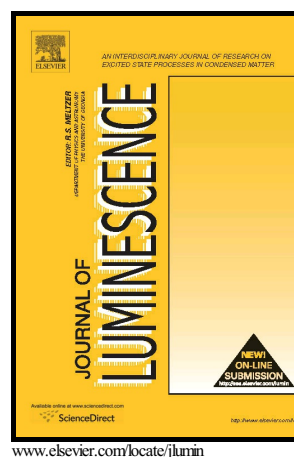


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Ultra-smooth poly(3,4-ethylene dioxythiophene):poly(styrene sulfonate)films for flexible Indium Tin Oxide-free Organic Light-Emitting Diodes

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Abstract

In this research, treated poly(3,4-ethylene dioxythiophene):poly(styrene sulfonate) (PEDOT:PSS) films - highly conductive and transparent have been proposed as an anode of optoelectronic devices. Acid vapor was applied for treatment to enhance the conductivity of PEDOT:PSS films. Various acids including H_2SO_4 , HNO_3 and HCl were used to treat the surface of the films. Acid vapor was indicated to possess the ability to decrease the sheet resistance from $130k\Omega/sq$ to $95\Omega/sq$ through modifying the surface of PEDOT:PSS film by H_2SO_4 . The root mean square roughness of PEDOT:PSS film was altered from 1.02 nm to 0.61 nm after being treated with H_2SO_4 . The transmittances of all acid-treated films have been more than 90% in the visible range. Ultra smooth acid-treated PEDOT:PSS films with low sheet resistance and high optical transmittance were applied as anode in organic light emitting diodes (OLEDs). The indium tin oxide (ITO)-free OLED manufactured on PEDOT:PSS film treated by H_2SO_4 vapor displayed the

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