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Fabrication of homogenous microstructures by femtoseconds laser micromachining

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Femtosecond laser micromachining is increasingly investigated as a new technique for micro/nano structure fabrication because of its applicability to virtually all kinds of materials in an easy one-step process that is scalable. Various parameters (such as fluency, number of pulses, laser beam polarization, wavelength, incident angle, scan velocity, number of scans, and processing environment) have a strong influence on the result of the micromachining process. We propose the fluency and pulses-per-spot (F-PPS) and accumulated fluency profile (AFP) models to group, characterize and optimize the microstructures observed on metallic surfaces from single scan machining. Furthermore, these models are also useful to predict the machining result on polymeric surfaces. However, multiple scans of surfaces cannot be described by these models. We present how another formation mechanism seems to be responsible for the formation of randomly distributed elliptical cones observed at very low fluency irradiation and multiple scans.

Biography

K M Tanvir Ahmmed is a PhD student at McGill University; he is working under Prof. Kietzig's supervision in Biomimetic Surface Engineering laboratory. He has been working on micro/nano structure fabrication on different materials with femtosecond laser, and he published peer-reviewed journal articles on this topic.

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