

### 论文摘要

中国有色金属学报

ZHONGGUO YOUSEJINSHUXUEBAO XUEBAO

第18卷 第10期 (总第115期) 2008年10月

 [PDF全文下载]

文章编号: 1004-0609(2008)10-1819-06

## 利用FE-SEM分析Al-Si-Mg系和Al-Mg-Si系合金中Mg<sub>2</sub>Si沉淀相

李建国, 谭红艳, 史子木, 何 迁

(清华大学 材料科学与工程系, 北京 100084)

**摘 要:** 以Al-Si-Mg系的A356合金和Al-Mg-Si系的6061合金中的Mg<sub>2</sub>Si沉淀相为研究对象, 通过场发射扫描电子显微镜(FE-SEM)的In-lens探头及低电压模式, 分析Mg<sub>2</sub>Si沉淀相的析出情况及其表面形貌。结果表明: 在低电压模式及In-lens探头双重条件下, 可获得较好分辨率的Mg<sub>2</sub>Si沉淀相表面立体显微形貌; 通过透射电子显微镜衍射分析发现在扫描电子显微镜中观察到的相确实为Mg<sub>2</sub>Si沉淀相。这种分析方法能够清晰观察到Mg<sub>2</sub>Si沉淀相的普遍析出情况。

**关键字:** Al-Si-Mg合金; Al-Mg-Si合金; Mg<sub>2</sub>Si沉淀相; FE-SEM; In-lens探头

## Analysis of Mg<sub>2</sub>Si precipitates in Al-Si-Mg and Al-Mg-Si alloys by FE-SEM

LI Jian-guo, TAN Hong-yan, SHI Zi-mu, HE Qian

(Department of Materials Science and Engineering, Tsinghua University, Beijing 100084, China)

**Abstract:** The distribution and morphology of Mg<sub>2</sub>Si precipitates in both Al-Si-Mg alloys (A356 alloy) and Al-Mg-Si alloys (6061 alloy) were observed by FE-SEM with an In-lens detector and in low voltage mode. The results suggest that the morphology image of Mg<sub>2</sub>Si precipitates can get better high-resolution only if observation is by FE-SEM in low voltage mode and with the In-lens detector. The precipitates were also analyzed by TEM and proved to be Mg<sub>2</sub>Si. The method can be used to observe general distribution of Mg<sub>2</sub>Si precipitates in the matrix clearly.

**Key words:** Al-Si-Mg alloys; Al-Mg-Si alloys; Mg<sub>2</sub>Si precipitates; FE-SEM; In-lens detector

电 话： 0731-8876765, 8877197, 8830410 传真： 0731-8877197

电子邮箱： [f-ysxb@mail.csu.edu.cn](mailto:f-ysxb@mail.csu.edu.cn)