Electronic Supplementary Information (ESI) for

Highly Porous Structured Polyaniline Nanocomposite for Free-sized and Flexible High-Performance Supercapacitor

Jungkyun Oh[a], Yun Ki Kim[a], Jun Seop Lee[b*] and Jyongsik Jang[a*]

[a] School of Chemical and Biological Engineering, Seoul National University, 1 Gwanak-ro, Gwanak-gu, Seoul 08826, Republic of Korea

[b] Department of Materials Science and Eigineering, Gachon University, 1342 Seongnam-Daero, Sujeong-Gu, Seongnam-Si, Gyeonggi-Do 13120, Republic of Korea

Corresponding Author:

*E-mail: (J. Jang) jsjang@plaza.snu.ac.kr; Tel.: +82-2-880-7069; Fax: +82-2-880-1604

*E-mail: (J.S. Lee) junseop@gachon.ac.kr; Tel.: +82-31-750-5814; Fax: +82-31-750-5389

1. Synthesis of Pt_CPPyNP

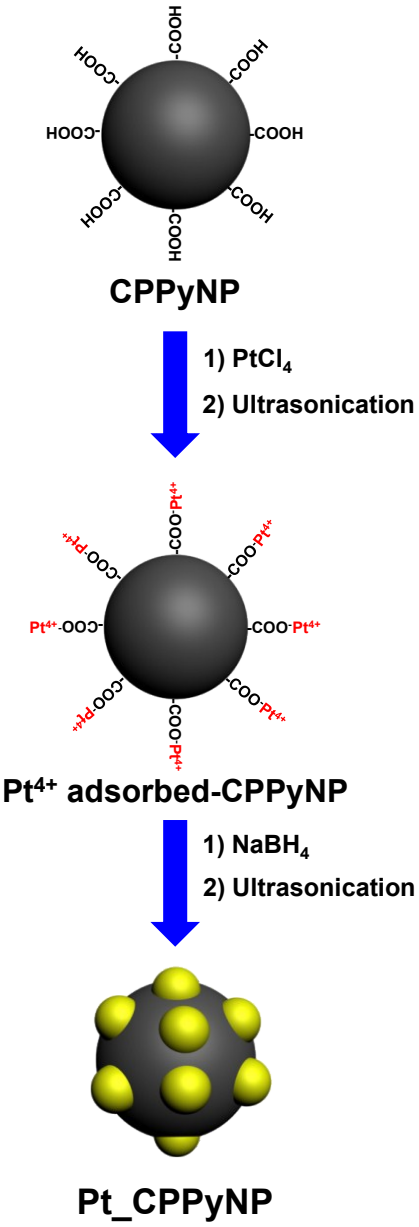

Figure S1. Illustrative diagram of fabrication steps for Pt decorated carboxyl polypyrrole nanoparticles (Pt_CPPyNP).

2. Real images of PANI:CSA film

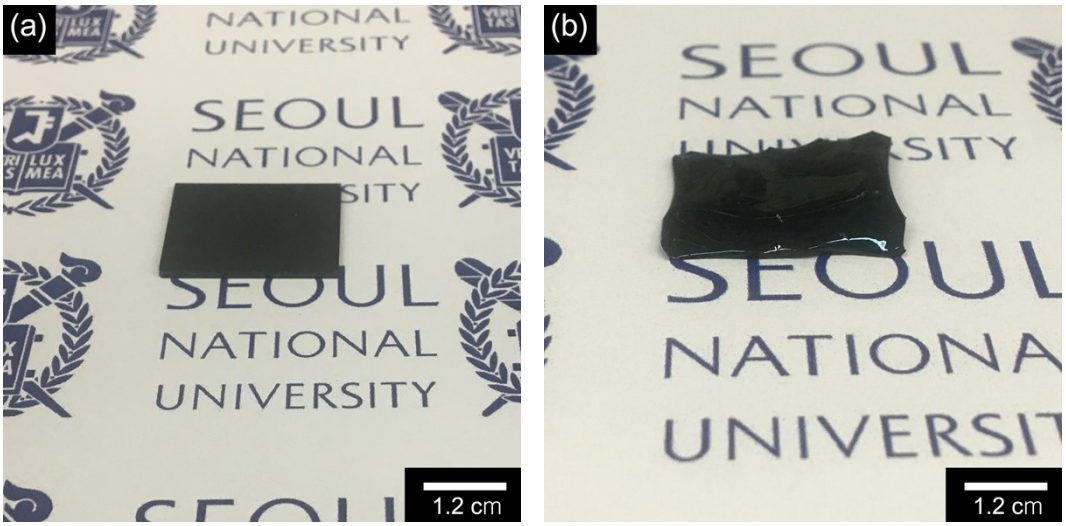

Figure S2. Real sample of Pt_CPPy/PANI:CSA paste (a) coated on the glass substrate and (b) free-standing.

3. Flexibility test of PANI:CSA film

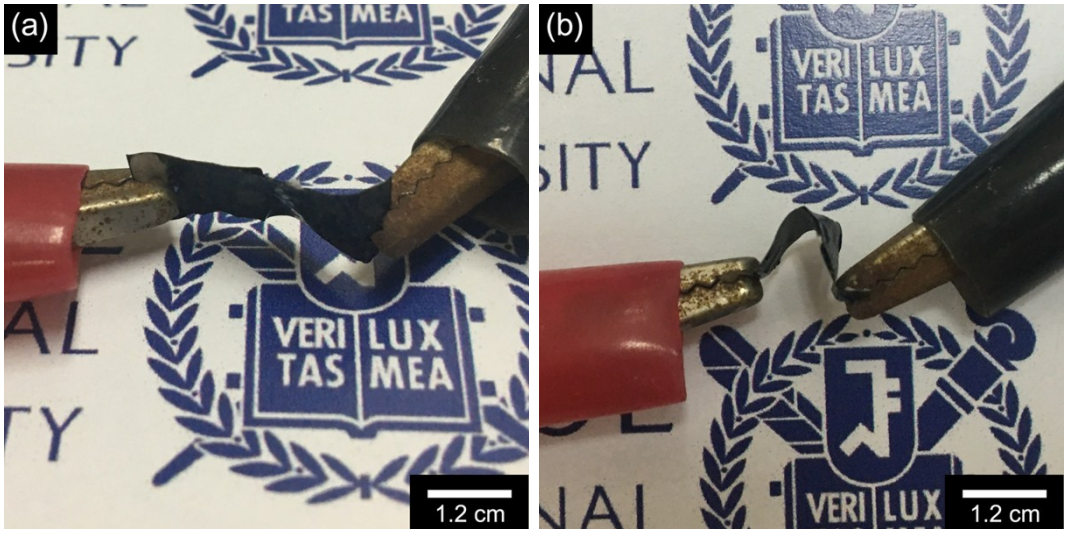

Figure S3. Photographs of the solid-state symmetric Pt_CPPy/PANI:CSA supercapacitor with flat and bending formation.

4. SEM images of Pt_CPPy/PANI:CSA film before and after bending

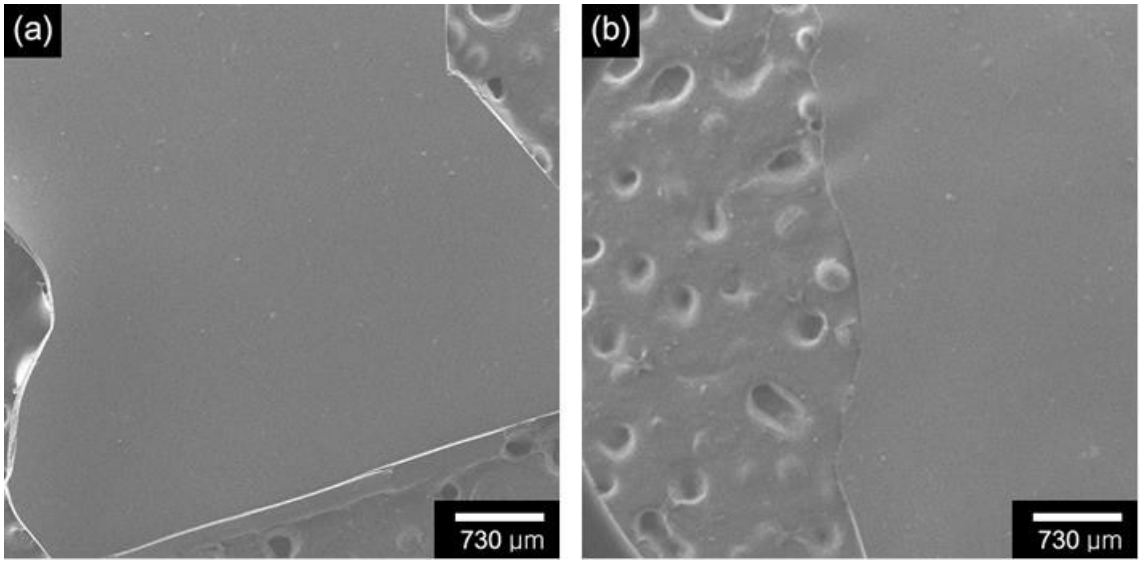

Figure S4. Scanning electron microscope (SEM) image of Pt_CPPy/PANI:CSA film (a) before bending and (b) after 100 times bending.

5. Electrical conductivity of Pt_CPPy/PANI:CSA film before and after bending

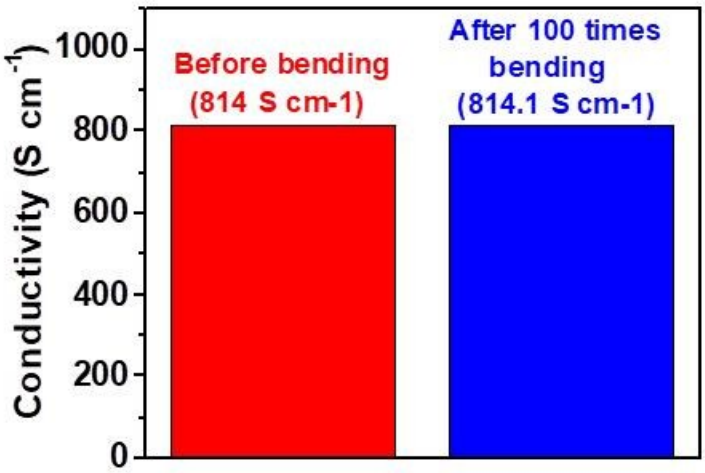

Figure S5. Electrical conductivity measurement of Pt_CPPy/PANI:CSA film before bendindg (red) and after 100 times bending (blue).

6. Energy storage performance of PANI:CSA in two electrode system

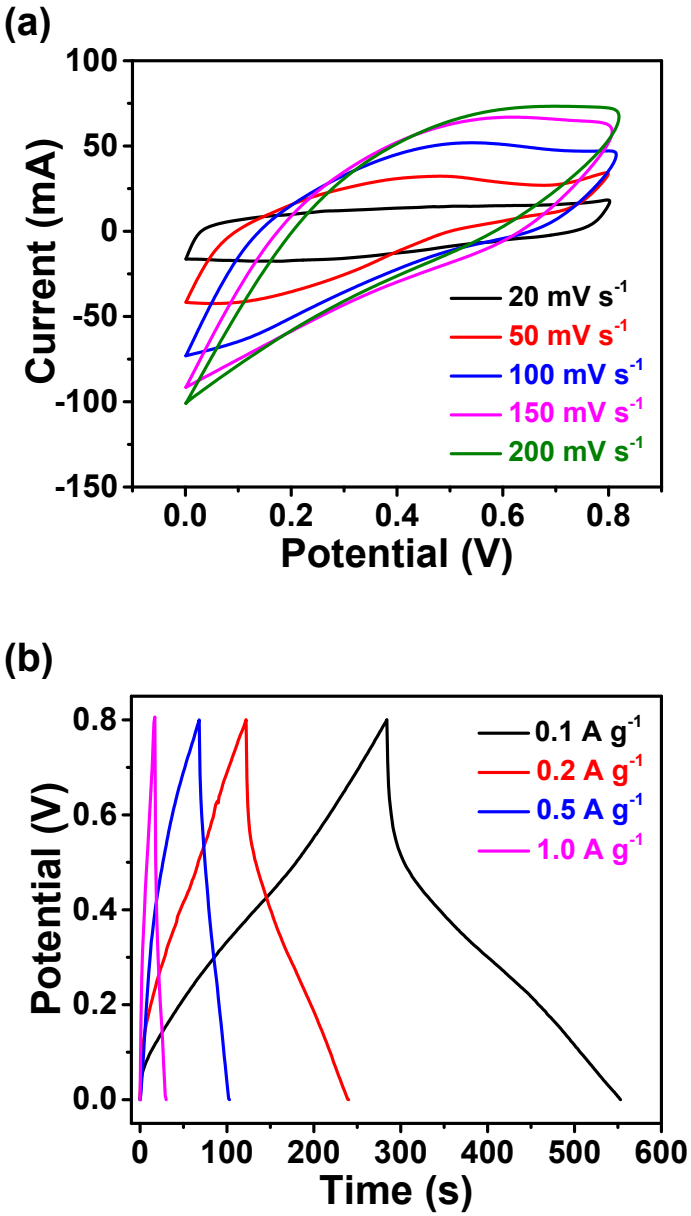

Figure S6. (a) Cyclic voltammetry and (b) galvanostatic charge-discharge curves of the solid-state symmetric supercapacitor based on Pt_CPPy/PANI:CSA paste with various voltage scan rates (20 to 200 mV s^{-1}) and current densities (0.1 to 1.0 A g^{-1}).