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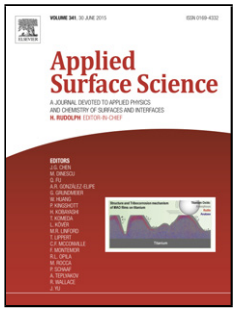

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ACCEPTED MANUSCRIPT

Smooth polishing of femtosecond laser induced craters on cemented carbide by ultrasonic vibration method

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Highlights

- The laser induced micro to submicron spikes on crater surface were removed effectively by ultrasonic vibration polishing.
- The laser induced periodic nano-ripples structure on crater surface was present clearly after polishing process.
- The minimal surface roughness of Ra 7.60 nm was achieved at the polished surface.
- The generated spikes were eliminated mainly by strong collision effect of diamond particles.
- The period of the nano-ripples decreases from 860 to 812 nm with increasing laser fluence, which may be mainly due to plasmon shielding effect.

Abstract: Rough surface features induced by laser irradiation have been a challenging for the fabrication of micro/nano scale features. In this work, we propose hybrid ultrasonic vibration polishing method to improve surface quality of microcraters produced by femtosecond laser irradiation on cemented carbide. The laser caused rough surfaces are significantly smoothened after ultrasonic vibration polishing due to the strong collision effect of diamond particles on the

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