

Neutralization of PEDOT:PSS with various imidazoles for stable conducting polymer films

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Poly(3,4-ethylenedioxythiophene):poly(styrenesulfonate) (PEDOT:PSS) has applied for a wide range of applications due to the commercial potential. However, any post-treatments of PEDOT:PSS is necessary to apply for organic electronics due to the poor electrical stability and corrosion induced by strong acidity. In this study, imidazole derivatives are added to the PEDOT:PSS solution in order to neutralize and improve the stability of the PEDOT:PSS. The conductivity of PEDOT:PSS is decreased with reducing the acidity of the PEDOT:PSS. In particular, an imidazole shows the least conductivity loss compared with the other imidazole derivatives. This phenomenon is confirmed by UV/Vis/NIR and Raman spectra. The neutral-PEDOT:PSS film shows not only increase of Seebeck coefficient from 10 to 27  $\mu$  K<sup>-1</sup> but also highly improved stability compared to acidic PEDOT:PSS film under harsh condition. Lastly, corrosion test was carried out through drop casting on the copper sheet.