(P-5)

Texture in Silicon Carbide Seeded with Silicon Carbide Whisker

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Silicon carbide ceramics seeded with 0 - 30 wt% SiC whiskers were fabricated by hot pressing and annealing. Quantitative texture analysis including calculation of the orientation distribution function (ODF) was used for obtaining the degrees of preferred orientation of these samples. The maximum multiples of random distribution (mrd) values of a sample seeded with 20 wt% whiskers was 2. This means that the sample with 20 wt% whiskers most of the grains tend to align their basal planes parallel to the stress axis, or in other words, c axis of α-SiC grains are normal to the stress axis. The SEM microstructures and the texture data revealed that the majority of whiskers were aligned perpendicular to the stress axis during hot-pressing and the grains with whiskers grew significantly after annealing and increased the texture intensity. The newly formed α-phases growing anisotropically from the whisker seeds appear aligned well with the c-axis perpendicular to the hot pressing direction.