

3D LASER MICRO- AND NANOPRINTING

Martin Wegener¹

¹Institute of Applied Physics and Institute of Nanotechnology,
Karlsruhe Institute of Technology (KIT), 76128 Karlsruhe, Germany
*martin.wegener@kit.edu

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Following a brief introduction into 3D laser printing on the micrometer and nanometer scale based on two-photon absorption [1,2], I will emphasize recent progress of my group in this field. This includes replacing two-photon absorption by one-color two-step absorption, allowing to use compact and inexpensive continuous-wave lasers rather than femtosecond laser systems [3]. Using two-color two-step absorption combined with the idea of light-sheet laser printing [1,4], we have more recently achieved print rates approaching 10^7 voxels/s. Aligning the director of liquid-crystal elastomers during the 3D laser printing process yields 3D micro-architectures that can be actuated by light from an LED [5]. Finally, I briefly discuss recent unpublished [6] progress in regard to laser printing of functional microelectronic devices such as diodes, memristors, and transistors. Here, introducing laser-induced photothermal synthesis of inorganic semiconductors such as ZnO has been crucial.

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