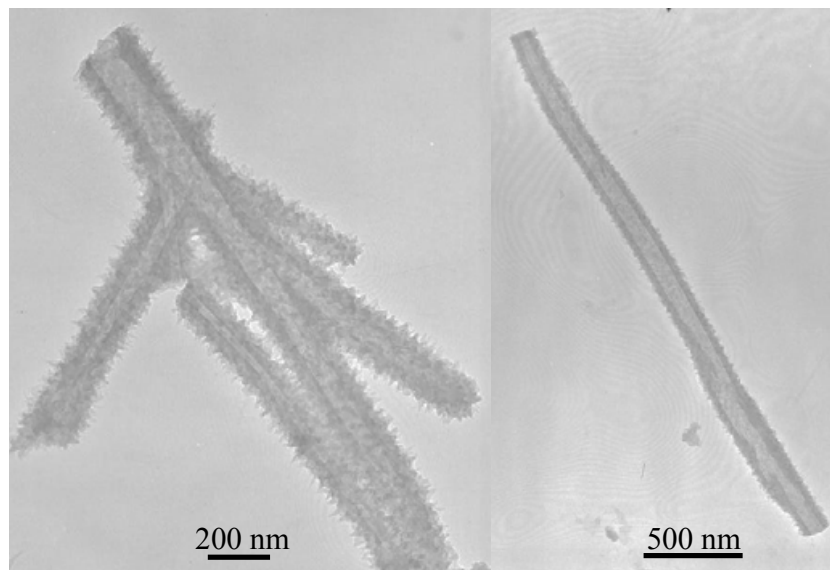
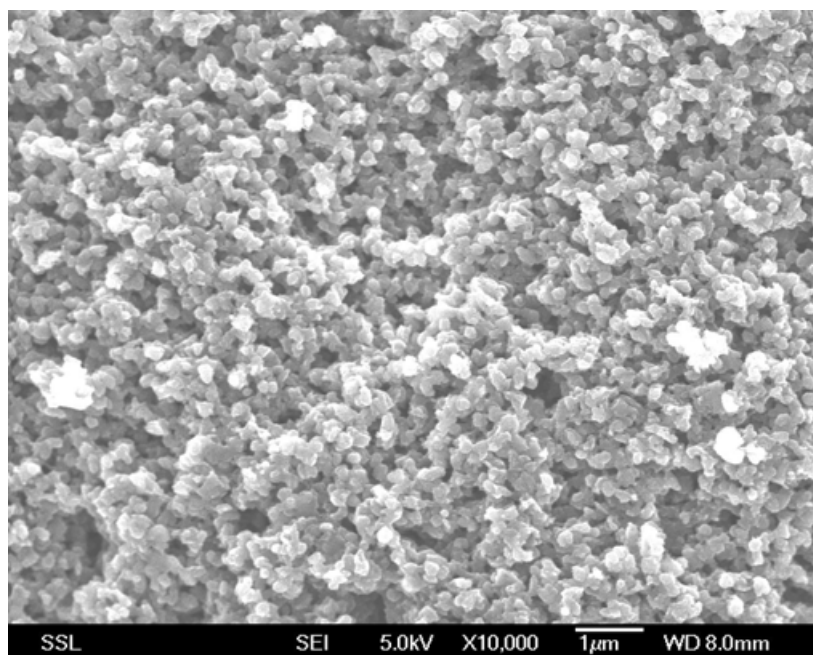


### **TEM, SEM images of PANI nanostructures and their graphs of characterization experiments**

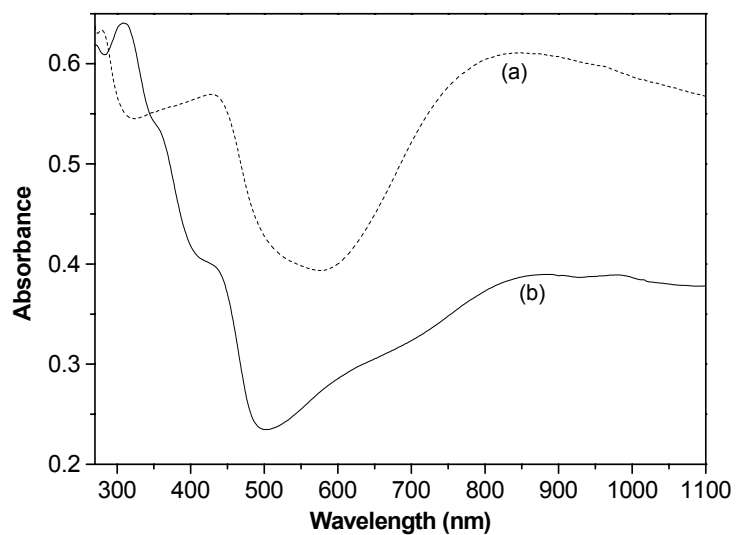
1. TEM images of PANI products at different concentrations of aniline (a) 0.20 mol/L and (b) 0.26 mol/L ([An] : [APS] = 1, reaction time = 18 h, temperature = 2.5 °C, initial pH = 5).



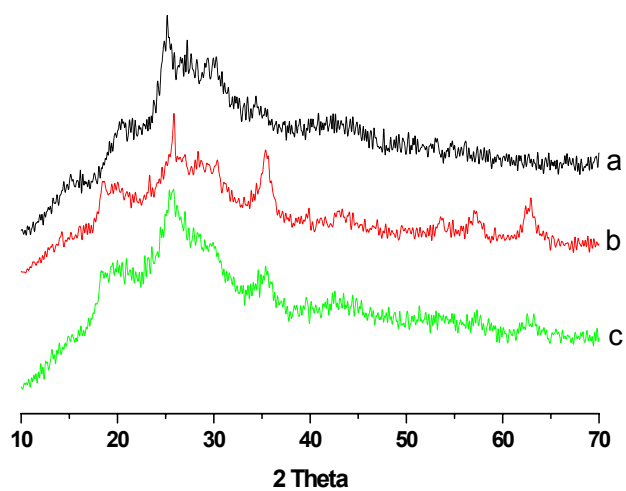
2.. SEM image of PANI products prepared under the same conditions with NP5 and CD.



3. UV-vis spectra of the doped PANI nanotubes (a) (Sample conditions are the same as in Fig. 5a) and normal bulk PANI (b) in water.



4. X-ray diffraction patterns of (a) common PANI-HCl, (b) Y-junction PANI rods (Sample conditions are the same as in Fig. 3) and (c) Y-junction PANI tubes (Sample conditions are the same as in Fig. 5a)



5. The content of  $\text{Fe}_3\text{O}_4$  in the final PANI nanorods characterized by TGA under air environment was 2.74 % (Sample conditions are the same as in Fig. 3).

