

## Dynamic optics for laser material processing

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The capabilities of high-resolution optical systems are considerably enhanced through the use of dynamic optical elements, such as deformable mirrors or liquid crystal spatial light modulators. These elements can be used to perform adaptive optical correction of aberrations or dynamic beam shaping. I explain how these methods are being used in laser micro and nano-fabrication. I will show a number of methods through which such methods are improved by dynamic optics, including aberration correction and parallelization for three-dimensional structuring of materials. These methods are being developed for the manufacture of photonic devices, such as waveguides, and the precision machining of various materials. Particular applications include waveguide circuits for quantum optics, laser writing of colour centres in diamond, novel polymer/liquid crystal structures and diamond-based radiation detectors.