

Polymer electroluminescent devices using the ionomers

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The effect of ion concentration, neutralization level and counterions in ionomers was systematically studied to obtain the optical electroluminescent characteristics in polymer light-emitting diodes using Poly[2-methoxy-5-(2'-ethyl-hexyloxy)-1,4-phenylene vinylene] (MEH-PPV) for the emissive layer and sulfonated polystyrene ionomers for the electron-injecting layer. MEH-PPV blends with poly(sodium 4-styrenesulfonate) ionomer (PSS-ionomer) were used as emitting materials in polymer LED and PSS-ionomer was used as a matrix of polymer blends. The devices of MEH-PPV/ionomer blends showed higher luminescent efficiency compared with pure polymer devices due to the dilution effect as well as electron injecting mechanism. The ionomer with a smaller metal counter ion greatly enhances the efficiency of EL devices. The dominant factor in enhancing the luminance is the number of ionic dipoles near the cathode irrespective of the type of metal counterions.