Claims:

1. A method of scribing a substantially planar substrate comprising semiconductor material along at least one scribeline parallel to a major surface of the substrate, comprising the steps of:

- providing at least one laser beam;
- causing said laser beam to impinge on said major surface, the point of impingement of the beam constituting a light spot, the substrate being positioned with respect to the laser beam such that said light spot is disposed at least proximal to said scribeline;
- causing relative motion of the substrate with respect to the laser beam, such that the light spot is caused to translate substantially along the scribeline,

whereby localized energy is transferred from the laser beam to the substrate along the course of said scribeline,

characterized in that positioning of the light spot with respect to the scribeline is monitored using a method that comprises the following steps:

- illuminating at least a portion of the major surface proximal to the light spot using a flash of light, produced during said relative motion;
- during said illumination, using an image recording device to capture an image of said portion, including said light spot;
- using image recognition software to analyze said image and to determine momentary position information for the light spot relative to the scribeline;
- using said momentary position information to regulate a setpoint for a position of the laser beam relative to the substrate.

2. A method according to claim 1, wherein the laser beam is a pulsed laser beam and the image is at least partially captured during a radiating pulse of the laser beam.

3. A method according to claim 1 or 2, wherein:

- the flash of light comprises a wavelength different to that of the laser beam;
- the image recording device is provided with a filter that substantially attenuates the wavelength of the laser beam but substantially transmits said wavelength of the flash of light, at least in reflection from the substrate.

4. A method according to any of claims 1-3, wherein the image recording device registers a location of the light spot with the aid of a localized glow generated by energetic interaction of the laser beam with at least one of:

- a material of the substrate;
- a fluid present at the location of the light spot.

5. A method according to claim 4, wherein said glow is generated proximal the light spot by a mechanism selected from the group comprising:

- localized incandescence of substrate material, due to heating thereof;
- localized luminescence of substrate material, due to recombination of electron-hole pairs generated therein;
- fluorescence in a locally generated plasma,

and combinations hereof.

6. A method according to claim 4 or 5 when depending on claim 3, wherein said filter transmits at least a portion of light from said glow.

7. A method according to any of claims 1-6, wherein:

- said laser beam is one member of a cluster of laser beams, all caused to concurrently impinge on the substrate at least proximal to said scribeline;
- said light spot is at least one member of a corresponding cluster of light spots associated with said cluster of laser beams.

8. An apparatus constructed and arranged to perform a method as claimed in any of the claims 1-7.

CLAIMS

1. A method of scribing a planar substrate comprising semiconductor material along at least one scribeline parallel to a major surface of the substrate, comprising the steps of:

- Providing at least one laser beam;
- Causing said laser beam to impinge on said major surface, the point of impingement of the beam constituting a light spot, the substrate being positioned with respect to the laser beam such that said light spot is disposed at least proximal to said scribeline;
- Causing relative motion of the substrate with respect to the laser beam, such that the light spot is caused to translate along the scribeline,

whereby localized energy is transferred from the laser beam to the substrate along the course of said scribeline,

characterized in that positioning of the light spot with respect to the scribeline is monitored using a method that comprises the following steps:

- Illuminating at least a portion of the major surface proximal to the light spot using a flash of light, produced during said relative motion;
- Capturing an image of said portion as well as the light spot produced by the laser beam during the illumination, using an image recording device;
- Using image recognition software to analyze said image and to determine momentary position of the light spot relative to the scribeline;
- Using said momentary position of the light spot produced by the laser beam to regulate a setpoint for a position of the laser beam relative to the substrate.

wherein the flash of light comprises a wavelength different to that of the laser beam and the image recording device is provided with a filter that attenuates the wavelength of the laser beam but transmits said wavelength of the flash of light, at least in reflection from the substrate.

2. A method according to claim 1, wherein the laser beam is a pulsed laser beam and the image is at least partially captured during a radiating pulse of the laser beam.

3. A method according to any of claims 1-2, wherein the image recording device registers a location of the light spot with the aid of a localized glow generated by energetic interaction of the laser beam with at least one of:

- A material of the substrate;
- A fluid present at the location of the light spot.

4. A method according to claim 3, wherein said glow is generated proximal the light spot by a mechanism selected from the group comprising:

- Localized incandescence of substrate material, due to heating thereof;
- Localized luminescence of substrate material, due to recombination of electron-hole pairs generated therein;
- Fluorescence in a locally generated plasma,

and combinations hereof.

5. A method according to claim 3 or claim 4, wherein said filter transmits at least a portion of light from said glow.

6. A method according to any of any one of the preceding claims, wherein:

- Said laser beam is one member of a cluster of laser beams, all caused to concurrently impinge on the substrate at least proximal to said scribeline;
- Said light spot is at least one member of a corresponding cluster of light spots associated with said cluster of laser beams.

7. An apparatus for scribing a planar substrate comprising semiconductor material along at least one scribeline parallel to a major surface of the substrate, comprising:

- A substrate table, onto which the substrate can be mounted;
- A laser, for providing at least one laser beam that can be directed so as to impinge on said major surface and form a light spot thereon at least proximal to said scribeline;
- A stage assembly, for producing relative motion of the substrate with respect to the laser beam, such that the light spot is caused to translate along the scribeline, whereby localized energy is transferred from the laser beam to the substrate along the course of said scribeline,

characterized in that the apparatus further comprises:

- A light source, for illuminating at least a portion of the major surface proximal to the light spot using a flash of light, produced during said relative motion;
- An image recording device, for capturing an image of said portion as well as the light spot produced by the laser beam during illumination by the light source;
- A controller for:

- Using image recognition software to analyze said image and determine momentary position of the light spot produced by the laser beam relative to the scribeline;
- Using said momentary position of the light spot to regulate a setpoint for a position of the laser beam relative to the substrate.

wherein the flash of light comprises a wavelength different to that of the laser beam and the image recording device is provided with a filter that attenuates the wavelength of the laser beam but transmits said wavelength of the flash of light, at least in reflection from the substrate.