

Novel Shaped Microstructures Processed By Deep X-ray Lithography

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Abstract

A new process, plane-pattern to cross-section transfer (PCT) technique, has been developed for forming of three-dimensional microstructures with novel shapes using deep X-ray lithography. This process technique makes it possible to process microstructures with sloped sidewalls, curved surfaces and sharp tips expected as components of MEMS. The principle of the PCT technique and a result of a simulation based on the principle are presented. Using the PCT technique, fabrications of PMMA microstructures having curved surfaces with surface roughness of about 10 nm and sharp tips with radius of about 0.5 μm , and a PMMA micro lens array are demonstrated.