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SiC crystal growth via physical vapor transport method from α -SiC and β -SiC powders

권용진, 김영희, 이명현, 정성민^a

Yong-Jin Kwon, Younghee Kim, Myung-Hyun Lee, Seong-Min Jeong^a

한국세라믹기술원

Abstract:

Silicon carbide is one of the most attractive and promising wide band-gap semiconductor materials with excellent physical properties and a huge potential for electronic applications. In this study, the effect of source materials on crystal growth have been studied. Three kinds of SiC powder were prepared for growing SiC single crystal. One is commercial α -SiC powder, the others are lab-synthesized (α , β phase SiC powder) using direct carbonization method. Crystal growth was conducted on off-axis 4H-SiC seed crystal in the temperature range of 2050~2150°C by PVT method. The grown SiC crystals were analyzed using high resolution X-ray diffraction and Raman spectroscopy. We confirmed that 4H-SiC wafers grown from β -SiC powders are obtained uniformly as compared to the other sources.

Keywords

SiC, PVT, Powder

a. 교신저자 이메일

smjeong@kicet.re.kr
