

## INVESTIGATION AND ANALYSIS OF LASER BEAM MACHINING

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### ABSTRACT

The high intensity which can be obtained by focusing the pulsed energy emitted by a LASER can offer potential as a tool for nearly forceless machining. The method can be used on any material, regardless of thermal properties, which can be evaporated without decomposition, including almost all ceramics and metals. With most substances, almost all of the material removed by LASER machining leaves in the liquid state. Only a small fraction is vaporized, and the high rate of the vaporization exerts forces which expel the liquid metal. All features of LASER beam machining improve with increased intensity. The higher the intensity, the less heat is resonant in the uncut material, an important consideration with materials which are sensitive to heat shock, and the more efficient the process is in terms of volume of material removed per unit of energy. The intensities which are available with the LASER are high enough so that the heat affected zone (HAZ) on a cut surface is too small to be detected and there is no solidified liquid film residue on the cut surface. In this paper Laser micromachining of an aluminum film on a glass substrate is investigated using atime-resolved transmission imaging technique with nanosecond resolution.

**KEYWORDS:** LASER, Aluminum Film, Laser Beam Machining (LBM)



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