Supporting Information

Harnessing Light in Tandem: Advanced Erbium-Polyaniline QD Composites for Next-Generation Energy Storage

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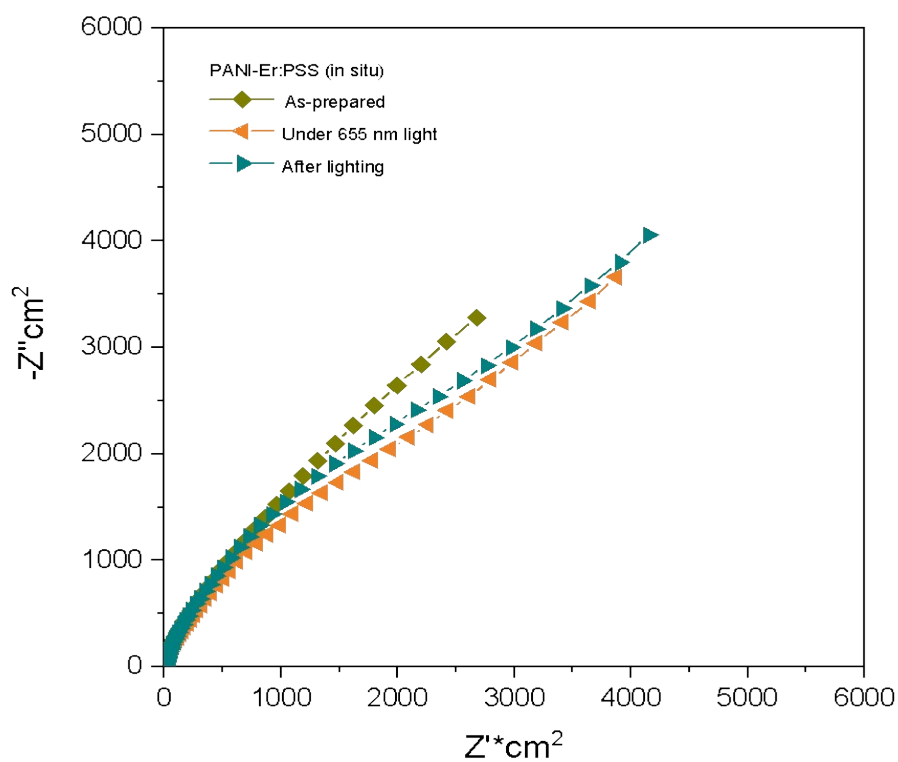

Figure S1. Electrochemical impedance spectroscopy of PANI(Er):PSS composite suspension obtained by in-situ polymerization method.

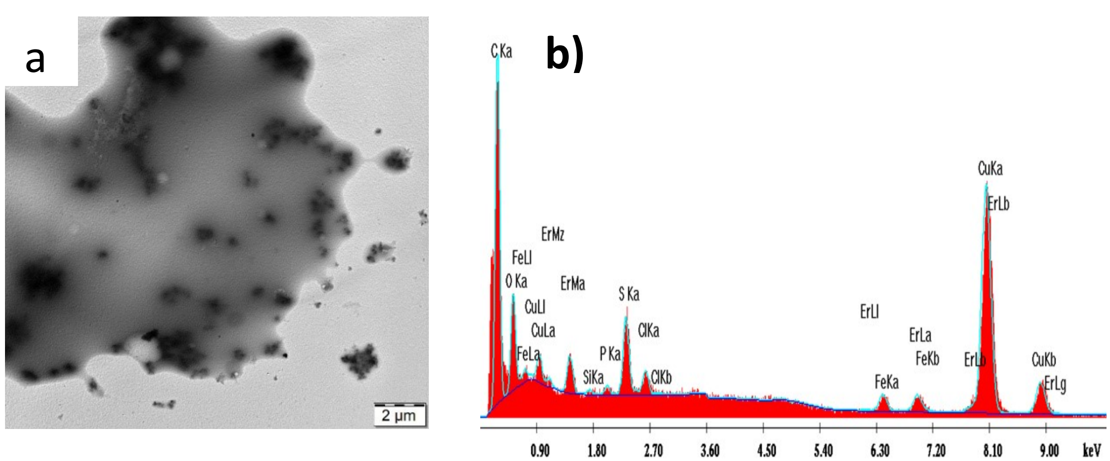

Figure S2. (a) TEM image of the Er-PANI:PSS composite (2 µm scale bar) and its corresponding (b) EDX spectrum.

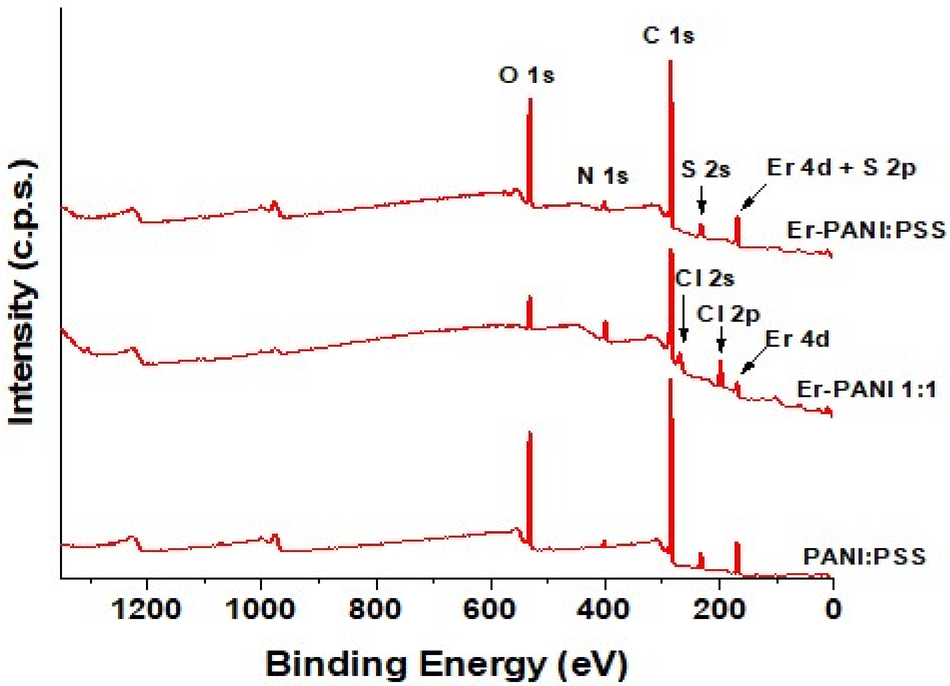

Figure S3. XPS Survey Spectra of drop-cast films from PANI:PSS, Er-PANI (1:1), and Er-PANI:PSS suspensions.

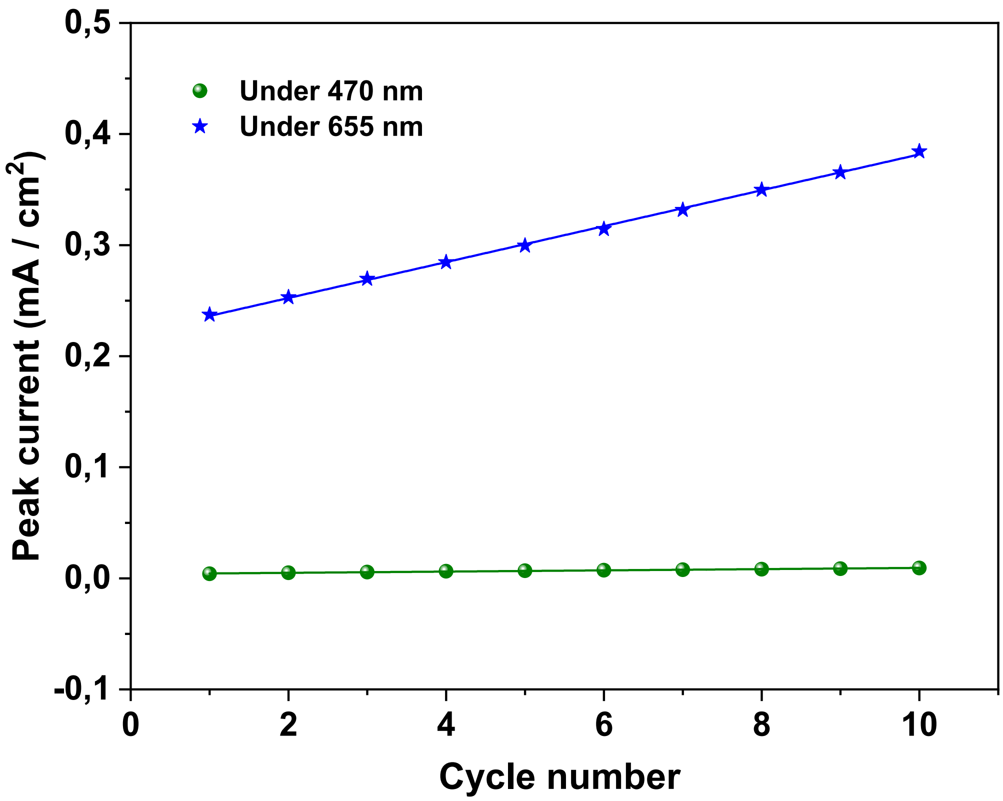

Figure S4. Evolution of the peak current of Er-PANI:PSS under blue and deep-red light illumination.

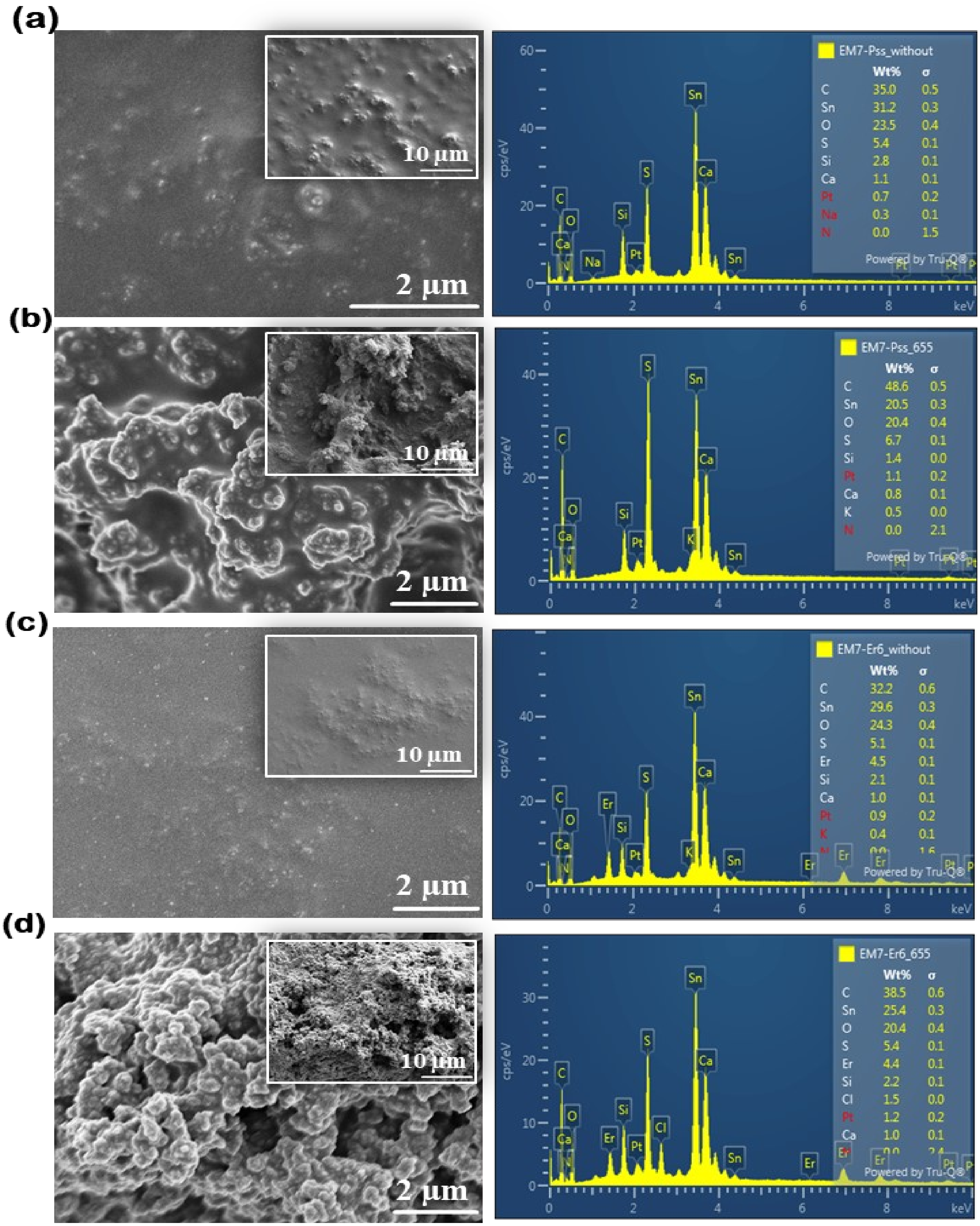

Figure S5. SEM images and corresponding EDX data of films deposited on FTO surfaces after CV measurements for (a) as-prepared PANI:PSS, (b) irradiated PANI:PSS, (c) as-prepared Er-PANI:PSS, and (d) irradiated Er-PANI:PSS suspensions.

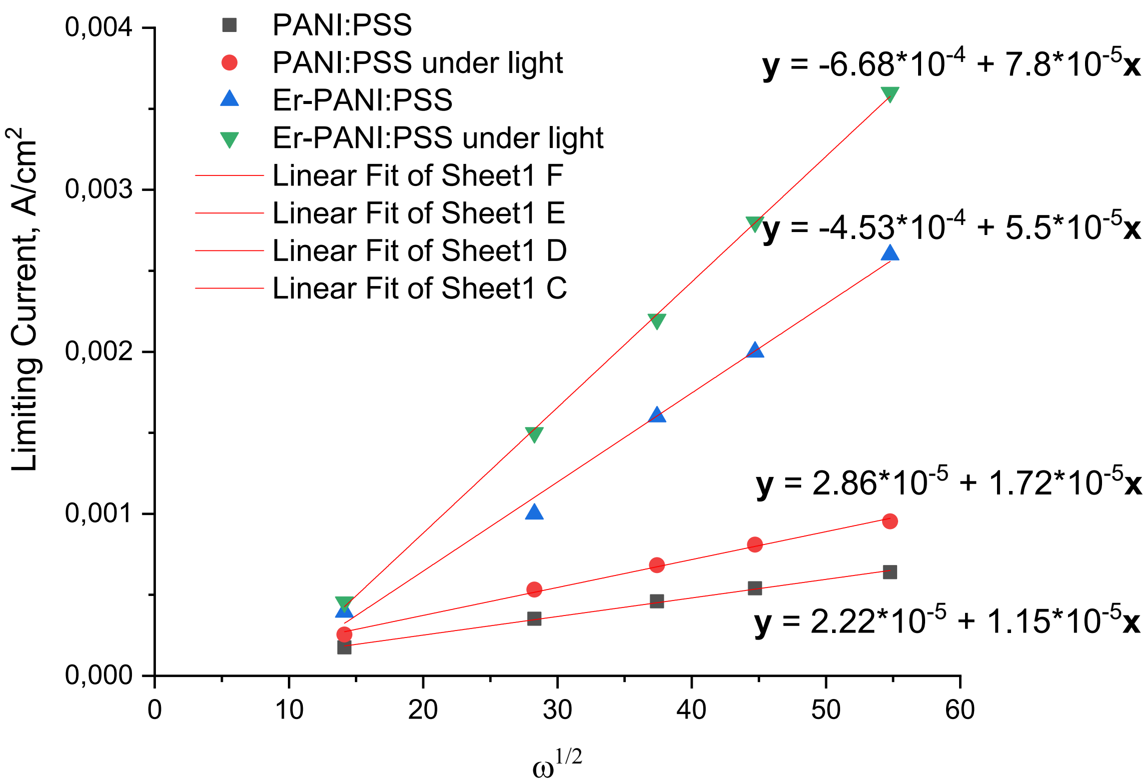

Figure S6. Limiting current versus the square root of rotation speed ($\omega^{1/2}$) obtained from LSV measurements.

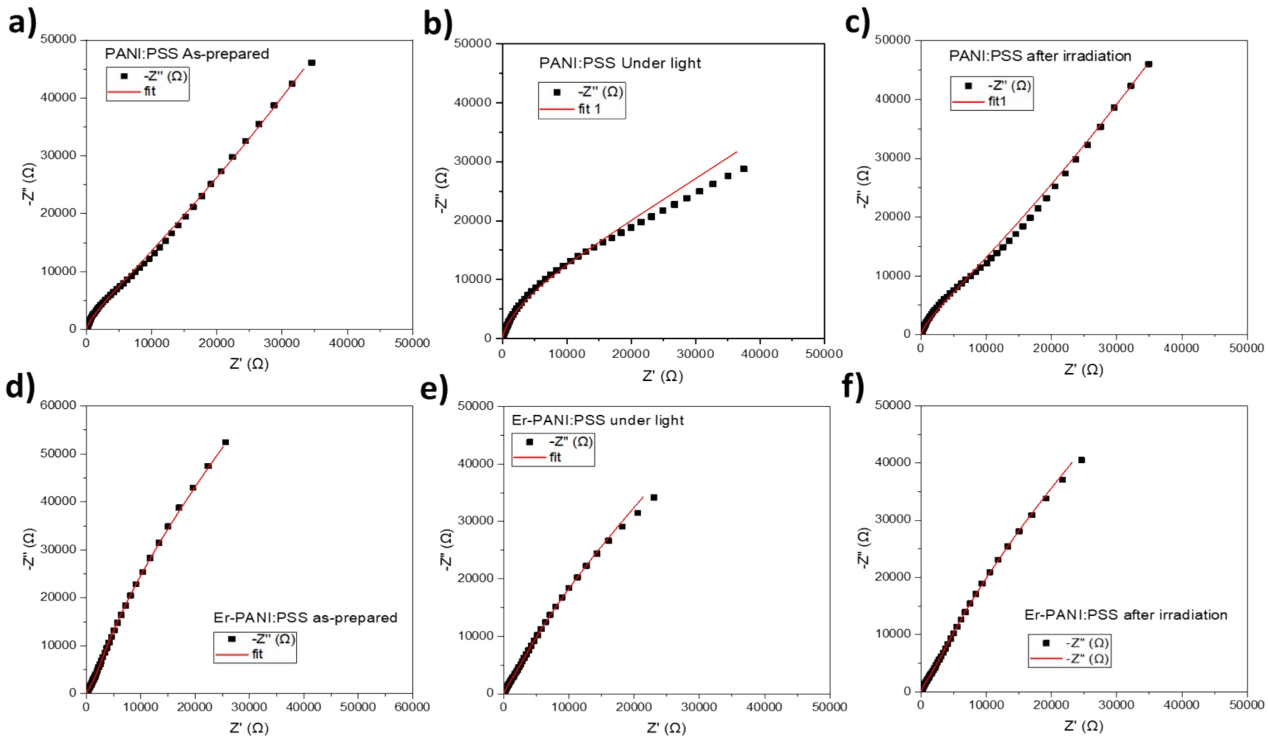

Figure S7. EIS data and corresponding equivalent circuit fitting curves of PANI:PSS: (a) as-prepared, (b) under light, and (c) after light irradiation; and of Er-PANI:PSS: (d) as-prepared, (e) under light, and (f) after light irradiation.

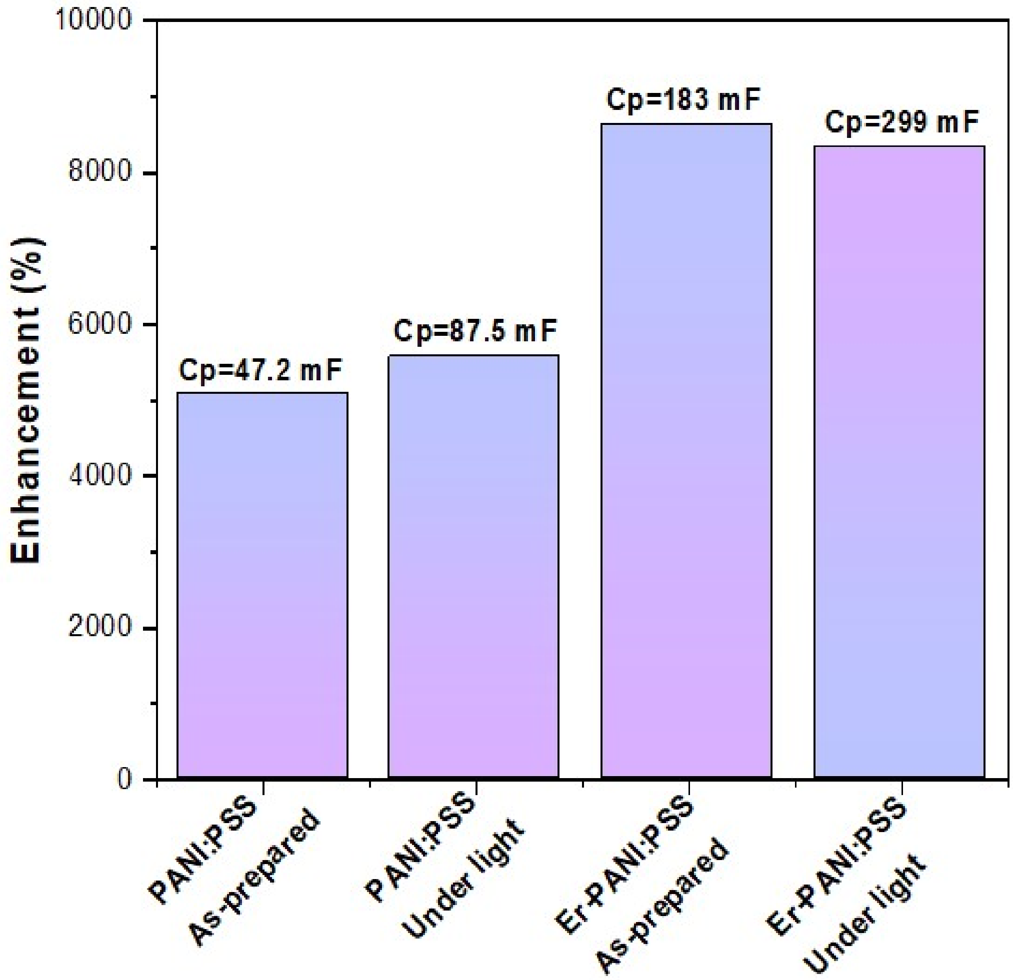

Figure S8. Areal capacitance of different systems, calculated from CV.