

Supporting Information

**Synergistic interplay of ionic liquid and
dodecyl sulphate driving the oxidation state of
Polypyrrole based electrodes**

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Supplementary results (Figures S1 –S5).

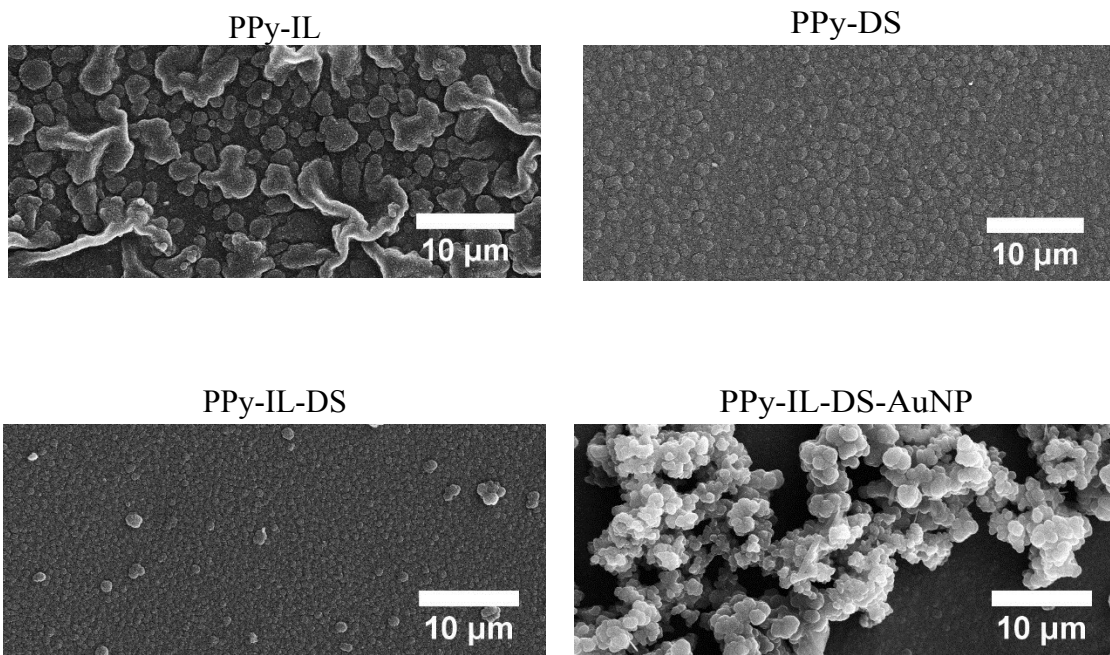


Figure S1. SEM images of PPy-IL, PPy-DS, PPy-IL-DS and PPy-IL-DS-AuNP films.

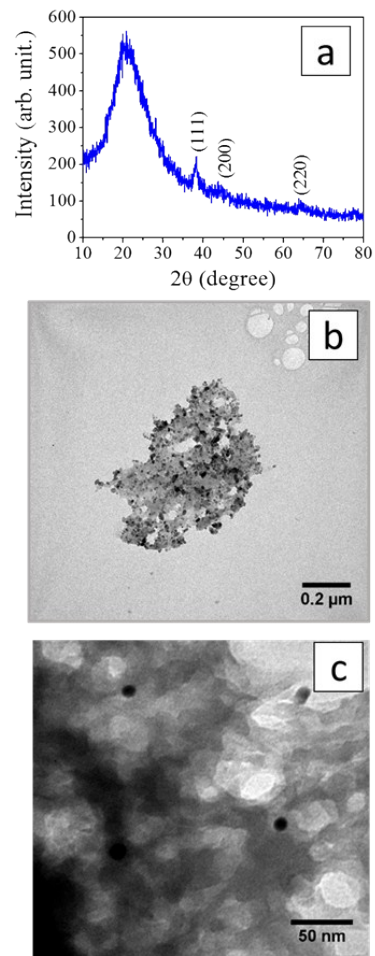


Figure S2. (a) X-ray diffraction and (b and c) TEM image of the PPy-IL-DS-AuNP film.

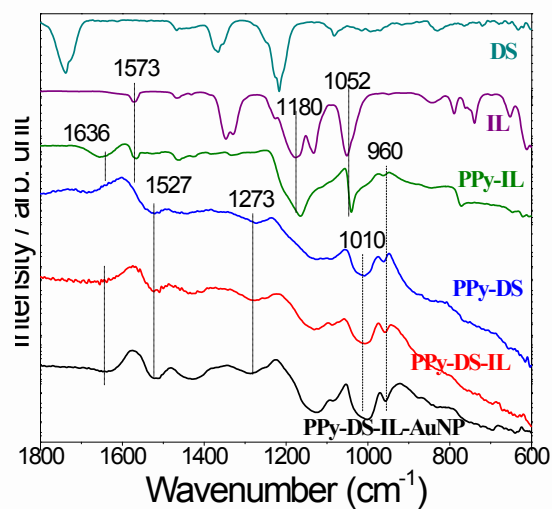


Figure S3. FTIR-ATR spectra of PPy-IL, PPy-DS, PPy-IL-DS, PPy-IL-DS-AuNP films, IL and pristine DS surfactant.

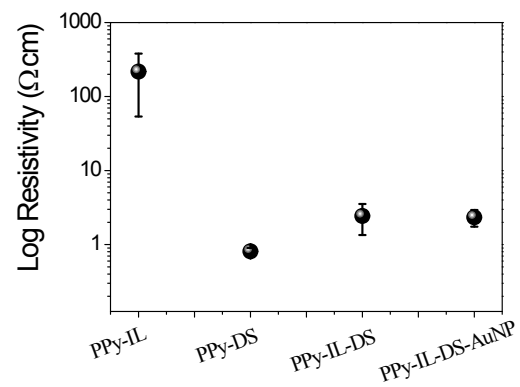


Figure S4. Resistivity of PPy-IL, PPy-DS, PPy-IL-DS and PPy-IL-DS-AuNP films.

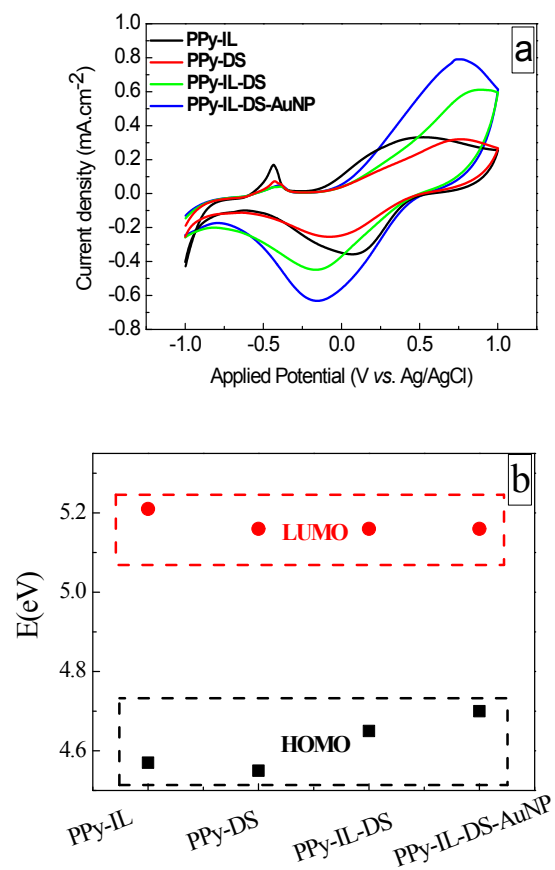


Figure S5. (a) Voltammograms of PPy-IL, PPy-DS, PPy-IL-DS, PPy-IL-DS-AuNP in 0.1 mol L⁻¹ LiClO₄ solution at a scan rate of 30 mV s⁻¹; (b) Electrochemical band gap calculated by cyclic voltammetry (Onset).