Supplementary information for

One-step template-free electrodeposition of novel poly(indole-7-carboxylic acid) nanowires and their high capacitance properties

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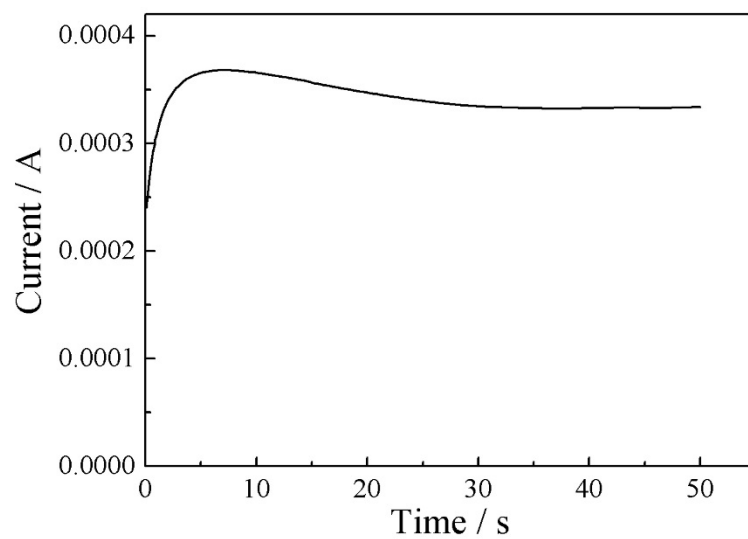
* E-mail: xujingkun@tsinghua.org.cn.

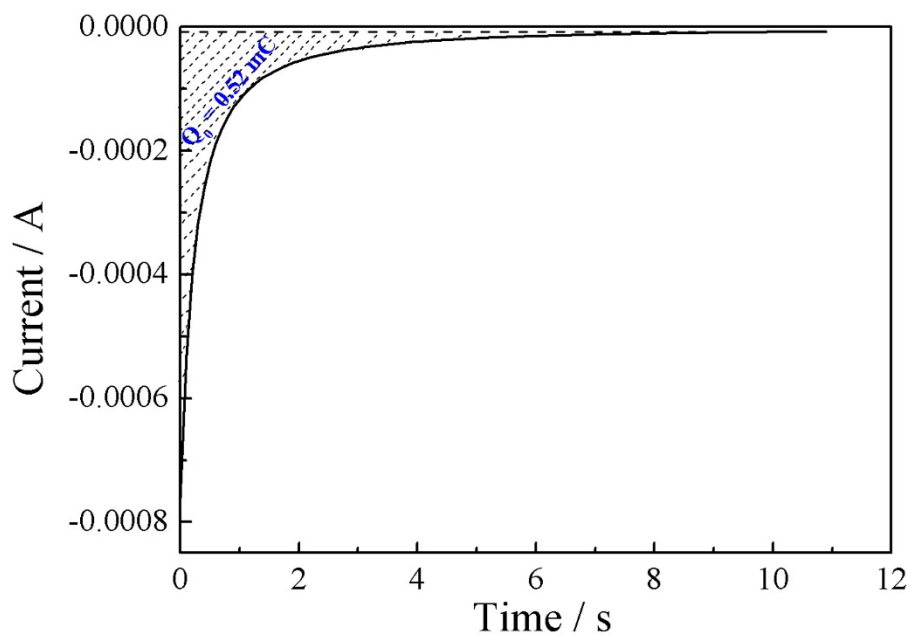**Figure S1.** The chronoamperometric curve of 50 mM ICA on GC substrates at 1.2 V in ACN solution containing 0.1 M LiClO$_4$.

Figure S2. The chronoamperometric curve of PICA film (Q_d = 5.0 mC) at -0.1 V. When the applied potential was -0.1 V, the PICA film was dedoped, and the dedoping process was ended when the current was close to zero. The shadow area shows the integral charges Q_o = 0.52 mC, which is the total charges of oxidized species in the PICA films (Q_d = 5.0 mC).
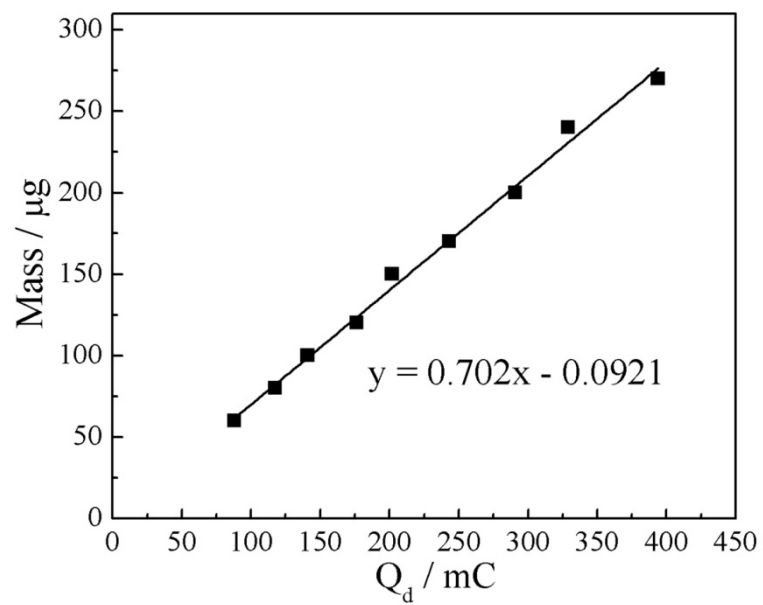
Figure S3. Deposition mass vs. deposition charge for PICA nanowires at 1.2 V.
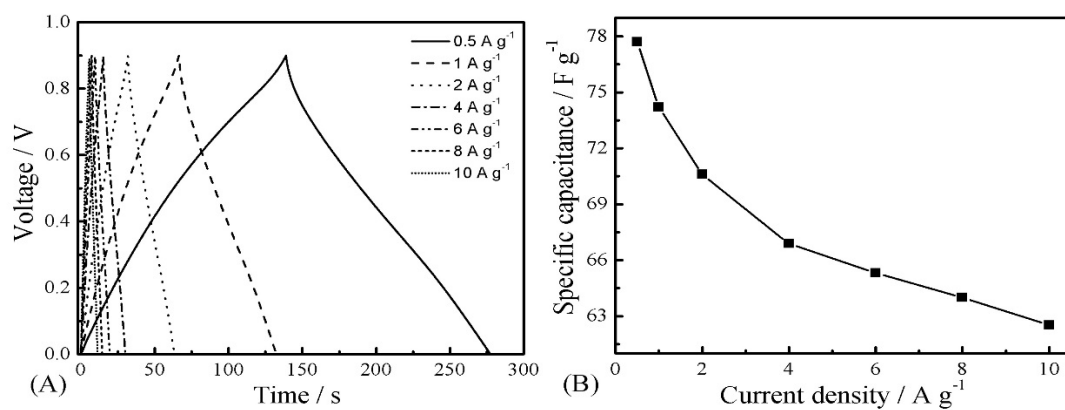
Figure S4. (A) Galvanostatic charge/discharge curves of the symmetric full cell based on two PICA electrodes at different current density, (B) Specific capacitance of the symmetric full cell based on two PICA electrodes as a function of current density, Mass loading of each electrode is fixed at 3.7 μg. The specific capacitance in Figure S4. (B) were calculated according to the equation (1):

$$C = \frac{It}{mV} \qquad (1)$$

where C is specific capacitance (F g^{-1}), I and t are the discharge current and time, respectively, V is the voltage range, and m is the total mass of two PICA electrodes.
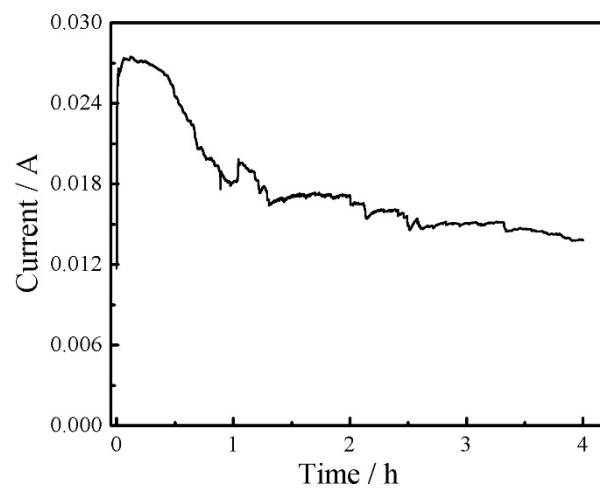
Figure S5. Chronoamperometric curve of 50 mM ICA on Pt sheet with a surface area of 5 cm^2 at 1.2 V for 4 h in ACN solution containing 0.1 M LiClO$_4$.
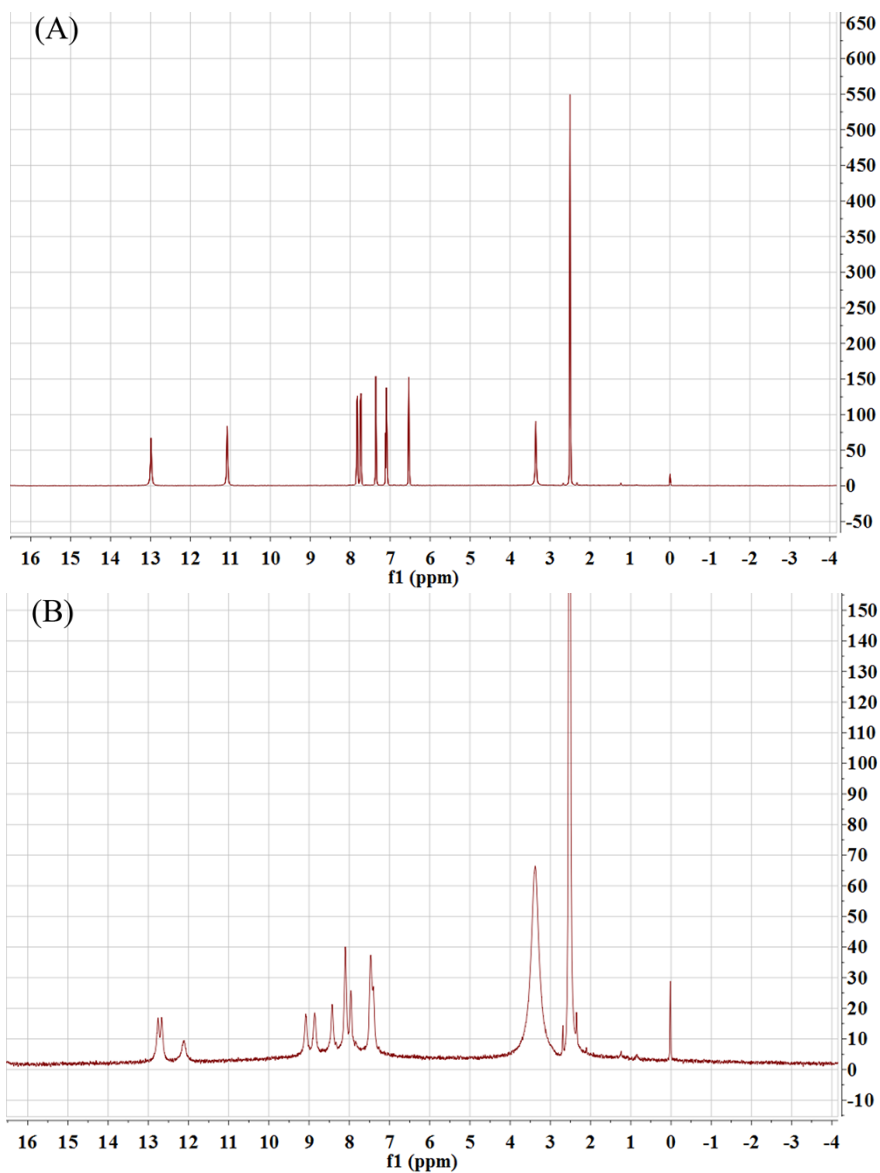
Figure S6. The complete ^{1}H NMR spectra of ICA (A) and dedoped PICA (B) in CD$_3$SOCD$_3$.
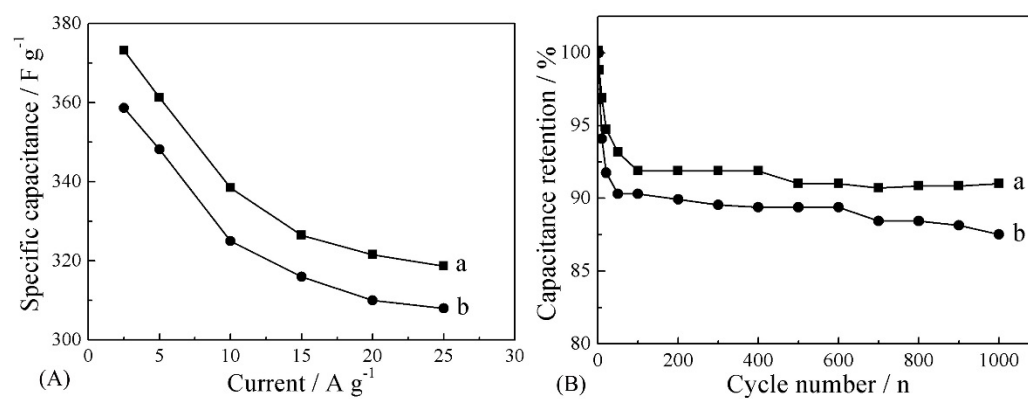
Figure S7. (A) Specific capacitance of poly(indole-7-carboxylic acid) (a) and poly(indole-6-carboxylic acid) (b) as a function of current density, respectively, (B) Galvanostatic charge-discharge life of poly(indole-7-carboxylic acid) (a) and poly(indole-6-carboxylic acid) (b) in 1.0 M H_2SO_4 solution at a constant current density of 15 A g^{-1}, the potential range is from 0.10 to 1.0 V. Mass loading: 3.7 μg.