PATENT CLAIMS

1. A method for making a recess or an opening in a planar workpiece having a thickness of less than 3 mm, the method comprising: irradiating the planar workpiece with laser radiation comprising a single pulse of laser radiation having a spatial beam that reacts with the planar workpiece over an entire thickness of the planar workpiece along a beam axis of the laser radiation, the spatial beam of the laser radiation propagating through the planar workpiece to modify the planar workpiece by forming a plurality of flaws, whereby no recess or opening into the planar workpiece is yet produced; and etching the plurality of flaws to create the recess or the opening in the planar workpiece.

2. The method of claim 1, wherein the flaws comprise a linear chain of blisters which are separated from each other along the chain.

3. The method of claim 2, wherein the linear chain of blisters extends across the thickness of the planar workpiece.

4. The method of claim 1, wherein the flaws along the beam axis do not touch one another.

5. The method of claim 1, wherein the flaws extend along the beam axis from one surface of the planar workpiece as far as to a second surface of the planar workpiece.

6. The method of claim 1, wherein the etching reduces an average thickness of the planar workpiece.

7. The method of claim 1, wherein the laser radiation has a wavelength to which the material of the planar workpiece is transparent.

8. The method of claim 1, wherein the laser radiation has a pulse length of less than 100 picoseconds.

9. The method of claim 8, wherein the laser radiation has a pulse length of less than 12 picoseconds.

10. The method of claim 1, further comprising: creating the spatial beam with an optical system having spherical aberration or with a diffractive optical element.

11. The method of claim 1, wherein the laser radiation includes paraxial beams and edge beams,each with a respective focal point layer, and wherein a difference between the focal point layers of the paraxial beams and the edge beams along the beam axis is >100 µm.

12. The method of claim 11, wherein the difference is >250 µm.

13. The method of claim 1, wherein a lateral surface of the recess or the opening forms an earthworm structure.

14. The method of claim 1, wherein a material of the planar workpiece includes a glass, silicon,and/or sapphire.

15. The method of claim 1, wherein the laser radiation comprises a sequence of pulses, wherein the single pulse is part of the sequence of laser pulses, and wherein each of the pulses of the sequence of pulses comprises a spatial beam that reacts with the planar workpiece over the entire thickness of the planar workpiece along the beam axis of the laser radiation.

16. The method of claim 1, wherein the etching is performed successively with etching fluid traveling from flaw to flaw and thereby joining the flaws to one another to form the recess or the opening.

17. The method of claim 1, further comprising, prior to the etching, applying a planar layer.

18. The method of claim 17, wherein the planar layer is a metal layer which covers the recess or the opening to be formed by the etching.

19. A method for making a recess or an opening in a planar workpiece having a thickness of less than 3 mm, the method comprising: irradiating the planar workpiece with laser radiation comprising a single pulse of laser radiation having a spatial beam that reacts with the planar workpiece over an entire thickness of the planar workpiece along a beam axis of the laser radiation, the spatial beam of the laser radiation propagating through the planar workpiece to modify the planar workpiece by forming a plurality of flaws, the plurality of flaws comprising a linear chain of blisters within the planar workpiece that are separated from each other along the chain; and etching the plurality of flaws to create the recess or the opening in the planar workpiece.

20. The method of claim 19, wherein the etching is performed successively with etching fluid successively traveling from blister to blister along the linear chain of blisters to join the blisters together and thereby create the recess or the opening in the planar workpiece such that a lateral surface of the recess or the opening has an earthworm structure.

21. The method of claim 19, wherein the linear chain of blisters extends across the thickness of the planar workpiece.