Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Materials

Direct writing of a conducting polymer pattern in aqueous solution by using ultrashort pulse laser

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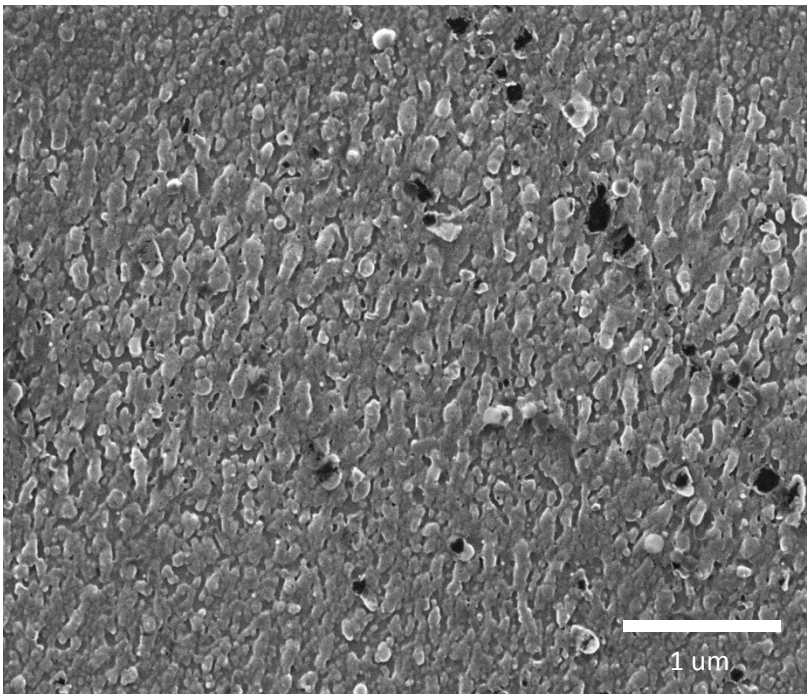

Figure S1. The surface morphology image of the polymerized Pyrrole-3-carboxylic acid (PCA) pattern by scanning electron microscopy.

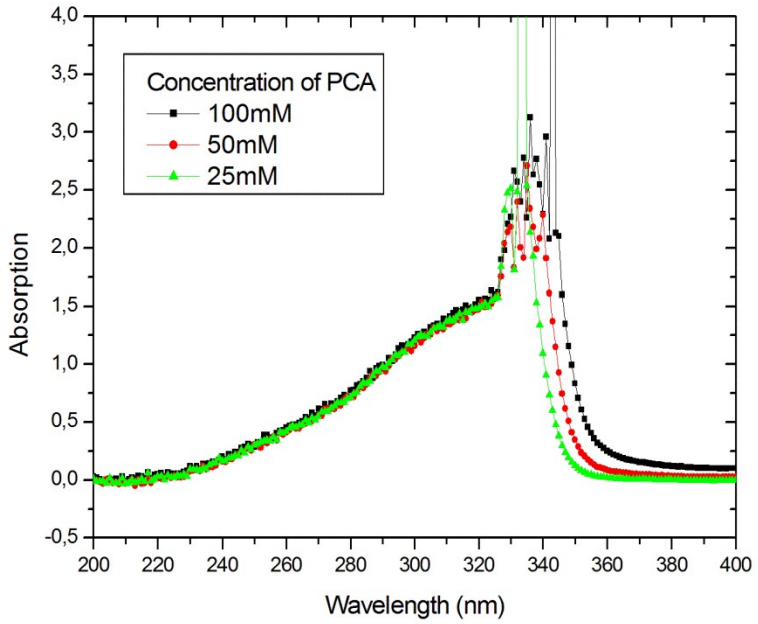

Figure S2. Result of UV-Vis spectrophotometer measurement for the PCA

We conducted preliminary test to know the adsorption properties of Pyrrole-3-carboxylic acid (PCA) with using UV-Vis spectrophotometer for the PCA polymerization. Figure S2. shows that absorption is dramatically decreased over the wavelength of 360 nm. The wavelength can be switched from fundamental (1030 nm) to 2nd (515 nm) or 3rd (343 nm) harmonics in the equipment we used. Therefore, the 343 nm wavelength was chosen for the whole experiment.

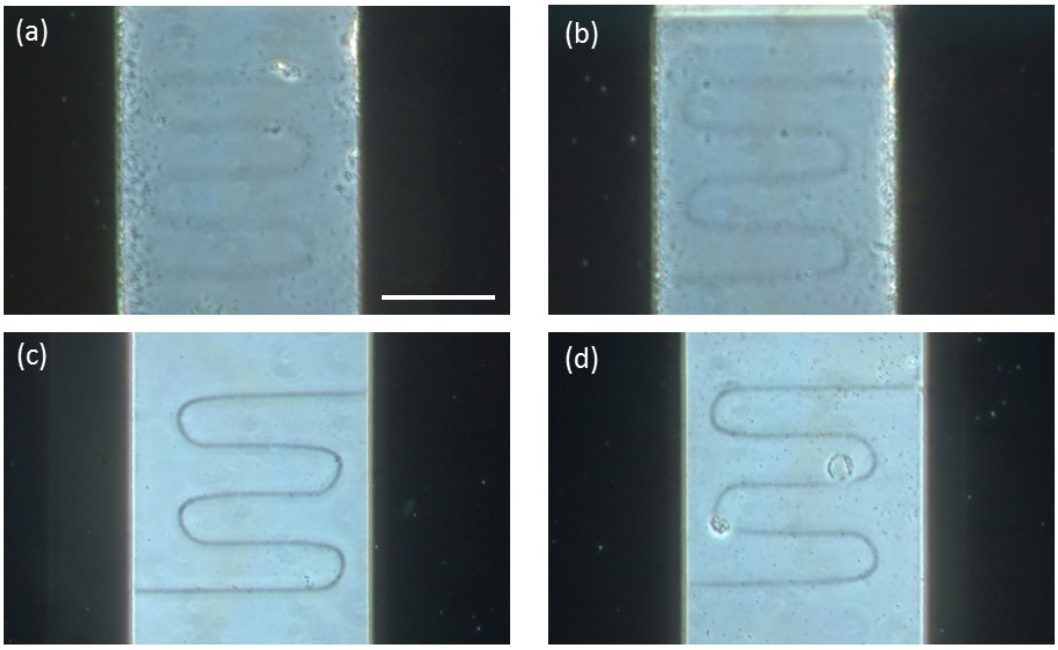

Figure S3. Microscopic images of the polymerized PCA patterns with different surface. (a,b) $–NH_2$ terminated groups, (c,d) –OH terminated groups. Laser power is 0.6mW, speed is 100mm/s and number of the repeat is (a,c) 1000 and (b,d) 750. Scale bar : 100 um

The surfaces of -OH functionalization and $–NH_2$ functionalization are tested. As shown in Figure S3, the pattern of the conducting polymer on –OH surface has finer and cleaner shape than $-NH_2$ functionalization.