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聚苯胺/氧化铟复合薄膜QCM瓦斯气体传感器*

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摘　要：

在10℃条件下，运用静电力自组装和原位化学氧化聚合相结合的方法制备了聚苯胺/氧化铟(PANi/In2O3)复合薄膜，并通过紫外-可见光光谱分析和扫描电镜(SEM)对薄膜进行了分析表征。采用AT-切型Ag电极石英晶体微天平(QCM)制备了PANi/In2O3气体传感器，常温下研究了其对瓦斯中主要成分CH4和CO气体以及常见干扰气体NH3的敏感特性。结果表明，PANi/In2O3复合薄膜对CH4和CO均呈现出较好的线性敏感性能，而对NH3则表现为非线性。

关键词：PANi/In2O3复合薄膜; 瓦斯气体传感器; 自组装; 石英晶体微天平

QCM Gas Sensor of Polyaniline/Indium(III) Oxide Composite Thin Films*

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Abstract:

Polyaniline/ Indium(III) Oxide (PANi/In2O3) composite thin films was prepared by combined techniques of electrostatic self-assembly and in situ chemical oxidation polymerization at 10℃, which was characterized by UV-Vis spectroscope and SEM. The PANi/In2O3 thin film gas sensor was fabricated by using AT-Shearing mode quartz crystal microbalance (QCM) with Ag electrodes, and the sensitive propertries of the sensor to CH4 and CO, the major compositions of coal mine gas, and to NH3, which was the regular interfering gas, were also characterized and analyzed. The results indicated that the PANi/In2O3 thin film gas sensor showed very good linear sensitivity to CH4 and CO, but non-linear sensitivity to NH3.

Keywords: PANi/In2O3 composite thin film; Gas Sensor; Self-Assembly; QCM

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