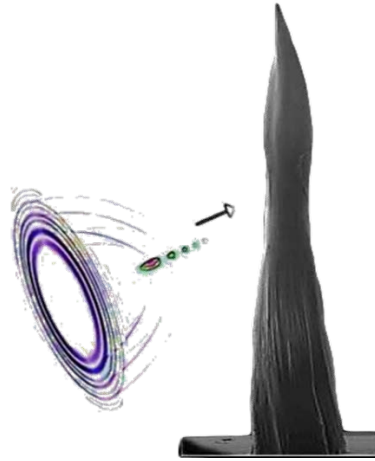


Exotic laser beams for advanced sculpturing of matter



Tunable-ring Airy beams are experimentally generated and employed for the fabrication of large three-dimensional structures with high resolution using multi-photon polymerization. We demonstrate that these beams can be adjusted to abruptly autofocus over an extended range of working distances while keeping their voxel shape and dimensions almost invariant. This striking property together with the real-time electronically controlled focus tuning makes these beams ideal candidates for long-range multi-photon polymerization. Moreover, the well-controlled remote localized deposition of energy can also impact many other fields of linear and nonlinear optics, like filamentation and remote high-power terahertz generation.

More information can be found in:

M. Manousidaki, D. G. Papazoglou, M. Farsari, and S. Tzortzakis, "*Abruptly autofocusing beams enable advanced multiscale photo-polymerization*,"

[Optica 3, 525-530 \(2016\)](#).