

Two-photon grayscale lithography

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Abstract

In this presentation we introduce two-photon grayscale lithography (2GL[®]). It is an additive microfabrication technology that combines the advantage of two-photon polymerization (2PP), namely a strong 3D confinement of the exposed volume pixel (voxel), with a dynamic dose control, i.e. instantaneous control of the voxel height during fabrication. Thus, true free-form microstructures can be printed directly onto flat or pre-structured substrates with high shape accuracy, allowing for the fast creation and iteration of diffractive, refractive, and hybrid microoptics with smooth surfaces.

We demonstrate the compatibility of 2GL[®]-printed master templates with several replication techniques.

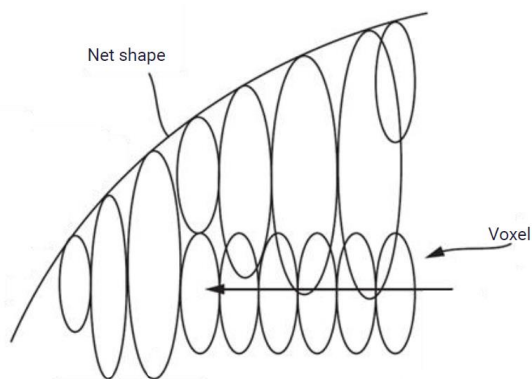


Figure 1: Dynamic control of the voxel height allows to create smooth freeform surfaces.