ON THE DEFORMATION MECHANISM OF SiC UNDER NANO-SCRATCHING: AN EXPERIMENTAL INVESTIGATION

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RESULTS AND DISCUSSION

C. SUBSURFACE DEFORMATION MECHANISM.

The diamond tip with the radius of 10 nm penetrated into the Si face of 4H-SiC under the normal loads in the range from 2 μN to 6 μN. It was clearly seen that six grooves were generated along the tip-sample contact trace, and plastic deformation without any cracks were observed from both images. The groove width was measured accurately about 15 nm, and the groove depth was about 1.1 nm. Therefore, the AFM diamond tip with the radius of around 10 nm and the normal loads were several micro newtons was used to investigate the material removal mechanism of SiC, which were consistent with MD simulations in both length and load scales.

REFERENCES


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