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Growth of high quality silicon carbide films by bias enhanced low-pressure HFCVD using methane

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Abstract

Highly oriented, β-SiC films have been grown on Si substrates by a bias enhanced low-pressure hot filament chemical vapour deposition (LP-HFCVD) technique. The films have been characterised using X-ray diffraction (XRD), atomic force microscopy (AFM), Fourier transform infrared spectroscopy (FTIR) and Raman spectroscopy. The application of bias to the substrate is found to induce crystallinity, increase particle size as well as the roughness of the deposit on the Si surfaces. The orientation of the film is found to depend on the orientation of the substrate.

Author Keywords: Oriented β-SiC films; Bias enhanced LP-HFCVD; Substrate orientation; Bias effects

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