CLAIMS:

1. A method for attaching an integrated circuit (IC) to an IC package substrate, the method comprising:

forming a solder bump on a bond pad of an IC die;

forming a solder-wetting protrusion on a bond pad of an IC package substrate, wherein the solder-wetting protrusion is cone shape including a base portion and a apex portion, and width of the base portion is greater than width of the apex portion ;

bonding the solder bump of the IC die to the solder- wetting protrusion of the IC package substrate, wherein a molten solder bump changes its shape and comes into contact with the solder-wetting protrusion; and

wherein forming a solder-wetting protrusion on the bond pad of the IC package substrate includes laser direct deposition of the solder-wetting protrusion onto the bond pad of the IC package substrate.

2. The method of claim 1, wherein laser direct deposition of the solder-wetting protrusion includes:

arranging a film of solder-wetting material opposite the bond pad of the IC package substrate; and

applying laser energy to the film of solder-wetting material to transfer the solder-wetting material to the bond pad of the IC package substrate.

3. The method of claim 1, wherein laser direct deposition of the solder-wetting protrusion includes:

arranging, opposite the bond pad of the IC package substrate, a film having solder-wetting material on one side and a transparent material on the other side, and

applying laser energy to the transparent side of the film.

4. The method of claim 2 or claim 3, wherein arranging a film of solder-wetting material includes arranging the film of solder-wetting material opposite a plurality of bond pads of one or more IC package substrates, and wherein applying laser energy includes

scanning a laser energy source to positions on the film of solder- wetting material opposite the plurality of bond pads and applying pulses of laser energy to the film of solder- wetting material to transfer the solder- wetting material to the plurality of bond pads.

5. The method of claim 2 or claim 3, wherein arranging a film of solder-wetting material includes arranging the film of solder-wetting material opposite a plurality of bond pads of one or more IC package substrates, and wherein applying laser energy includes scanning the plurality of bonds passed the laser energy source and applying a pulses of laser energy to the film of transparent material to transfer the solder- wetting material onto a bond pad when it is positioned opposite the laser energy source.

6. The method of claim 1, including applying solder flux to the bond pad of the IC package substrate prior to laser deposition of the solder- wetting protrusion.

7. The method of claim 1 , wherein forming a solder- wetting protrusion on the bond pad of the IC package substrate includes laser direct writing of the solder-wetting protrusion onto the bond pad of the IC package substrate.

8. The method of claim 1 , wherein forming a solder-wetting protrusion on the bond pad of the IC package substrate includes one of wire-stud bonding solder-wetting material to the bonding pad, attaching a solder-wetting micro-ball to the bond pad, attaching a solder-wetting microdot to the bond pad, solder jetting the solder- wetting material onto the bond pad, or injection molding the solder-wetting material onto the bond pad.

9. The method of claim 1 , wherein forming a solder- wetting protrusion on the bond pad of the IC package substrate includes at least one of solder paste printing the solder-wetting protrusion on the bond pad or plating the solder-wetting protrusion on the bond pad.

10. The method of any one of claims 6-9, wherein bonding the solder bump of the IC die to the solder-wetting protrusion of the IC package substrate includes heating the solder bump to form a molten solder bump and contacting the molten solder bump with the solder-wetting protrusion.

11. The method of any one of claims 6-9, wherein bonding the solder bump of the IC die to the solder-wetting protrusion of the IC package substrate includes heating the solder bump to form a molten solder bump and pressing the molten solder bump of the IC die to the solder- wetting protrusion of the IC package substrate.

12. An apparatus comprising:

means for forming a solder bump on a bond pad of an integrated circuit (IC) die;

means for forming a solder-wetting protrusion on a bond pad of an IC package substrate, wherein the solder-wetting protrusion is cone shape including a base portion and a apex portion, and width of the base portion is greater than width of the apex portion;

means for bonding the solder bump of the IC die to the solder- wetting protrusion of the IC package substrate, wherein a molten solder bump changes its shape and comes into contact with the solder-wetting protrusion; and

wherein the means for forming a solder-wetting protrusion on the bond pad includes an automatic laser direct deposition station.

13. The apparatus of claim 12, wherein the automatic laser direct deposition station includes:

a film of solder-wetting material on a transparent substrate and arranged opposite the bond pad of the IC package substrate; and

a laser energy source to apply laser energy to the transparent substrate to transfer the solder-wetting material onto the bond pad of the IC package substrate.

14. The apparatus of claim 13, wherein the film of solder- wetting material is arranged opposite a plurality of bond pads of one or more IC package substrates, and wherein the applied laser energy is scannable to positions on the film of transfer material opposite the plurality of bond pads.

15. The apparatus of claim 13, wherein the film of solder-wetting material is arranged opposite a plurality of bond pads of one or more IC package substrates, wherein the film of solder-wetting material and the one or more IC package substrates are movable relative to the laser energy source to position a bond pad and solder-wetting material opposite the applied laser energy.

16. The apparatus of any one of claims 12-15, wherein the means for bonding the solder bump of the IC die to the solder- wetting protrusion of the IC package substrate includes an automatic thermal compressive bonding (TCB) station configured to bond the IC die to the IC package substrate.

17. An electronic assembly including:

an integrated circuit (IC) package substrate;

a number of bond pads on the IC package substrate, wherein a bond pad includes a surface for electrical connection to an IC die;

one or more protrusions of solder- wetting material extending away from the surface of one or more of the number of bond pads; and

the IC die bonded to the IC package substrate;

wherein the solder-wetting material protrusion is cone shape including a base portion and a apex portion, and width of the base portion is greater than width of the apex portion,

wherein bonding of the solder bump of the IC die and the solder- wetting material protrusion is made by that a molten solder bump changes its shape and comes into contact with the solder-wetting protrusion; and

wherein a solder-wetting protrusion includes solder paste.

18. The electronic assembly of claim 17, wherein the base portion has a width of one hundred micrometers (100 microns) or less.

19. The electronic assembly of claim 17, wherein a width of the solder-wetting material protrusion is less than a width of the surface of the bond pad of the IC package substrate.

20. The electronic assembly of any one of claims 17-19, wherein the solder-wetting material protrusion includes at least one of tungsten, gold, copper, or silver.

21. The electronic assembly of any one of claims 17-19, wherein the IC die includes at least one of a processor and a memory.