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Supplementary information

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Three-dimensional isotropic microfabrication in glass using spatiotemporal focusing of high-repetition-rate femtosecond laser pulses

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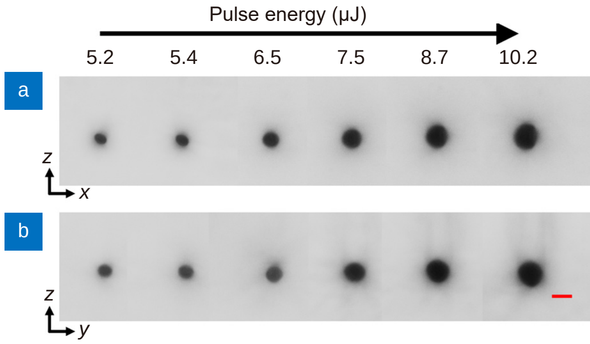

Fig. S1 | Cross-sectional optical micrographs of SSTF fs laser inscribed lines in the glass along the (**a**) *Y* and (**b**) *X* directions with different pulse energies (from left to right: 5.2, 5.4, 6.5, 7.5, 8.7, and 10.2 μJ). Scale bar: 20 μm.

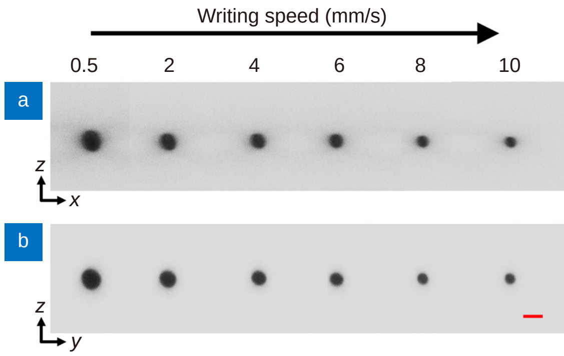

Fig. S2 | Cross-sectional optical micrographs of SSTF fs laser inscribed lines along the (**a**) *Y* and (**b**) *X* directions at different writing speeds. The writing speeds from left to right were 0.5, 2, 4, 6, 8, and 10 mm/s, and the pulse energy was 8 μJ. Scale bar: 20 μm.

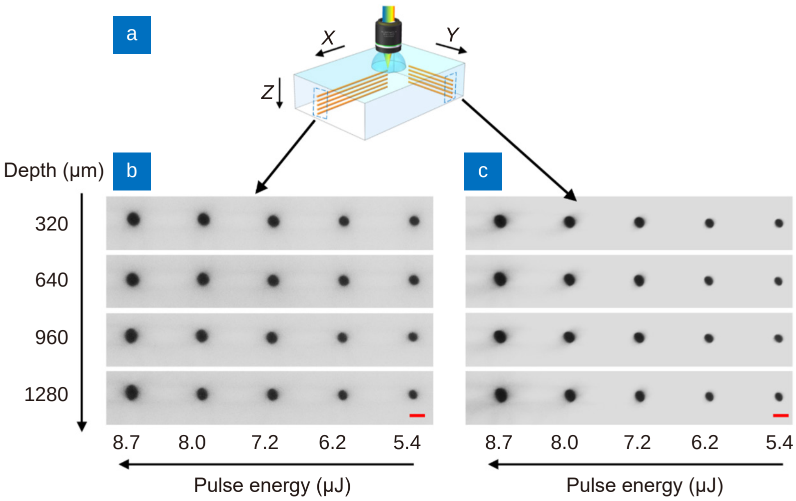

Fig. S3 | (**a**) Schematic of SSTF fs laser inscribed lines in glass at different depths. Cross-sectional optical micrographs of the lines along the (**b**) *X* and (**c**) *Y* directions at different depths ranging from 320 to 1280 μm. Scale bar: 25 μm.

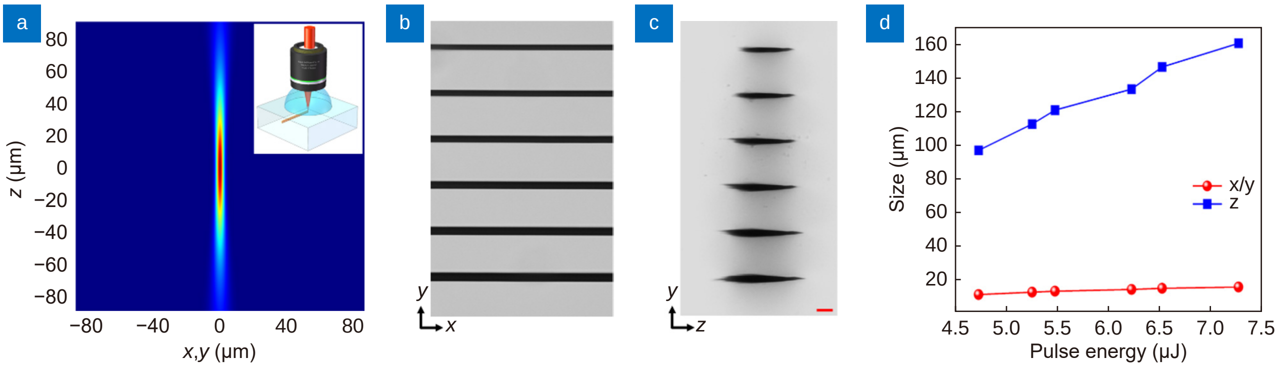

Fig. S4 | (**a**) Numerically calculated intensity distribution near the focus of the objective lens using a conventional focusing (CF) scheme. (**b**) Top-view and (**c**) cross-sectional view optical micrographs of CF fs laser inscribed lines written at different pulse energies. The pulse energies from top to bottom in (b, c) were 4.7, 5.2, 5.5, 6.3, 6.5, and 7.4 μJ, respectively. The writing speed was 200 μm/s. (**d**) Measured lateral (*x*/*y*) and longitudinal (*z*) size versus pulse energy. All aspect ratios of longitudinal and lateral sizes were large than 9 with the CF scheme. With the increase in the pulse energy, the degradation of the axial resolution became worse.