

## HTPB/MWNTs-COOH复合导电材料气敏响应性能研究

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摘要:

本文是基于端羟基聚丁二烯 (HTPB) 和羧基功能化多壁碳纳米管 (MWNTs-COOH) 之间的氢键耦合作用来开发一种新型导电材料。制备的聚氨酯样品中存在着由软、硬段微区形成的微相分离结构, 碳纳米管与聚氨酯之间的氢键相互作用赋予了材料良好的气敏响应性能。这种新型导电复合材料表现出良好的气敏选择性和稳定性, 为

关键词: 导电复合材料; 羧基碳纳米管; 原位聚合; 气敏传感器

## The response properties of HTPB/MWNTs-COOH composite conductive n

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**Abstract:**

Novel polyurethane (PU) conducting films consisting of hydroxyl-terminated polybutadienes (HTPB) and carboxyl functionalized MWNTs (MWNTs-COOH) were developed by a coupling approach based on hydrogen bonding interactions between MWNTs-COOH and PU. The micro-phase separation structure between soft and hard segments was formed in PU, and the hydrogen bonding interaction imparted the gas sensing properties toward a number of non-polar organic solvents detection, such as benzene, cyclohexane, and toluene. The in-situ polymerization is a good route for preparing the conductive polymer based composite sensing materials with improved CNTs dispersion. The composite materials that displayed good selective response and good long-term stability are expected to be employed as promising gas sensors.

**Keywords:** conductive composite material; the carboxyl carbon nanotubes; in-situ polymerization; gas sensitive sensor

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