

Shapeshifting diffractive optical elements

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Abstract

We have proved that it is possible to realize optical elements with theory-matching efficiency and practical use, reconfigurable on demand right where and when needed. I will present diffraction optical elements with efficiency equal to the theoretical efficiency, realized by direct structuring of the surface of a photosensitive polymer, avoiding any further development step. The realized gratings and lenses can be reshaped completely while aligned in the optical setup. Grating periodicity can be changed; lenses focal length can be tuned; one optical element can be morphed into another optical element with completely different optical functionality, without affecting the alignment of the specific optical setup.