

研究论文

聚苯胺对新型杂化透明导电薄膜制备和性能的影响

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摘要 以聚苯胺和掺锡的氧化锡作为主要原料, 采用溶胶-凝胶法制备了新型有机-无机杂化透明导电薄膜. 薄膜的可见光透过率为85%以上, 电导率达到 $10^0 \sim 10^1 \text{ S}\cdot\text{cm}^{-1}$. 研究了聚苯胺含量的变化对浸涂液粘度、薄膜结构、光透过率、电导率的影响. 随着聚苯胺引入量的增加, 薄膜的电导率、可见光透过率均有所增大. 浸涂液的粘度可在长达25天的时间内保持稳定, 很适于浸涂工艺. 扫描电镜照片显示, 薄膜比较致密、均匀, 厚度为250 nm左右.

关键词 [有机-无机杂化](#) [溶胶-凝胶法](#) [透明导电薄膜](#)

分类号

Effect of Polyaniline on Preparation and Properties of New Transparent Conducting Hybrid Films

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Abstract New organic-inorganic hybrid films with relative high conductivity and good optical transmittance were successfully synthesized by polymerization of antimony-doped tin oxide in the presence of polyaniline via a sol-gel route. Visible light transmittance of the obtained film was over 85%, and its conductivity reached $10^0 \sim 10^1 \text{ S}\cdot\text{cm}^{-1}$. The effect of content of PANI on viscosity of dipping solution, structure, transmittance and conductivity of the hybrid films was investigated. Conductivity and visible light transmittance of the films were increased with the increase of PANI content. The viscosity of the dipping solutions was almost unchanged during 25 d, which was much suitable for a dipping process. The dense and uniform film with a thickness of $\sim 250 \text{ nm}$ was observed from SEM photographs.

Key words [organic-inorganic hybrid](#) [sol-gel method](#) [transparent conducting film](#)

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