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综述

立方氮化硼薄膜制备与性质研究新进展

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摘要

立方氮化硼(c-BN)具有优异的物理和化学性质, 在力学、光学和电子学等方面有着广泛的应用前景. 自上世纪80年代开始, 低压沉积c-BN薄膜的研究迅速发展, 到90年代中期达到高潮, 随后进展缓慢, c-BN薄膜研究转入低潮. 近年来, c-BN薄膜研究在几方面取得了突破, 如获得与衬底粘附良好、厚度超过1μm的c-BN厚膜; 成功实现了c-BN单晶薄膜的异质外延生长; 此外, 在c-BN薄膜力学性质和过渡层微结构研究方面也取得了进展.
本文主要评述最近几年c-BN薄膜研究在以上几方面取得的最新进展.

关键词 立方氮化硼薄膜 异质外延 应力 粘附性

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Recent Advances in Synthesis and Properties of Cubic Boron Nitride Films

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Abstract

Cubic boron nitride (c-BN) attracts widespread interest as a promising material for many potential applications because of its unique physical and chemical properties. Since the 1980's the research in c-BN thin films has been carried out, which reached its summit in the mid of 1990's, then turned into a downward period. In the past few years, however, important progress was achieved in synthesis and properties of cubic boron nitride films, such as obtaining >1μm thick c-BN films, epitaxial growth of single crystalline c-BN films, and advances in mechanics properties and microstructures of the interlayer of c-BN films. The present article reviews the current status of the synthesis and properties of c-BN thin films.

Key words cubic boron nitride (c-BN) films heteroepitaxy stress adhesion

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