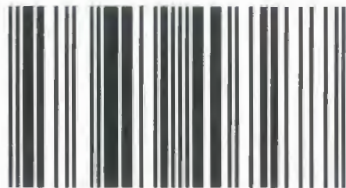


Micro-blasting has established itself among the mainstream machining processes for difficult-to-cut workpieces like glasses, carbides, ceramics, etc., by using abrasive particles. Initially, during micro-blasting process non-machined areas are covered by protective mask. Today, either mask fabrication practice or micro-blasting process, none is secretive in the area of micro-manufacturing, but in the previous work, those processes were well suited and optimized for producing micro-features on planar workpieces. However, the demand for micro-features on 3D freeform substrate in MEMs and lab-on-a-chip devices imposes development of more refined non-planar micro-manufacturing techniques. In these concerns, this research focused on devising an appropriate photoresist mask required by micro-AJM processes on surface of a 3D freeform workpiece. The author investigated fundamental erosion mechanisms based on the SU-8 mask properties. Under optimal settings, the mask hardness and surface roughness were 25.04 HV and 1.14 $\mu\text{m}$  respectively. Through micro-AJM process, the engraved micro-features size on surface of 3D freeform workpiece was 447.1  $\mu\text{m}$ - width and 11.6  $\mu\text{m}$ - depth.



**Jean Bosco Byiringiro**

J.B. Byiringiro is a Citizen of Rwanda, Ph.D holder from Yeungnam University (S.Korea). His area of specialization is Non-Traditional Machining (Nano and Micro Fabrication). He is an Engineer by professional with MSc. and BSc. degrees Mechatronic and Electromechanical Engineering respectively. Dr. Byiringiro is currently a University Lecturer.



978-3-659-40727-7



Jean Bosco Byiringiro

## Su-8 Micro-mask On 3D Freeform Surface Of Brittle Materials For AJM

Optimal Conditions of SU-8 Mask for Micro-Abrasive Jet Machining of 3D Freeform Brittle Materials