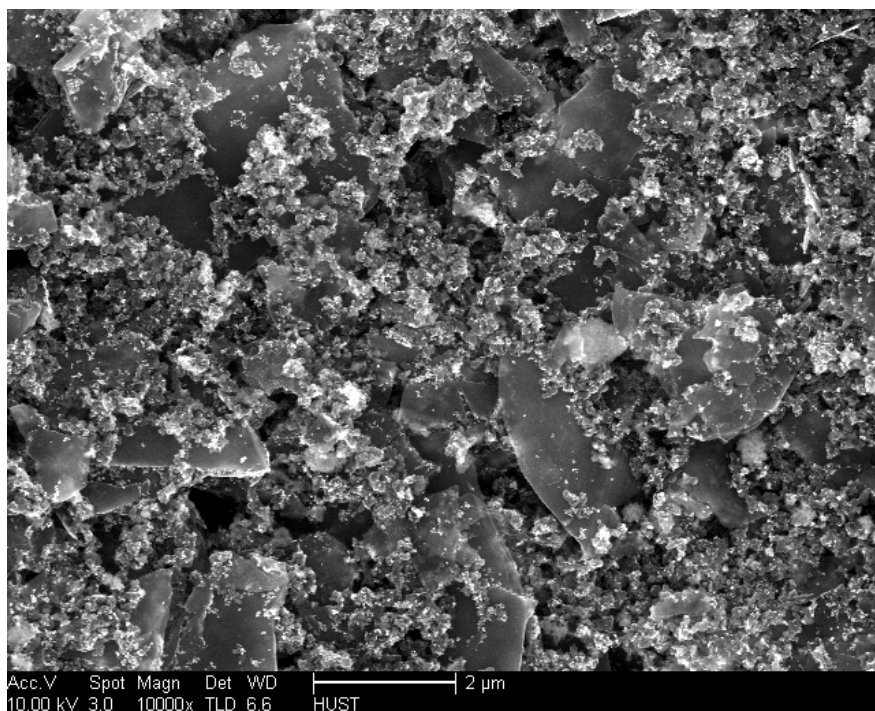
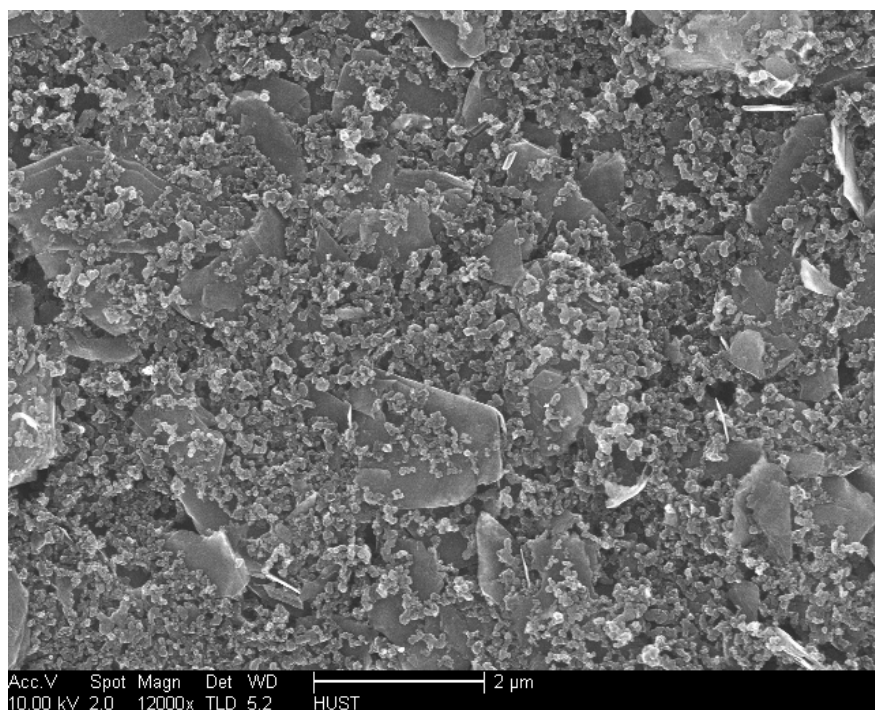


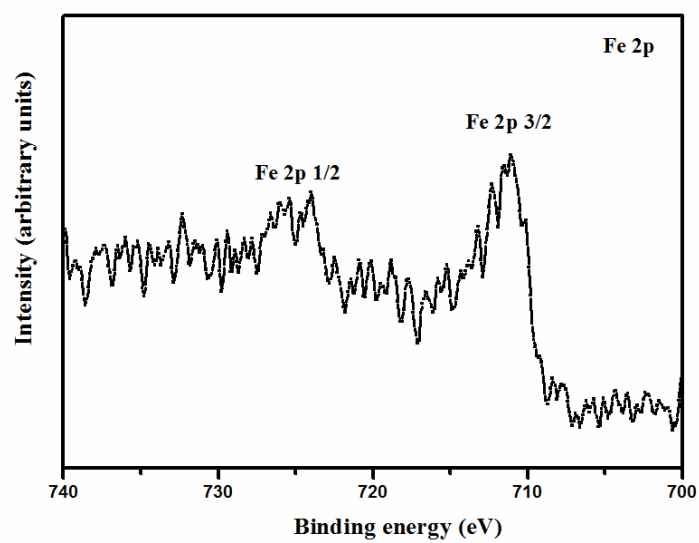
## Supporting information



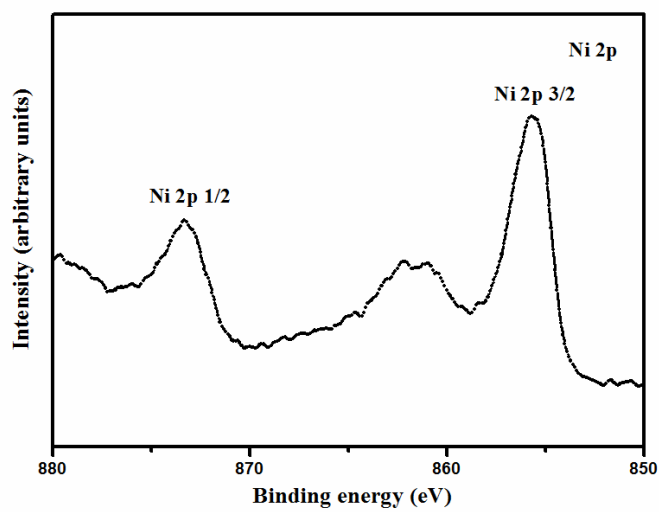
**Figure.S1** Low-magnification SEM image of the PPy modified carbon substrate.



**Figure.S2** Low-magnification SEM image of the bare carbon substrate.



**Figure.S3** Fe2p core-level XPS spectra of Fe-PPy-C.



**Figure.S4** Ni2p core-level XPS spectra of Ni-PPy-C.

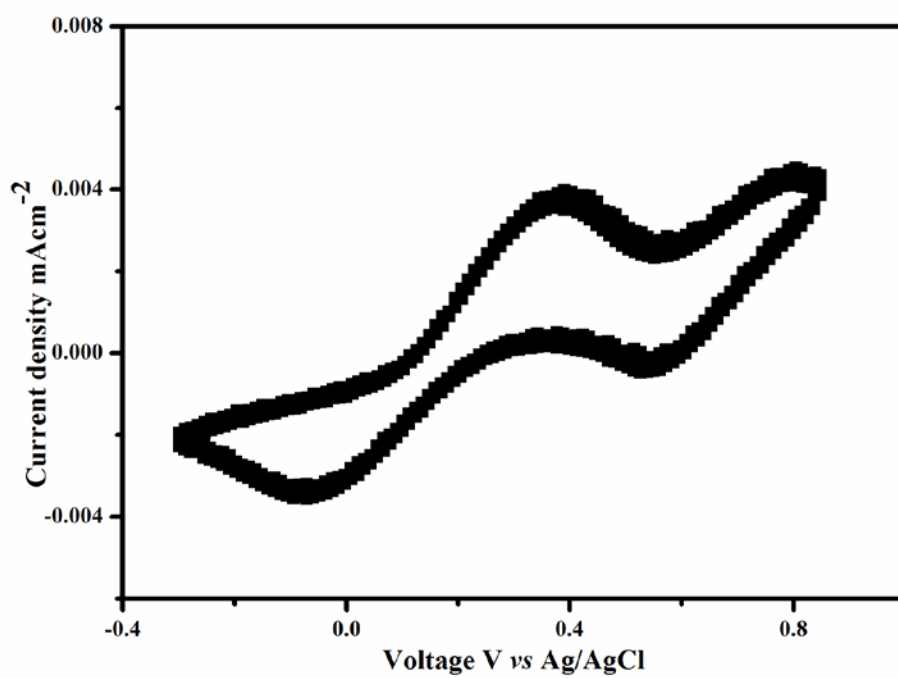


Figure.S4 A 50 consecutive cycle scan of cyclic voltammogram of the Co-PPy-carbon material in corrosive iodide electrolyte at a scan rate of 100 mV s<sup>-1</sup>.