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研究论文

MoO₂微/纳米片的气相合成和光学性能

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摘要:

以MoO₃粉末和石墨为原料,用气相传输方法制备MoO₂微/纳米片,并对其形貌、结构及光学性能进行了分析和表征。结果表明,用气相法制备的矩形薄片状MoO₂,长和宽在几微米到几十微米之间,厚度约为200 nm。MoO₂微/纳米片在波长200--300 nm的紫外光范围内有较强的吸收带,在304.6 nm、343.4 nm和359.6 nm处有较强的发光峰。根据实验分析和热力学理论,探讨了MoO₂微/纳米片的生长机理。

关键词: 无机非金属材料 二氧化钼 微/纳米片 光学性能 生长机理

Vapor Phase Synthesis and Optic Properties of MoO₂ Micro/nanosheet

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Abstract:

MoO₂ micro/nanosheets were synthesized by vapor-deposit process and characterized by XRD, SEM, TEM, UV-Vis and photoluminescence (PL) photometer. The results show that MoO₂ micro/nanosheet is rectangle, and the length and width range from several to dozens of micrometers and about 200 nm thick. The MoO₂ micro/nanosheets have absorbance peaks between 200–300 nm, and three fluorescent excitations at 304.6, 343.4 and 359.6 nm. The synthesis mechanism of MoO₂ micro/nanosheets was discussed based on the experimental results and the thermodynamic computation.

Keywords: inorganic nonmetallic materials molybdenum dioxide micro/nanosheet optics property growth mechanism

收稿日期 2009-07-30 修回日期 2009-10-12 网络版发布日期 2010-02-04

DOI:

基金项目:

国家自然科学基金资助项目(50825102, 50804057, 50823006, 50721003), 中澳科技合作特别基金项目(50711120183), 湖南省自然科学基金资助项目(08JJ3110), 湘潭大学“低维材料及其应用技术教育部重点实验室”开放课题资助项目(KF0705)。

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