We claim:

1. A method for preparing a flexible substrate assembly comprising

(a) attaching a flexible substrate to a rigid support with an adhesive layer, wherein the adhesive layer comprises a viscoelastic polymer having a glass transition temperature less than 180 °C and a decomposition temperature greater than 220 °C, wherein the adhesive layer comprises *n*-butylacrylate, polysiloxane, polysilicone or polyimide;

(b) forming one or more thin film transistors, organic light emitting diodes, inorganic light emitting diodes, electrode arrays, field effect transistors, passive structures and combinations thereof on a surface of the flexible substrate, and

(c) removing the flexible substrate from the rigid support after step (b).

2. The method of claim 1, wherein the attaching comprises

depositing the adhesive layer on a surface of the rigid support; and

bonding the flexible substrate with the rigid support wherein the adhesive layer is between the rigid support and flexible substrate.

3. The method of claim 2, wherein the adhesive layer is deposited by spin-coating, spray-coating, extrusion coating or preform lamination.

4. The method of ~~any of~~ claims 1~~—3~~, wherein the adhesive layer has a coefficient of thermal expansion ranging from about 10 to about 1000 ppm/°C.

5. The method of ~~any of~~ claims 1~~—3~~, wherein the adhesive layer outgases at a rate less than 2×10^{-4} Torr-liter/second.

~~6. The method of claims 4 or 5, wherein the adhesive layer comprises a polyimide, polyacrylate, acrylic, urethane, epoxy, phenolic, bis-maleimide, silicone, or siloxane.~~

~~7. The method of claim 6, wherein the adhesive layer comprises *n*-butylacrylate, polysiloxane, polysilicone or polyimide.~~

~~8. The method of claim 7, wherein the adhesive layer comprises *n*-butylacrylate.~~

~~9. The method of claim 7, wherein the adhesive layer comprises polysiloxane.~~

~~10. The method of claim 7, wherein the adhesive layer comprises polysilicone.~~

~~11. The method of claim 7, wherein the adhesive layer comprises polyimide.~~

6~~12~~. The method of ~~any one of~~ claim 1~~—11~~, wherein the rigid support comprises a semiconductor wafer, alumina, a glass, or a material CTE matched to the flexible substrate.

~~13. The method of claim 12, wherein the rigid support comprises a semiconductor wafer, and wherein the semiconductor wafer comprises Si.~~

~~14. The method of claim 12, wherein the rigid support comprises alumina.~~

~~15. The method of claim 12, wherein the rigid support comprises a material CTE matched to the flexible substrate.~~

7~~16~~. The method of ~~any one of~~ claim 1~~—15~~, wherein the flexible substrate is a plastic substrate or metal substrate.

8~~17~~. The method of claim 7~~16~~, wherein the flexible substrate is a plastic substrate, and wherein the plastic substrate comprises polyethylene naphthalate (PEN), polyethylene terephthalate (PET), polyethersulfone (PES), polyimide, polycarbonate, cyclic olefin copolymer, or mixtures thereof.

9~~18~~. The method of claim 7~~16~~, wherein the flexible substrate is a metal substrate, and wherein the metal substrate comprises INVAR, KOVAR, titanium, tantalum, molybdenum, aluchrome, aluminum, stainless steel, or mixtures thereof.

~~19. The method of claim 18, wherein the metal substrate comprises stainless steel.~~

~~20. The method of any one of claims 1—19, further comprising fabricating one or more electronic components on a surface of the flexible substrate.~~

10~~21~~. The method of ~~any one of~~ claims 1~~—20~~, further comprising, prior to bonding of the flexible substrate and the rigid carrier,

forming an insulating layer or metal layer directly on the adhesive layer; and

placing a double-sided adhesive tape directly on the insulating layer or metal layer

11~~22~~. The method of claim 10~~21~~, wherein the method further comprises forming an insulating layer directly on the adhesive layer and placing a double-sided adhesive tape directly on the insulating layer, and wherein the insulating layer comprises SiO_2 or SiN.

12~~23~~. The method of claim 10~~21~~, wherein the method further comprises forming a metal layer directly on the adhesive layer and placing a double-sided adhesive tape directly on the metal layer, and wherein the metal layer comprises aluminum.

~~24. The method of any one of claims 1-23 wherein the method controls bowing or warping of the flexible substrate.~~

13~~25~~. The method of claim 1~~24~~, wherein the flexible substrate has a bow or warp of less than about 100 μm.

14~~26~~. The method of claim 13~~25~~, wherein the flexible substrate has a bow or warp of less than about 60 μm.

15~~27~~. The method of ~~any one of~~ claims~~s~~ 1~~—~~~~26~~, further comprising forming a display architecture on the flexible substrate.

~~28. The method of any one of claims 1—26, further comprising forming one or more thin film transistors, organic light emitting diodes, inorganic light emitting diodes, electrode arrays, field effect transistors, passive structures and combinations thereof on a surface of the flexible substrate.~~

~~29. An assembly comprising a flexible substrate, a rigid support, and an adhesive layer, wherein~~

~~the flexible substrate is attached to the rigid support with the adhesive layer between the flexible substrate and rigid support; and~~

~~the adhesive layer comprises a viscoelastic polymeric adhesive having a glass transition temperature less than 180 °C and a decomposition temperature greater than 220 °C.~~

~~30. The assembly of claim 29, wherein the adhesive has a coefficient of thermal expansion greater ranging from about 10 to about 1000 ppm/°C.~~

~~31. The assembly of claim 29, wherein the adhesive outgases at a rate less than 2 x 10^{-4} Torr-liter/second.~~

~~32. The assembly of claims 30 or 31, wherein the adhesive layer comprises a polyimide, polyacrylate, acrylic, urethane, epoxy, phenolic, bis-maleimide, silicone, or siloxane.~~

~~33. The assembly of claim 32, wherein the adhesive layer comprises *n*-butylacrylate, polysiloxane, polysilicone or polyimide.~~

~~34. The assembly of claim 33, wherein the adhesive layer comprises *n*-butylacrylate.~~

16~~35~~. The method~~assembly~~ of claim 1~~33~~, wherein the adhesive layer comprises polysiloxane~~.~~ or

~~36. The assembly of claim 33, wherein the adhesive layer comprises~~ polysilicone.

~~37. The assembly of claim 33, wherein the adhesive layer comprises polyimide.~~

17~~38~~. The method~~assembly~~ of ~~any one of~~ claims 16~~29 – 37~~, wherein the rigid support comprises a semiconductor wafer, alumina, a glass, or a material CTE matched to the flexible substrate.

~~39. The assembly of claim 38, wherein the semiconductor wafer comprises Si.~~

~~40. The assembly of claim 38, wherein the rigid support comprises alumina.~~

~~41. The assembly of claim 38, wherein the rigid support comprises a material CTE matched to the flexible substrate.~~

18~~42~~. The method~~assembly~~ of ~~any one of~~ claim 17~~29 – 41~~, wherein flexible substrate is a plastic substrate or metal substrate.

19~~43~~. The method~~assembly~~ of claim 18~~42~~, wherein flexible substrate is a plastic substrate, and wherein the plastic substrate comprises polyethylene naphthalate (PEN), polyethylene terephthalate (PET), polyethersulfone (PES), polyimide, polycarbonate, cyclic olefin copolymer, or mixtures thereof.

2044. The methodassembly of claim 1842, wherein flexible substrate is a metal substrate, and wherein the metal substrate comprises INVAR, KOVAR, titanium, tantalum, molybdenum, aluchrome, aluminum, or stainless steel, or mixtures thereof.

~~45. The assembly of claim 44, wherein the metal substrate comprises stainless steel.~~

~~46. The assembly of any one of claim 29 45, further comprising an insulating or metal layer formed directly on the adhesive layer and a double-sided adhesive tape directly on the insulating or metal layer, wherein the flexible substrate is in contact with the double-sided adhesive tape.~~

~~47. The assembly of claim 46, wherein the insulating layer comprises SiO_2 or SiN.~~

~~48. The assembly of claim 46, wherein the metal layer comprises aluminum.~~

~~49. A method for flexible display processing comprising:~~

~~producing a flexible display;~~

~~attaching the flexible display to a rigid substrate according to any one of claims 1-28, wherein the flexible substrate is the flexible display.~~