CLAIMS:

1. A die bond head apparatus, comprising:

a die bond head body coupled to a die bond head motion table for moving the die bond head body along at least one axis;

a die holder motion table mounted on the die bond head body;

a die holder which is operative in use to secure a semiconductor die to a substrate, the die holder being positionable by the die holder motion table to move the die holder along the at least one axis independently of the die bond head motion table; and

an imaging device positioned over the substrate that is operative in use to image a placing location on the substrate, the imaging device being configured such that the die holder motion table is movable to a position between the imaging device and the substrate, whereat the imaging device is further operative to image at least a portion of the die holder and/or the semiconductor die held by the die holder to determine at least one of position and orientation information of the die holder and/or the semiconductor die after the die bond head is located proximate the placing location along the at least one axis by the die bond head motion table, wherein the die holder motion table is further operative to adjust the position and orientation of the die holder and/or the semiconductor die relative to the placing location,

wherein the die holder motion table comprises at least one aperture through which at least one inspection light path passes through the die holder motion table for allowing the imaging device to image at least a portion of the die holder and/or the semiconductor die held by the die holder.

2. The apparatus of claim 1, wherein the die bond head motion table is coupled to a first end of the die bond head body and the die holder motion table is mounted at a second end of the die bond head body distal from the first end.

3. The apparatus of claim 1, wherein the die holder motion table is operative in use to displace the die holder along more than one axis on a plane.

4. The apparatus of claim 1, wherein the die holder motion table is operative in use to displace the die holder with greater precision than the die bond head motion table is operative in use to displace the die bond head body.

5. The apparatus of claim 1, wherein the die holder motion table has a displacement range which is smaller than the die bond head motion table.

6. The apparatus of claim 1, wherein the die holder motion table has a table support structure retained by the die bond head body and a moveable structure displaceable with respect to the table support structure.

7. The apparatus of claim 6, wherein the die holder motion table comprises at least one actuator operative in use to displace the moveable structure with respect to the table support structure.

8. The apparatus of claim 7, wherein the at least one actuator is operative in use to displace the moveable structure along more than one axis.

9. The apparatus of claim 6, wherein the die holder motion table comprises at least one of a bearing and a flexure coupling the moveable structure with the table support structure and operative in use to facilitate movement of the moveable structure with respect to the table support structure.

10. The apparatus of claim 6, wherein the die holder motion table comprises a location identifier operative to provide an indication of the location of the moveable structure.

11. The apparatus of claim 10, wherein the location identifier comprises a linear encoder having respective components separately mounted on the moveable structure and the table support structure.

12. The apparatus of claim 6, wherein the moveable structure comprises the at least one inspection light path that passes through the moveable structure and is positioned for imaging of at least a portion of the die holder and/or the semiconductor die held by the die holder.

13. The apparatus of claim 12, wherein the inspection light path comprises a void in the movable structure.

14. The apparatus of claim 1, comprising a controller operative in use to locate the die holder proximate a bonding location by manipulating the die bond head body position using the die bond head motion table and to correct at least one of a position and orientation of the semiconductor die held by the die holder in response to at least one of the position and orientation information by manipulating the die holder position using the die holder motion table.

15. A method, comprising:

imaging a placing location on a substrate with an imaging device of a die bond head apparatus of claim 1,

locating the die holder of the die bond head apparatus proximate the placing location by manipulating the die bond head body using the die bond head motion table such that the die holder motion table is moved to a position between the imaging device and the substrate;

imaging, with the imaging device, at least a portion of the die holder and/or the semiconductor die held by the die holder through at least one aperture of the die holder motion table through which at least one inspection light path passes through the die holder motion table to determine at least one of position and orientation information of the die holder and/or the semiconductor die;

adjusting at least one of a position and orientation of the semiconductor die held by the die holder relative to the placing location using the die holder motion table; and thereafter

bonding the semiconductor die at the placing location.