

Parametric Optimization of Micro Drilling using Machine Vision Technique
Combined with Taguchi Method

梁有燈, 邱奕契

Mechanical Engineering

Engineering

chiou@chu.edu.tw

Abstract

The objective of this study is to optimize the micro drilling of PMMA (Polymethyl methacrylate) polymer with multiple performance characteristics. In Taguchi method, a three level orthogonal array has been used to determine the S/N ratio. Analysis of variance was used to determine the most significant process parameters affecting the holes roughness. Coated deposition, spindle speed and feed rate are optimized drilling parameters when the performance characteristics, which include tool life and surface roughness, are taken into consideration. The results indicated that the TiAlN-coating drills generate least wear and best holes quality. Finally, confirmation experiments were conducted to confirm the validity of the results.

Keyword : Micro Drill, PMMA Polymer, Machine Vision, Taguchi Method, Flank Wear.