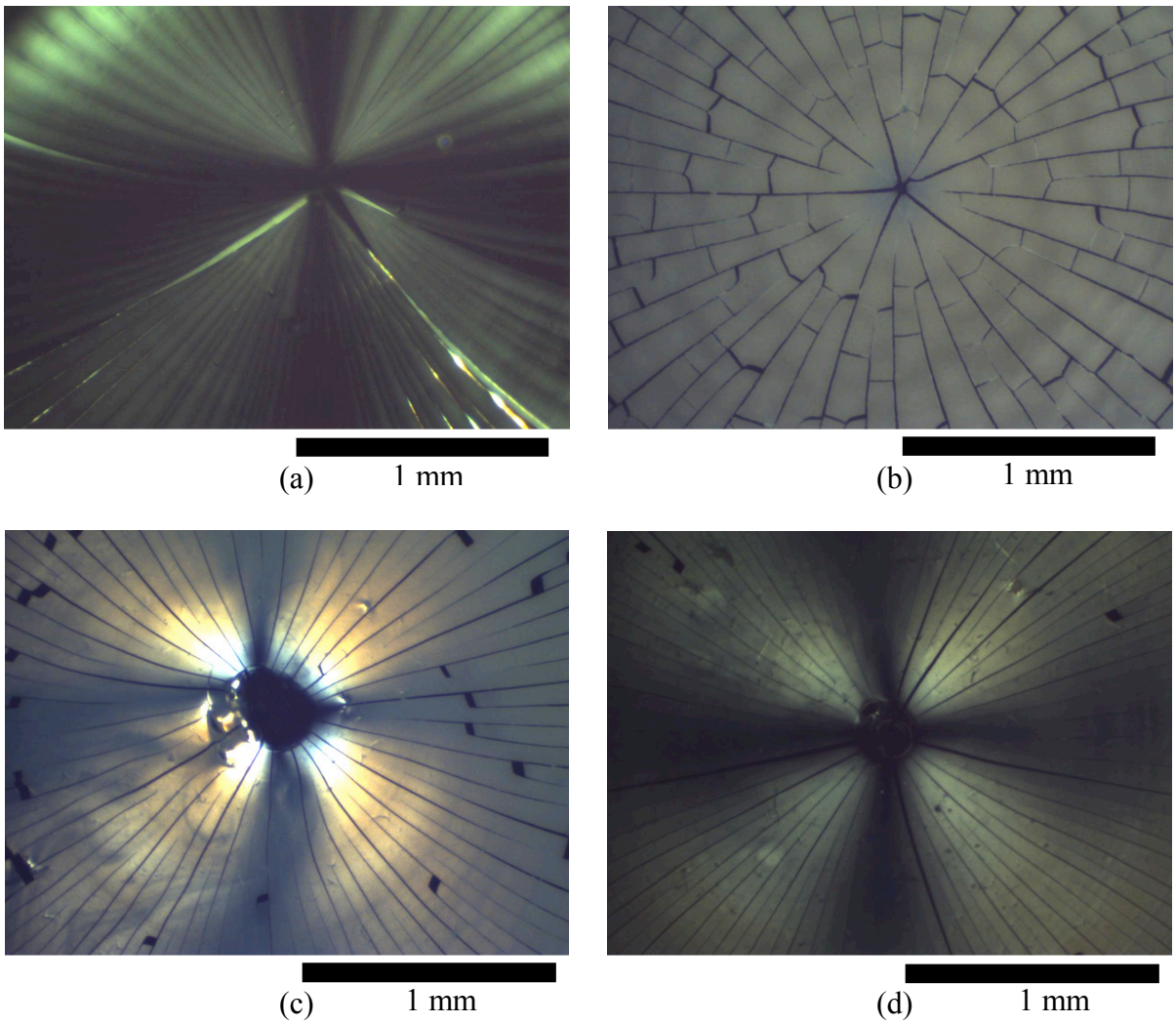
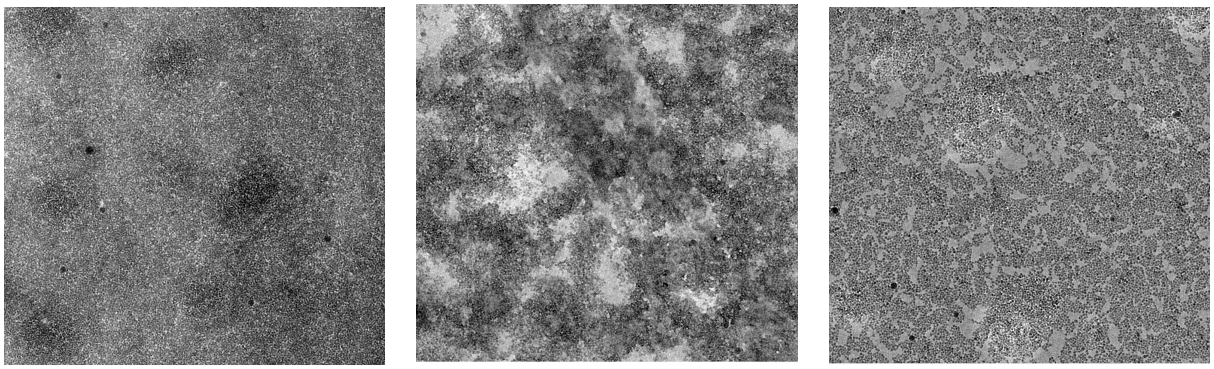


Fig 1. Polarization microscopy (PM) images obtained after the drying of droplets containing (a) nanoparticles only (7.8 % wt.) and nanoparticles (NP) with DNA at different concentrations corresponding to different NP/dsDNA ratios: (b) 1 : 0.5, (c) 1 : 0.25, and (d) 1 : 0.167. The ratio of 1 : 0.5 corresponds to a DNA at 20.8 mg•L^{-1}. The scale bar is 1 mm.

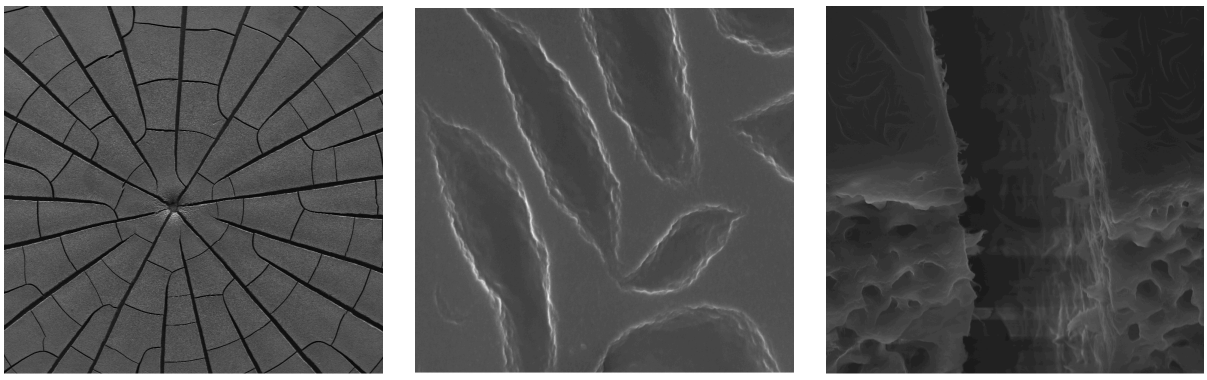
Transmission electron microscopy



(a) (b) (c)

Fig 2. TEM images of the silica nanoparticles from a solution (a) without DNA and containing DNA at the NP/dsDNA ratios of (b) 1 : 0.5 and (c) 1 : 0.25. The radius of the nanoparticles is around 5 mm. The scale bar is 0.5 μm.

Scanning electron microscopy



(a) (b) (c)

Fig 3. HR-SEM images of the dried droplets for the NP/dsDNA ratio of 1 : 0.5. The scale bar is (a) 200 μm, (b) 400 nm, and (c) 7 μm.

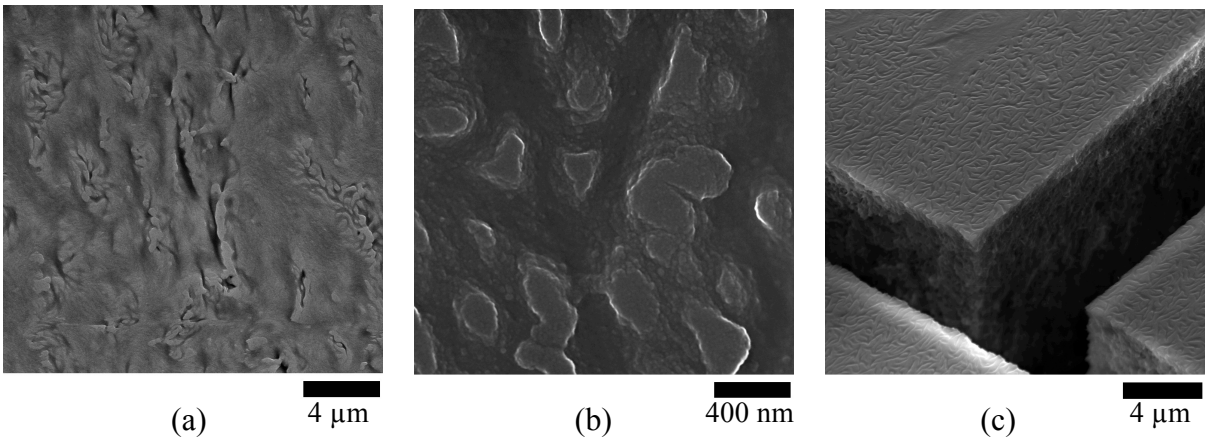


Fig 4. HR-SEM images of the dried droplets for the NP/dsDNA ratio of 1 : 0.25. The scale bar is (a) 4 μm, (b) 400 nm, and (c) 4 μm.

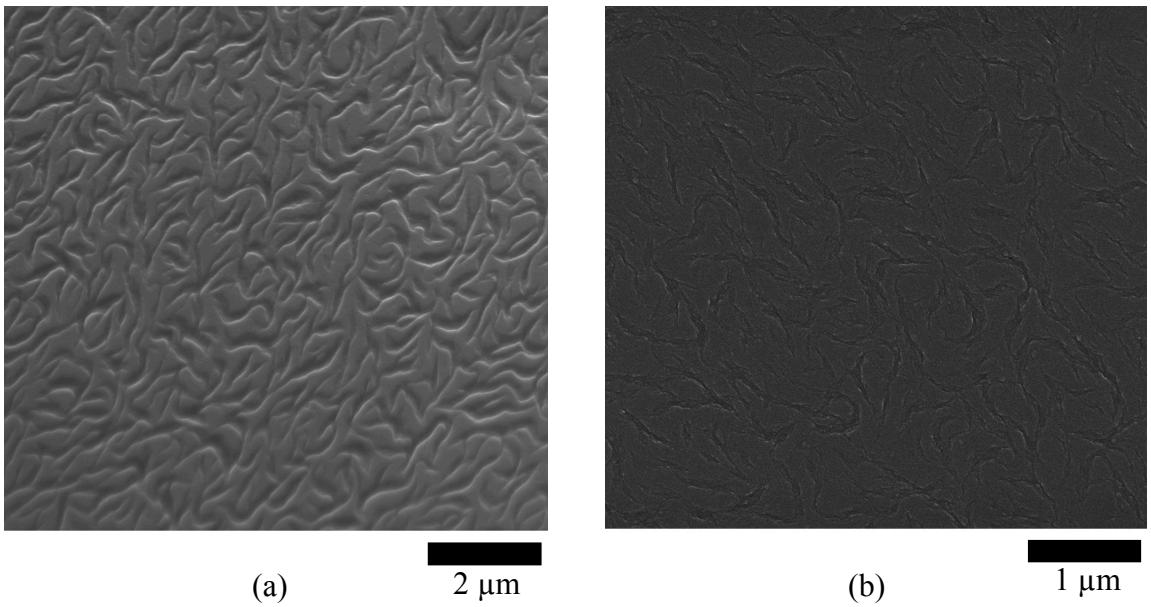


Fig 5. HR-SEM image of the dried droplet for the NP/dsDNA ratios of (a) 1 : 0.167 and (b) 1 : 0.125. The scale bar is 2 μm and 1 μm respectively.

Fluorescence microscopy

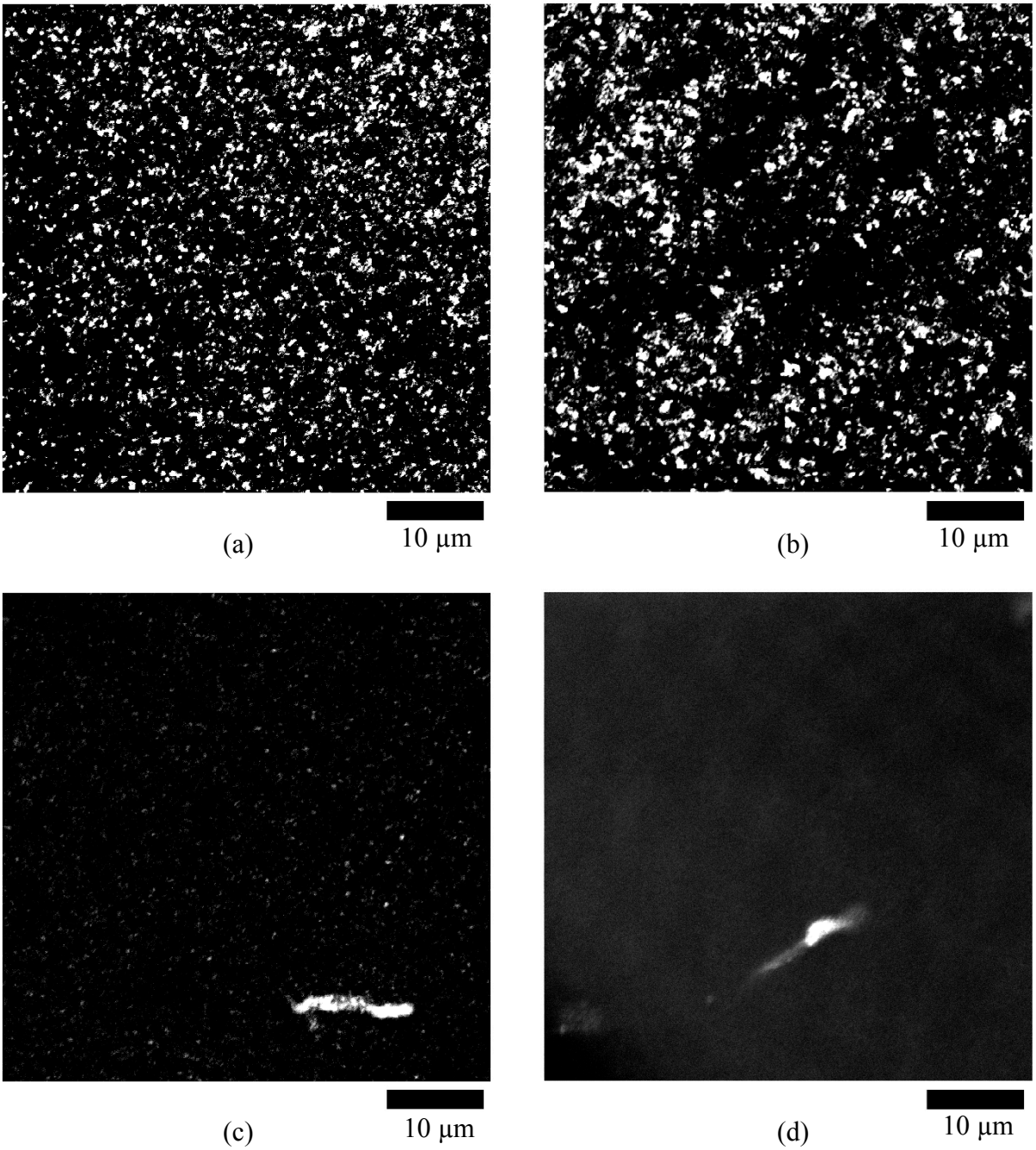


Fig 7. Fluorescence microscopy images obtained by staining DNA with the dye YOYO-I for the NP/dsDNA ratios (a) 1 : 0.75, (b) 1 : 0.5, (c) 1 : 0.25, and (d) 1 : 0.167