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铝铅均质合金膜的制备与研究

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The study preparation and of the Al-Pb alloy thin films

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摘要 利用磁控共溅射法制备Al-Pb合金薄膜.运用SEM、EDS、TEM对薄膜成分、结构进行分析,用分子动力学模拟薄膜中Al、Pb原子的聚集状态.结果发现铅含量影响着Al-Pb合金膜的结构,靶材中Pb的原子分数控制在4%范围内时,薄膜中Al和Pb在纳米级范围内可以实现均匀混合,得到均质合金膜.随着Pb含量的增加薄膜中Pb原子会出现聚集,形成不均匀结构.这与分子动力学模拟的结果相一致.

关键词: [Al-Pb合金薄膜](#) [磁控共溅射](#) [均质合金](#)

Abstract: Al-Pb alloy thin films were prepared by magnetron co-sputtering. SEM, EDS and TEM were employed to determine the composition and the structure of the alloy films. Meanwhile, the distribution state of Al, Pb atoms in the films was simulated by molecular dynamics. The experimental results showed that the structure of Al-Pb alloy films was affected by the Pb content. When the Pb content in target was less than 4%, Al and Pb atoms could be mixed homogeneously in the alloy film, and the homogeneous alloy thin films could be gotten. With the increasing of the content of Pb, Pb atoms tended to agglomerating into inhomogeneous structure, which was consistent with the theoretical simulation.

Key words:

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