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材料物理和化学

二次加工制备高电导率PEDOT:PSS的途径和方法

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摘要: 聚噻吩衍生物PEDOT:PSS是一种可溶于水,由氧化的聚乙氧基噻吩链和聚苯乙烯磺酸复合物构成的导电聚合物,普遍应用于有机光电器件的制备中。其电子电导率经化学或物理方法处理后会有较大的改变。高电导率的PEDOT:PSS可望用于替代无机半导体及金属电极用于光电器件的制备。文章总结了使用化学方法在商品化的PEDOT:PSS中添加有机或无机混合物,以及添加金属纳米粒子和纳米碳材料等对聚合物导电性能的改进方法。

关键词: 导电聚合物 聚噻吩 PEDOT:PSS 掺杂 电导率

Preparation of Highly Conductive Polymer PEDOT:PSS by Post-Treatment

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Abstract: PEDOT:PSS, widely used in the fabrication of organic optoelectronic devices, is composed of oxidized poly(3,4-ethylenedioxythiophene) and poly(styrenesulfonate) as the counterions. The conductivity of PEDOT:PSS can be greatly improved by chemical or physical treatments. Highly conductive PEDOT:PSS could be one of the alternatives to inorganic semiconductors or metals as the conducting electrodes in optoelectronic devices. In this paper, chemical treatments on PEDOT:PSS are reviewed, including the addition of organic or inorganic materials; the blending with metallic nanoparticles, carbon nanotube and graphene.

Keywords: conducting polymer polythiophene PEDOT:PSS doping conductivity

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