~~THEREFORE WHAT IS CLAIMED IS:~~ CLAIMS

1. A method of preparing a substrate for cleavage, the method comprising the steps of:

irradiating the substrate with a burst of pulses of a focused laser beam, wherein the substrate is transparent to the focused laser beam, wherein a time delay between successive pulses in the burst of pulses is less than a time duration over which relaxation of one or more material modification dynamics occurs, and wherein the burst of pulses have an energy and pulse duration selected to produce a filament within the substrate;

translating the substrate relative to the focused laser beam to irradiate the substrate and produce an additional filament at one or more additional locations;

wherein the filaments form an array defining an internally scribed path for cleaving the substrate.

2. The method according to claim 1 wherein substrate is translated relative to the focused laser beam with a rate selected to produce a filament spacing on a micron scale.

3. The method according to claim 1 or 2 wherein the burst of pulses are provided two or more times with a prescribed frequency, and wherein the substrate is translated relative to the focused laser beam with a substantially constant rate.

4. The method according to any one of claims 1 to 3 wherein a location of a beam focus of the focused laser beam is selected to generate the filaments within

22. The method according to any one of claims 1 to 21 wherein a repetition rate of the burst of laser pulses and a scanning speed of the substrate are controlled such that the pitch of the array is less than or equal to approximately 10 microns.

23. The method according to any one of claims 1 to 22 wherein a repetition rate of the burst of laser pulses and a scanning speed of the substrate are controlled such that a length of the filaments exceeds approximately 250 microns.

24. The method according to any one of claims 1 to 23 wherein the burst of laser pulses is focused on the substrate such that a length of the filaments exceeds approximately 600 microns.

25. The method according to any one of claims 1 to 24 wherein the burst of laser pulses is focused on the substrate such that a diameter of the filament is less than approximately 3 microns.

26. The method according to any one of claims 1 to 24 wherein the burst of laser pulses is focused on the substrate such that a diameter of the filament is less than approximately 10 microns.

27. The method according to any one of claims 1 to 26 wherein the burst of laser pulses is focused on the substrate such that, upon cleavage of the substrate, the kerf width is less than approximately 30 microns.

28. The method according to any one of claims 1 to 27 wherein the burst of laser pulses is focused on the substrate such that the filaments extend over a substantial portion of the substrate.

29. The method according to claim 28 wherein the burst of laser pulses is focused on the substrate such that the filaments end without breaking into top or bottom surfaces of the substrate.

30. The method according to claim 28 wherein a location of a beam focus of the focused laser beam is selected to generate a V groove within at least one surface of the substrate.

31. The method according to any one of claims 1 to 30 wherein a diffracted beam emerging through a bottom surface of the substrate is converged back onto the bottom surface of the substrate by a focusing element, such that a V groove is produced in the bottom surface of the substrate.

32. The method according to any one of claims 1 to 31 wherein upon cleaving the substrate, the edge of the cleaved substrate is substantially free of chipping and microcracks.