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Growth of Spheroidal Silicon Carbide by Arc Plasma Treatment

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Abstract

Spheroidal growth of silicon carbide (SiC) was observed by treating SiC grain in thermal arc plasma reactor/furnace followed by 4 h of in situ cooling under argon atmosphere. The plasma treatment of samples was carried out between 5 and 15 min. under Ar atmosphere. High microhardness and Young's modulus values were found for plasma-treated SiC with spheroidal structure. Materials were evaluated by employing techniques such as XRD, XPS, micro Raman, FTIR, FESEM, TEM, EDS, microhardness, and Young's modulus. Typical 15 min. plasma-treated SiC shows relatively high microhardness and Young's