

化学

氟化钛膜中氦的热解吸行为初步研究

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摘要 对He、Ti原子比 $n(\text{He})/n(\text{Ti})$ 为0.004~0.300的7块氟化钛膜样品在1 300 K以下进行热解吸分析, 以获得它们的热解吸谱。在低于1 300 K范围内, 氟化钛膜共有4种氦的热释放峰, 分别对应于贯穿至表面的氦泡、近表面的氦、体相中的氦泡和氦的小团簇。对这4种类型的氦释放峰的解吸温度和解吸量随膜中总氦量的变化分别进行分析, 研究观测膜中各种状态存在的氦量随 $n(\text{He})/n(\text{Ti})$ 增加的变化趋势。实验观测到, 升温将导致氟化钛膜可容纳的氦量大幅降低。

关键词

[T-Ti膜; 氦; 氦泡; 热解吸](#)

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Primarily Study on Thermodesorption From Titanium Tritide Films

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Abstract The thermal desorption was used to investigate the He release from titanium tritide films with He and Ti atom ratio $n(\text{He})/n(\text{Ti})$ from 0.004 to 0.300. Below 1 300 K in helium desorption spectra there are four kinds of peaks that account for He bubbles punching up to the surface, the helium near the surface, He bubbles and He cluster. And the study was carried out for the changing of their peak temperature and desorption quantities with $n(\text{He})/n(\text{Ti})$ in titanium tritide films, and the developing and changing of these helium states in lattice with $n(\text{He})/n(\text{Ti})$ in titanium tritide films. It is proven the maximum ^3He conserved quality on titanium tritide decreases with temperature increment.

Key words [T-Ti film](#) [He](#) [He bubbles](#) [thermal desorption](#)

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