Electronic Supplementary Material (ESI) for RSC Advances.
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Electronic Supplementary Information (EIS)

FTIR Spectroscopy

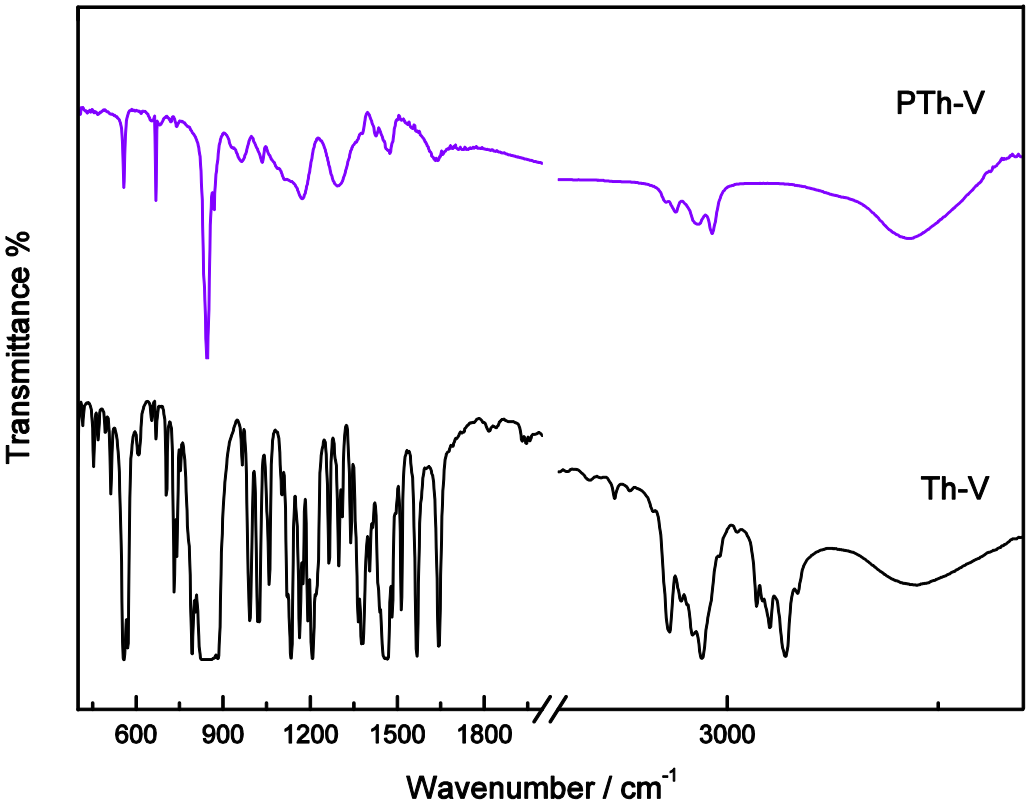

Fig. S1. FTIR spectra of monomer (Th-V) and polymer (PTh-V). The monomer spectrum contains several bands while the polymer spectrum has few broad bands. This is usual for conducting polymers suggesting polymer formation from monomer precursor. For assignments of the bands, please refer.

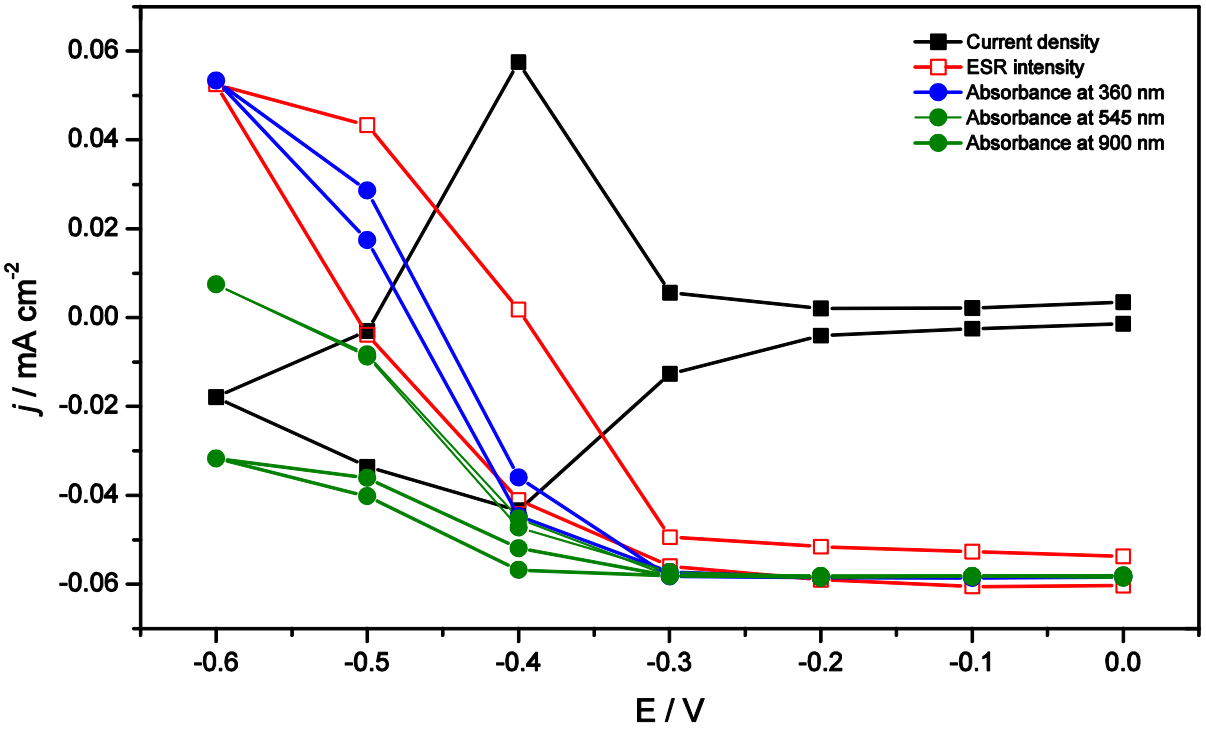

Fig. S2.1. Potential dependence curves of Current density, ESR and Absorbance at 360, 545 and 900 nm for PTh-V film during *n* doping (PTh- $V^{\bullet+}$).

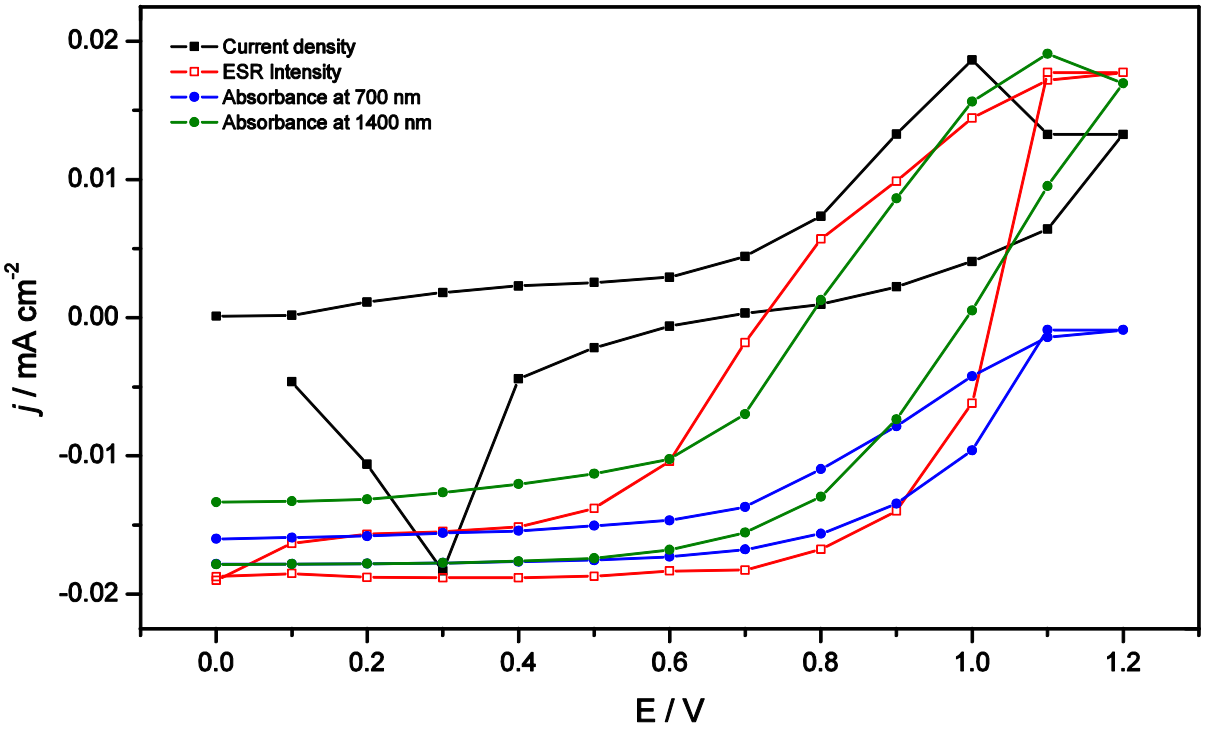

Fig. S2.2. Potential dependence curves of current density, ESR and Absorbance at 700 and 1400 nm for PTh-V film during *p* doping (PTh^{n+}-V^{2+}).

Morphology:

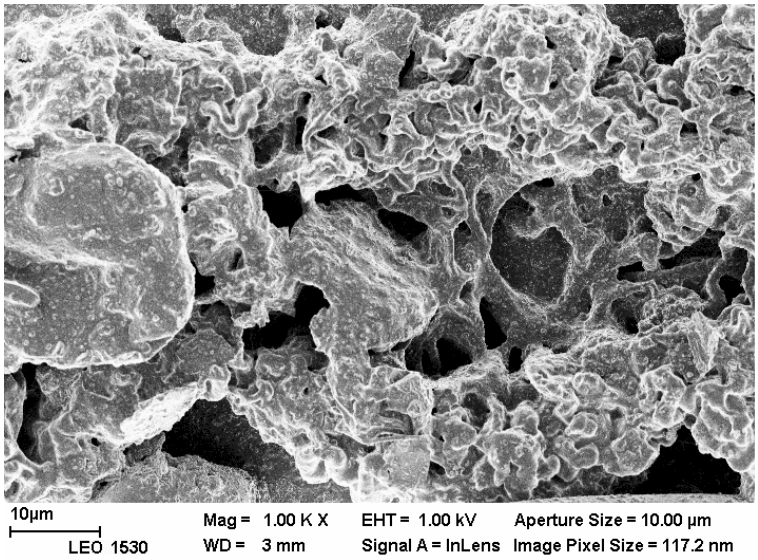

Fig. S4. SEM image of PTh-V on ITO electrode showing cauliflower morphology generally observed in conjugated polymer.