

表面改性在二维材料气体传感器中的研究进展

摘要

气体传感器在日常生产生活中扮演着重要的角色，气体传感器能通过检测当前空气中的毒害性气体对人示以警戒，保障了人们生产生活的安全。自从石墨烯问世，二维材料逐渐成为相关研究人员追捧的研究方向。气体传感器作为二维材料的一个现实应用，其研究进展一直跟随着二维材料的发现和改进。不同的二维材料气体传感器有着明显不同的优势和劣势，研究人员也通过一系列改进方法使气体传感器性能不断提高。表面改性方法就是其最有效的方法之一，表面改性是指通过化学或物理的方法改变材料的化学成分或组织结构，来赋予材料新的性能。

本文结合近些年来研究人员在二维气体传感器领域所做的大量工作，总结了二维材料气体传感器的优点和不足，从而引出化学修饰物（贵金属、金属氧化物、有机聚合物等）

对二维材料气体传感器性能影响的研究，系统的总结了目前国内外学者通过表面改性提高二维材料气体传感器性能的系列方法,同时也分析了二维材料气体传感器的应用前景。

关键词： 气体传感器 二维材料 表面改性

ABSTRACT

Gas sensors play an important role in daily production and life. Gas sensors can alert people by detecting toxic gases in the current air, thus ensuring the safety of people's production and life. Following the discovery of graphene, other two-dimensional materials have attracted significant attention due to its unique properties. As a practical application of two-dimensional materials, the research progress of gas sensors has been following the discovery and improvement of two-dimensional materials. Different two-dimensional material gas sensors have obviously different advantages and disadvantages. The researchers also improved the performance of gas sensors through a series of improvement. Surface modification is one of the most effective methods. Surface modification refers to changing the chemical composition or structure of a material through chemical and physical methods to endow the material with new properties.

In this paper, the advantages and disadvantages of two-dimensional material gas sensors are summarized based on a great deal of work done by researchers in the field of two-dimensional material gas sensors in recent years. Then, the influence of chemical modifiers (noble metals, metal oxides, organic polymers, etc.) on the performance of two-dimensional material gas sensors was studied. At the same time, a series of methods for improving the performance of two-dimensional material gas sensors by surface modification by domestic and foreign scholars are systematically summarized, and the application prospect of two-dimensional material gas sensors is also analyzed.

Key words: gas sensor, two-dimensional material, surface modification

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