

一维氧化锌的水热合成及其气敏性能的研究

刘荣利, 向群, 潘庆谊, 程知萱, 施利毅

上海大学理学院化学系, 上海 200444

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摘要 Zn(NO₃)₂为原料,CTAB为形貌控制剂,采用水热合成技术制备了一维氧化锌粉体.采用X射线衍射(XRD)、透射电镜(TEM)、扫描电镜(SEM)等测试技术对产物的相组成和微观形态进行了表征和分析,结果表明一维氧化锌属于六方晶系,分散性好,纯度高,直径~200nm,长度~5μm.

用该粉体制成烧结型旁热式气敏元件,测试其气敏性能.结果表明,在170℃左右对10ppm的三甲胺、甲醇等还原性气体有很好的响应.文中对一维材料的气敏机理也进行了讨论.

关键词 [气敏](#) [一维氧化锌](#) [水热合成](#)

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Hydrothermal Synthesis and Gas Sensitivity of One-dimensional ZnO

LIU Rong-Li, XIANG Qun, PAN Qing-Yi, CHENG Zhi-Xuan, SHI Li-Yi

Department of Chemistry, Shanghai University, Shanghai 200444, China

Abstract Zn(NO₃)₂ was used as the raw material to prepare one-dimension ZnO through a hydrothermal technique with CTAB controlling ZnO morphology. The products were characterized by X-ray diffraction(XRD), transmission electron microscope(TEM) and scanning electron microscope(SEM). Gas sensors were made by using the ZnO nanorods and their gas sensitivities were measured. The result shows that the ZnO nanorods have lower working temperature than granulated ZnO and have very good sensitivity to 10ppm trimethylamine (TMA), methanol, ammonia, acetone and ethanol at the working temperature of 170℃. The gas sensitivity mechanism of the ZnO rods was discussed.

Key words [gas sensitivity](#) [one-dimension ZnO](#) [hydrothermal](#)

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通讯作者 潘庆谊 qypan@staff.shu.edu.cn

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