



Surface Stress Modification in Silicon Carbide by Laser Ablation M1005

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Abstract

We report the use of short pulse laser ablation as a technique for mitigation of subsurface stress and damage in SiC. Conventional machining, grinding or polishing of SiC renders a damaged surface layer of depth approximately equal to the final peak-to-valley roughness. This damage layer is comprised of compressive stress and represents a threat to the integrity of the material as sites for crack initiation. However, observations of the Twyman Effect of disk shaped samples suggest that laser ablation can remove the stress layer and substantially mitigate subsurface damage. Data are presented in support of this claim, along with comments on technique and applications.

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