Abstract

Optical grade plastics are increasingly being used as magnifiers in Ophthalmic Optical Instrumentation applications. In its effort to develop indigenously aspheric technology-based Ophthalmic Optical aids, the Aspheric Group at CSIO has studied the machining and surface characteristics of optical grade plastics. Generally, PMMA and polycarbonate considered as suitable candidates for aspheric Visual aids. In the study presented, optical grade polycarbonate is explored for its single-point diamond turning (SPDT) features and its profile characteristics. This study focuses on the optimization of SPDT machining parameters viz: tool feed rate, depth of cut, spindle speed for a given tool nose radius. In this study, the machining sensitivity in terms of surface roughness and profile error (Pt) is investigated. It is found that machining parameters play a major role in surface quality optimization in terms of roughness and profile. Based on optimized machining parameters, good quality aspheric lens is developed.

References
- W. M. Chiu and W. B. Lee "Development of Ultra-Precision Machining Technology"; Department of Manufacturing Engineering, The Hong Kong Polytechnic University, Hong Kong.

Index Terms

Computer Science
Pattern Recognition

Keywords

Single Point Diamond Turning (spdt) Surface Roughness Profile Error Machining Parameters Tool Path