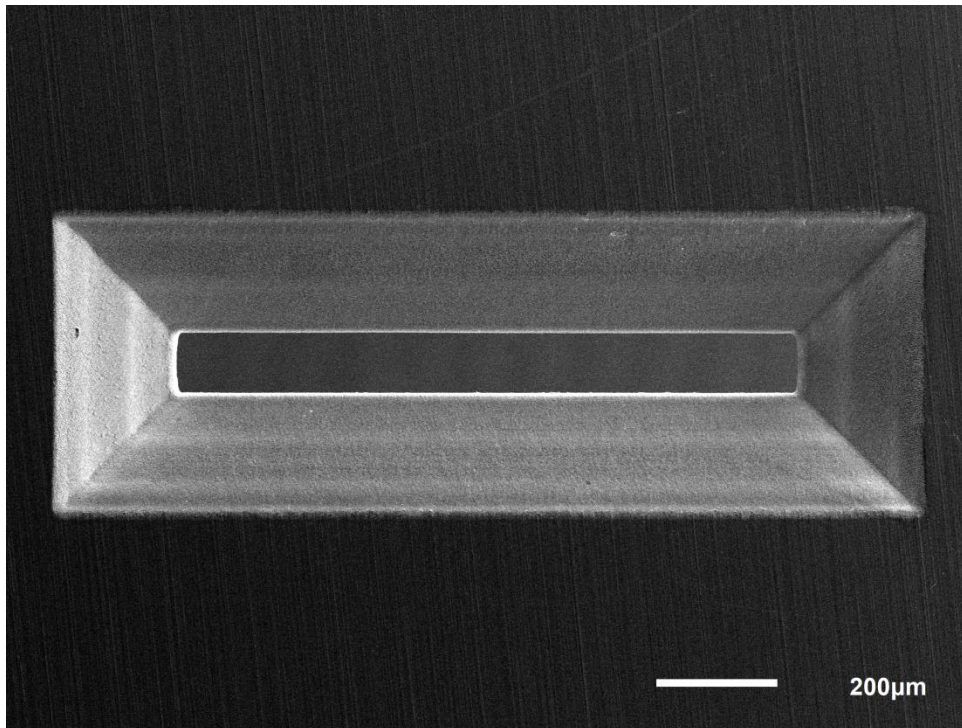


HIGH PRECISION 3D MICRO PROCESSING OF TUNGSTEN BY ULTRASHORT PULSE LASER ABLATION

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This paper presents results obtained in high-precision ultrashort pulse laser processing of tungsten sheet metal. In the study, essential research on the ablation behavior of tungsten as well as the influence of different processing strategies on machining results was conducted. For this, a high-PRF (pulse repetition frequency) femtosecond laser ($\lambda = 1030 \text{ nm}$, $\tau_H = 180 \text{ fs}$, $f_p = 1 \text{ MHz}$) was used in conjunction with a galvanometer scan system. By raster scanning of the laser beam across the tungsten surface and by in-situ control of the cavity depth, precise aperture cuts were produced. The quality of the machining results were evaluated by SEM micrographs. Machining samples will be presented to demonstrate the feasibility of the high-PRF ultrashort pulse laser technology in high-precision micro fabrication.



Aperture cut produced in tungsten sheet metal, thickness 200 μm , width 100 μm , length 1 mm