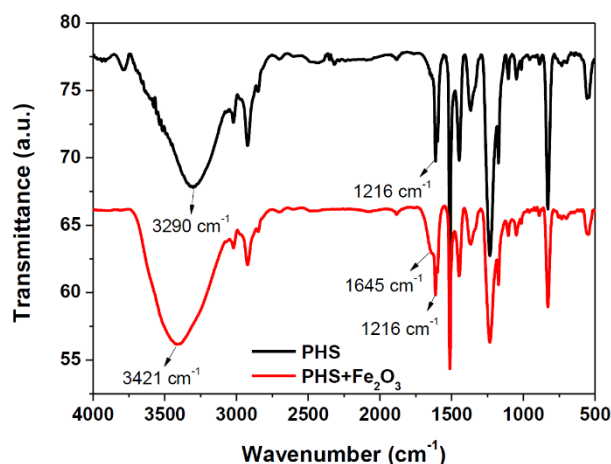
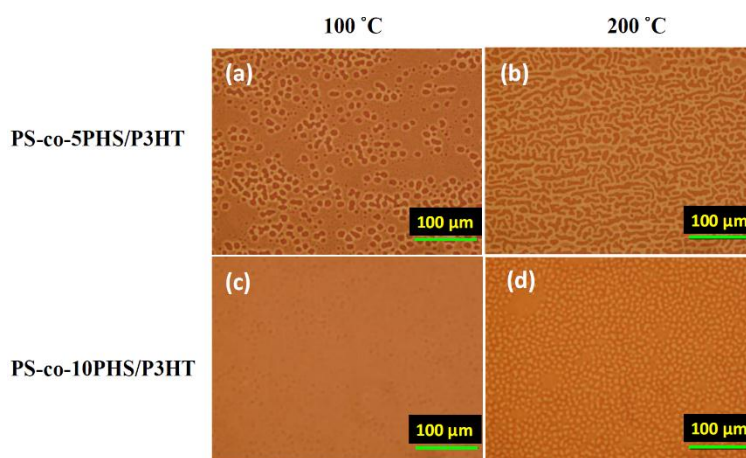


## Supplementary Materials



**Figure S1.** FT-IR study on the interaction between PS-co-PHS and  $\text{Fe}_2\text{O}_3$ .

The black line shows the FT-IR spectrum of poly(hydroxystyrene) (PHS). A broad band appears at  $3290\text{ cm}^{-1}$  indicates the existence of hydroxyl group in the PHS. Additionally, the sharp peak shows up at  $1216\text{ cm}^{-1}$  indicating the existence of phenyl ring. The  $3290\text{ cm}^{-1}$  peak shifts to  $3421\text{ cm}^{-1}$  and a shoulder peak shows up at  $1645\text{ cm}^{-1}$  after blending PHS with  $\text{Fe}_2\text{O}_3$  demonstrate the interaction between PHS and  $\text{Fe}_2\text{O}_3$  which is the characteristic interaction of the iron substrate and PS-co-PHS.



**Figure S2.** Optical microscopy photos of thermally treated PS-co-5PHS/P3HT blends at (a)  $100\text{ }^\circ\text{C}$ , 2 h and (b)  $200\text{ }^\circ\text{C}$ , 2 h; and PS-co-10PHS/P3HT blends at (c)  $100\text{ }^\circ\text{C}$ , 2 h and (d)  $200\text{ }^\circ\text{C}$ , 2 h.

The PS-co-5PHS blend shows phase separation after thermal treatment at  $100\text{ }^\circ\text{C}$  for 2 h. Phase separation becomes very severe after thermal treatment at  $200\text{ }^\circ\text{C}$ , 2 h. With more hydroxyl groups on the PS-co-10PHS, extent of phase separation in PS-co-10PHS/P3HT blend is less severe than that of PS-co-5PHS/P3HT blend after the same thermal treatment conditions. It seems that PS-co-10PHS/P3HT blend is rather stable at  $100\text{ }^\circ\text{C}$  because of the introduction of 10% hydroxyl groups.