

Conducting Polymers for Flexible Electronic Devices : Synthesis, Processing, and Applications

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Conducting polymers are promising materials due to their electrical properties including an excellent conductivity, unique transmittance, processability, and low cost. Electrical conductivity is dependent on chemical structure of material, doping level, and fabrication process. Although commercially available PEDOT:PSS has advantages of processing and good electrical conductivity, the detail synthesis method of PEDOT:PSS has not been reported for increase of conductivity. Therefore, we present about influencing factors in the synthesis of PEDOT:PSS and evaluation of conductivity. The fabricated conducting polymers were excellent in terms of unique properties, such as good film forming ability by versatile fabrication techniques, superior optical transparency in visible light range, high electrical conductivity, good mechanical and chemical stability in air. In addition, various functions such as stretchability, UV/IR absorbance, or work function were controlled by copolymerization with other materials for flexible electronic devices. It has wide applicability as electrodes in stretchable OLED, solar cells, electrochromic devices (smart windows).