

聚苯胺及其氧化锡复合材料的气敏特性研究

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摘要:

以溶胶-凝胶法制备了SnO₂纳米粒子, 以原位聚合沉积法在陶瓷基底叉指金电极上制备了PANI及PANI/SnO₂复合薄膜。结果表明, PANI和PANI/SnO₂复合膜对氨气具有选择性好, 线性度好的特点, PANI比PANI/SnO₂复合膜对氨气的灵敏度更高; 另外, 这两种传感器对存放的水果(香蕉、苹果)释放气体具有响应恢复快, 重复性好等特性, 具备更高的灵敏度, 有望在水果仓储运输方面得以应用。

关键词: 气体传感器; 聚苯胺复合材料; 原位聚合法; 氨气; 水果释放气体

The research on gas sensing properties of polyaniline and its tin oxide composite

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Abstract:

SnO₂ nanoparticles were synthesized via sol-gel method. PANI and PANI/SnO₂ composite film were coated on ceramic substrate by polymerization deposition method to form gas sensors. The gas sensing properties of sensors to ammonia and fruit releasing gases were tested. Results show that two gas sensors both have good selectivity and linearity on ammonia, and PANI has higher sensitivity than PANI/SnO₂ composite membrane. In addition, two sensors both have good response and recovery time, good repeatability and other characteristics. PANI/SnO₂ composite membrane has higher sensitivity than PANI. It is expected to be applied in fruit storage and transport.

Keywords: gas sensors; polyaniline composite materials; in-situ polymerization; ammonia; fruit releasing gases

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