中南大学学报 自然科学版 英文版

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论文摘要

中南大学学报(自然科学版)

ZHONGNAN DAXUE XUEBAO(ZIRAN KEXUE BAN)

Vol.32 No.1 Feb.2001

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文章编号：1005-9792(2001)01-0085-04

成品退火对高纯铝箔立方织构的影响

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摘 要：高纯铝箔主要用于制作高压电容器的阳极材料,电容器的比电容大小与阳极箔材中立方织构的含量密切相关:立方织构含量越高,箔材腐蚀后有效表面积越大,其比电容也相应越大.作者采用晶体取向分布函数(ODF)研究和分析了成品退火工艺制度及冷却速度对不同铁含量高纯铝箔立方织构的影响.研究结果表明:含Fe 0.0011%的高纯铝箔在二级退火190℃/3 h+520℃/2 h条件下立方织构含量较高,R织构比例较小.由于铁的含量及存在状态严重影响了高纯铝箔的立方织构含量,当铁含量较高或过饱和固溶在基体中时,成品退火时主要出现原位再结晶,立方织构较弱,R织构较强.因此,含Fe 0.0016%的高纯铝箔成品退火后虽在空冷时立方织构含量较高,但其立方织构含量均低于含Fe 0.0011%的高纯铝箔中的立方织构含量.

关键字：高纯铝箔;立方织构;变形织构;退火

The effect of final annealing on cube texture of high-purity aluminum foils

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Abstract: High purity Al foils are mainly used for the anode materials of high voltage electrolytic capacitors. The content of capacitors is affected by the cube texture intensity inAl foils. The stronger is the cube texture, the higher is content of capacitors. The effect of final annealing on cube texture of high-purity aluminum foils was investigated by means of orientation distribution functions (ODFs) in this article. The results showed that impurity Fe strongly influenced the deformation textures. The deformation textures were very weak if the Fe content was high. When the Fe content became lower,the deformation textures were very strong, especially the Sorientation and Cu orientation. And it was of advantage to produce the cube texture for air cold foils containing Fe 0.001 6% after the final annealing at 520℃/2 h. But the cube texture in the Fe 0.001 6% foils was lower than that in the Fe 0.001 0% foils. During the two stages annealing at 190℃/3 h+520℃/2 h, the cube texture was the strongest and the R intensity was lower in the foils containing Fe 0.0011%.

Key words:high-purity aluminium foils; cube texture; deformation texture; annealing

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