Supporting information

Porous Polypyrrole Clusters Prepared by Electropolymerization for a High Performance Supercapacitor

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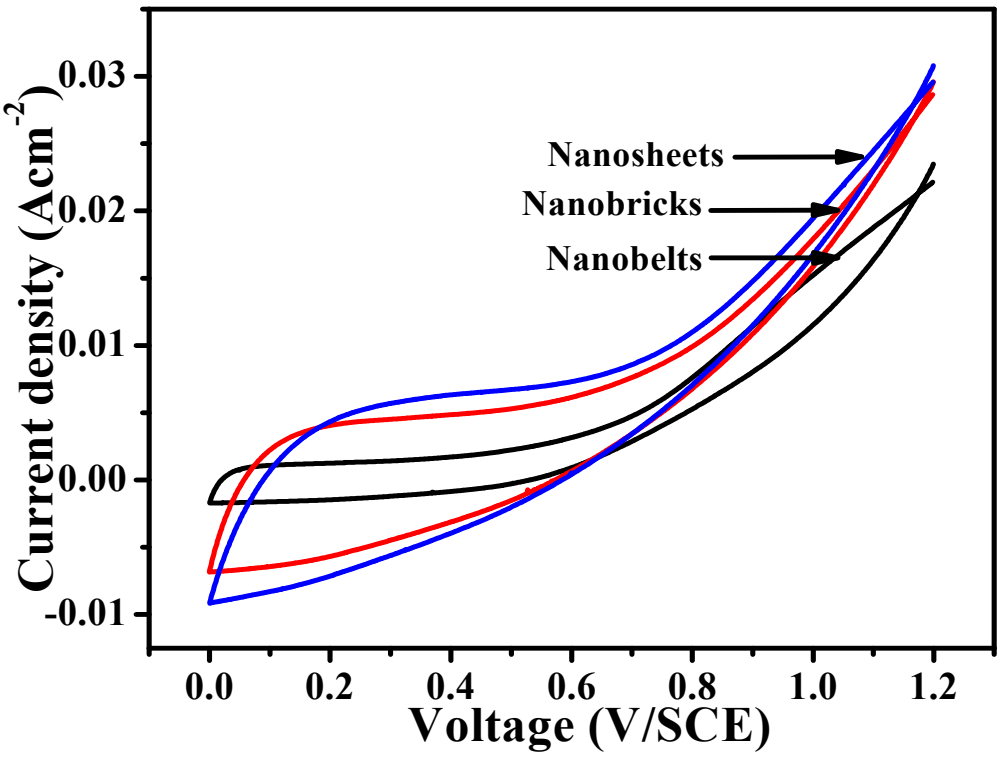
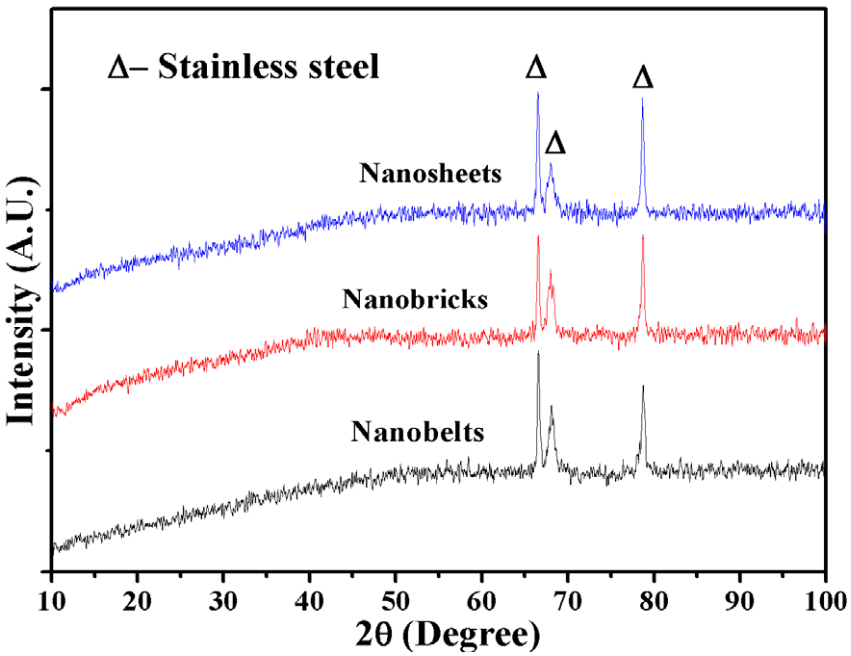
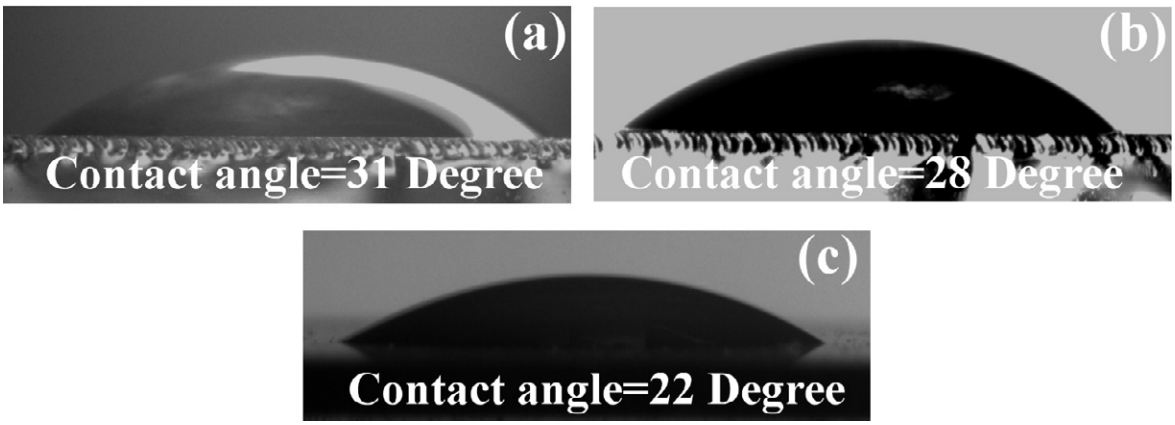


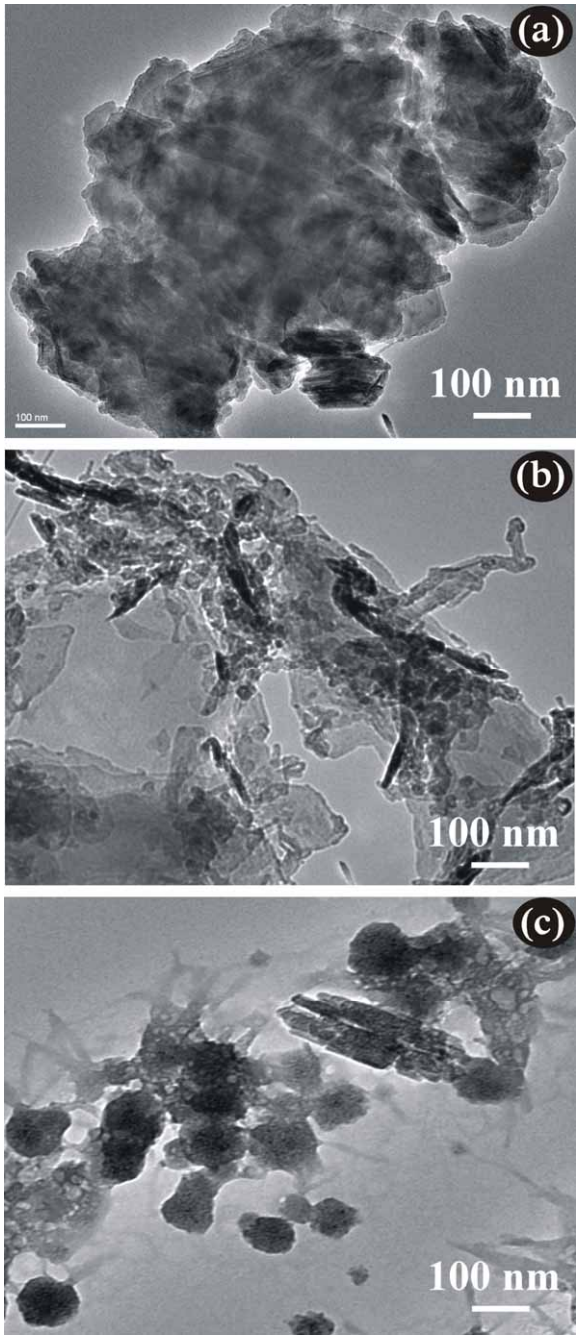
S.1 Cyclic voltammograms recorded during the deposition of nanobelts, nanobricks and nanosheets.



S.2 XRD patterns of (a) nanobelts (b) nanobricks and (c) nanosheets of PPy thin films onto SS substrate. The peaks observed are originated only from the stainless steel substrate.

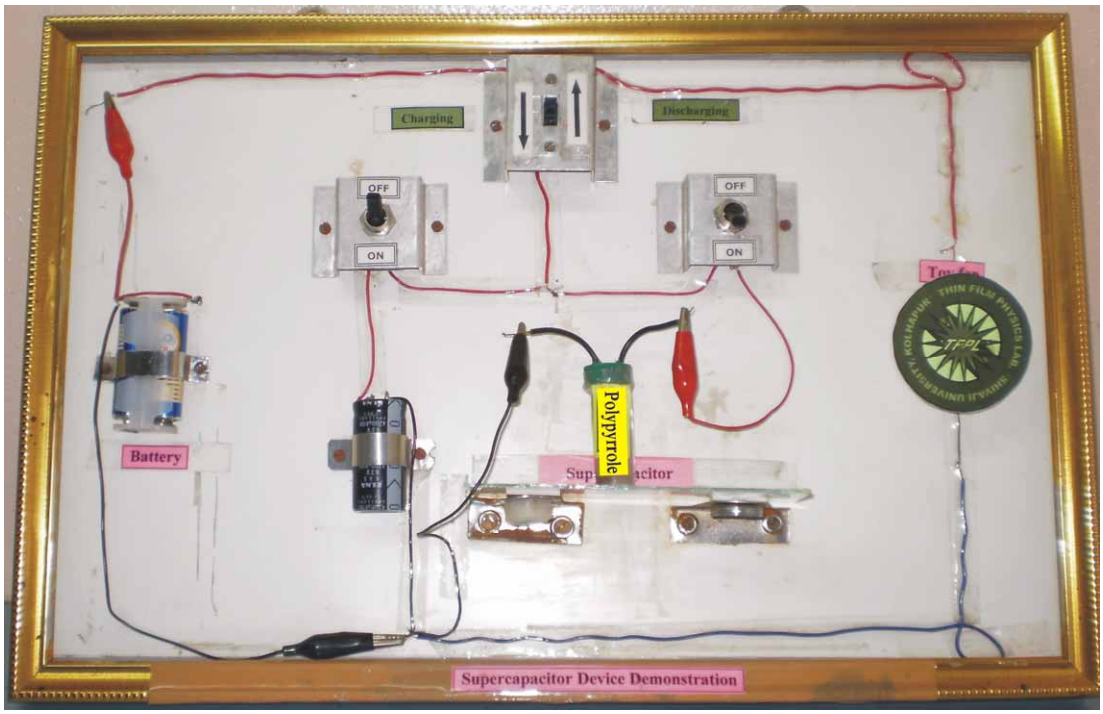


S.3 Measurement of water contact angles of (a) nanobelts (b) nanobricks and (c) nanosheets of PPy thin films.



S.4 TEM images of different NDs of PPy. From Figure (a) it is confirmed that the growth takes place 'cluster by cluster' and that interconnected nanobelts are formed. These nanobelts are grown together to form clusters where the nanobelts are indistinguishable.

As the scan rate of deposition increase to 100 mVs^{-1}, dispersed nanobricks are formed as seen from Figure (b). These nanobricks are also agglomerated. The approximate size of these nanobricks is about 30 to 40 nm. Further increase in scan rate to 200 mVs^{-1} causes the formation of highly porous spherical bunches of nanosheets in Figure (c). The approximate size of single spherical bunch is about 50-70 nm. Due to the porous nature of the sample it provides a large surface area.



S.5 Assembly used for the demonstration of PPy supercapacitive device. Demonstration model consists of ordinary capacitor, supercapacitor, battery to charge capacitor/supercapacitor and toy fan. Here ordinary capacitor is used to compare the energy and power density with supercapacitor