上海大学学报(自然科学版)
Journal of Shanghai University (Natural Science Edition)

上海大学学报(自然科学版) » 2013, Vol. 19 » Issue (1) :67-70 DOI: 10.3969/j.issn.1007-2861.2013.01.013

溶液法制备CdZnTe晶体中Te夹杂相分析

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Analysis of Te Inclusions in CdZnTe Crystal Growth from Solution

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- 摘要
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摘要 利用红外(infrared, IR)显微镜、腐蚀坑形貌及傅里叶红外(Fourier transform infrared, FTIR)光谱仪观察研究溶液法制备CdZnTe晶体中的Te夹杂相. 讨论CdZnTe晶锭中Te夹杂相的分布和原因, 及其对晶体中位错密度(etch pit density, EPD) 和红外透过率的影响. 实验结果表明: 沿生长轴方向, Te 夹杂相密度增大, 相应的位错密度也增大; 红外透过率随Te 夹杂相密度的增大而减小, 生长末端晶体的透过率低至45%.

关键词: 碲锌镉 Te夹杂 位错 红外透过率

Abstract: Te inclusions in CdZnTe crystals grown from solution has been investigated with transmission infrared (IR) microscopy, photography of etch pits and Fourier transform infrared (FTIR) transmission spectroscopy. Distribution and origination of Te inclusions in CdZnTe crystals are discussed, and the influence on the etch pit density (EPD) and IR transmittance are analyzed. The experimental results show that the density of Te inclusions increases along the growth direction, while the EPD increases. IR transmission decreases as the density of Te inclusions increases. The crystal in tail ingot has low transmittance of about 45%.

Keywords: CdZnTe, Te inclusion, dislocation, infrared (IR) transmittance

收稿日期: 2011-12-10;

基金资助:

国家自然科学基金资助项目(50902091); 上海市重点学科建设资助项目(S30107); 上海市科委重点资助项目(11530500200); 上海市教委科研创新资助项目(12ZZ096)

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.溶液法制备CdZnTe晶体中Te夹杂相分析[J] 上海大学学报(自然科学版), 2013,V19(1): 67-70

.Analysis of Te Inclusions in CdZnTe Crystal Growth from Solution[J] J.Shanghai University (Natural Science Edition), 2013,V19(1): 67-70

链接本文:
http://www.journal.shu.edu.cn//CN/10.3969/j.issn.1007-2861.2013.01.013 或 http://www.journal.shu.edu.cn//CN/Y2013/V19/I1/67

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