

## Micro-Bulges Investigation on Laser Modified Tool Steel Surface

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**Abstract.** This paper presents micro-bulges investigation on laser modified tool steel. The aim of this study is to understand the effect of laser irradiance and interaction time on surface morphology configuration. An Nd:YAG laser system with TEM<sub>00</sub> pulse processing mode was used to modify the samples. Metallographic study shows samples were analyzed for focal position effect on melted pool size, angle of peaks geometry and laser modified layer depth. Surface morphology were analyzed for surface roughness. Laser modified layer shows depth ranged between 42.22 and 420.12  $\mu\text{m}$ . Angle of peak bulge was found to be increase with increasing peak power. The maximum roughness, R<sub>a</sub>, achieved in modified H13 was 21.10  $\mu\text{m}$ . These findings are significant to enhance surface properties of laser modified steel and cast iron for dies and high wear resistance applications.