We claim:

1. A temporary bonding method comprising:

providing a stack comprising:

a first substrate having a back surface and a front surface;

a bonding layer adjacent said front surface, said bonding layer being formed from a composition comprising a cyclic olefin polymer dissolved or dispersed in a solvent system; and

a second substrate having a first surface; and

separating said first and second substrates without subjecting said stack to heat, wherein said stack is exposed to a temperature of less than about 100° C. for about 60 seconds prior to said separating.

2. The method of claim **1**, wherein said stack is exposed to a temperature of less than about 100° C. prior to and during said separating.

3. The method of claim **1**, further comprising subjecting said stack to processing prior to said separating, wherein said stack is exposed to a temperature of less than about 100° C. after said processing is complete.

4. The method of claim **3**, wherein said processing is selected from the group consisting of back-grinding, chemical-mechanical polishing, etching, metallizing, dielectric deposition, patterning, passivation, annealing, and combinations thereof, prior to separating said first and second substrates.

5. The method of claim **1**, said composition being essentially free of cyclic olefin copolymers.

6. The method of claim **1**, said composition being essentially free of pinene and poly(pinene).

7. The method of claim **1**, said composition being essentially free of rosin esters.

8. The method of claim **1**, said composition being essentially free of silicones.

9. The method of claim **1**, said first surface including a release layer formed thereon.

10. The method of claim **9**, wherein said release layer is a nonstick layer.

11. The method of claim **9**, wherein said release layer is a laser release layer.

12. The method of claim **10**, said nonstick layer being formed from a composition comprising a polysiloxane dissolved or dispersed in a solvent system.

13. The method of claim **12**, wherein said polysiloxane is selected from the group consisting of epoxyl, ethoxyl, acrylic, hydroxyl, vinyl, and amine siloxanes, and mixtures of the foregoing.

14. A temporary bonding method comprising:

providing a stack comprising:

a first substrate having a back surface and a front surface;

a bonding layer adjacent said front surface; and

a second substrate having a first surface, said first surface including a polysiloxane nonstick layer adjacent said bonding layer; and

separating said first and second substrates, wherein said stack is exposed to a temperature of less than about 100° C. for about 60 seconds prior to said separating.

15. The method of claim **14**, wherein said polysiloxane nonstick layer is formed from a composition comprising a polysiloxane dissolved or dispersed in a solvent system.

16. The method of claim **15**, said composition further comprising a solvent selected from the group consisting of propylene glycol monomethyl ether, d-limonene, ethyl 3-ethoxypropionate, propoxy propanol ("PnP"), propylene glycol methyl ether acetate, ethyl lactate, and mixtures thereof.

17. The method of claim **14**, wherein said polysiloxane is selected from the group consisting of epoxyl, ethoxyl, acrylic, hydroxyl, vinyl, and amine siloxanes, and mixtures of the foregoing.

18. The method of claim **14**, wherein said nonstick layer is free of silanes.

19. The method of claim **15**, wherein said composition further comprises a catalyst.

20. The method of claim **15**, further comprising forming said nonstick layer by applying said composition to said first surface.

21. The method of claim **20**, wherein said applying comprises spin-coating said layer on said first surface.

22. The method of claim **14**, wherein said bonding layer is formed from a composition comprising a polymer or oligomer dissolved or dispersed in a solvent system, said polymer or oligomer being selected from the group consisting of polymers and oligomers of cyclic olefins, epoxies, acrylics, styrenics, vinyl halides, vinyl esters, polyamides, polyimides, polysulfones, polyethersulfones, cyclic olefins, polyolefin rubbers, polyurethanes, ethylene-propylene rubbers, polyamide esters, polyimide esters, polyacetals, and polyvinyl buterol.

23. The method of claim **22**, wherein said polymer or oligomer comprises a cyclic olefin polymer.

24. The method of claim **23**, wherein said stack is exposed to a temperature of less than about 100° C. prior to and during said separating.

25. The method of claim **23**, further comprising subjecting said stack to processing prior to said separating, wherein said stack is exposed to a temperature of less than about 100° C. after said processing is complete.

26. The method of claim **14**, wherein said front surface is a device surface that comprises an array of devices selected from the group consisting of integrated circuits; MEMS; microsensors; power semiconductors; light-emitting diodes; photonic circuits; interposers; embedded passive devices; and microdevices fabricated on or from silicon, silicon-germanium, gallium arsenide, and gallium nitride.

27. The method of claim **14**, wherein said first surface is a device surface that comprises an array of devices selected from the group consisting of integrated circuits; MEMS; microsensors; power semiconductors; light-emitting diodes; photonic circuits; interposers; embedded passive devices; and microdevices fabricated on or from silicon, silicon-germanium, gallium arsenide, and gallium nitride.

28. The method of claim **14**, wherein said second substrate comprises a material selected from the group consisting of silicon, sapphire, quartz, metal, glass, and ceramics.

29. The method of claim **14**, wherein said first substrate comprises a material selected from the group consisting of silicon, sapphire, quartz, metal, glass, and ceramics.

30. The method of claim **14**, wherein said front surface is a device surface comprising at least one structure selected from the group consisting of: solder bumps; metal posts; metal pillars; and structures formed from a material selected from the group consisting of silicon, polysilicon, silicon dioxide, silicon (oxy)nitride, metal, low k dielectrics, polymer dielectrics, metal nitrides, and metal silicides.

31. The method of claim **14**, wherein said first surface is a device surface comprising at least one structure selected from the group consisting of: solder bumps; metal posts; metal pillars; and structures formed from a material selected from the group consisting of silicon, polysilicon, silicon dioxide, silicon (oxy)nitride, metal, low k dielectrics, polymer dielectrics, metal nitrides, and metal silicides.

32. The method of claim **14**, further comprising subjecting said stack to processing selected from the group consisting of back-grinding, chemical-mechanical polishing, etching, metallizing, dielectric deposition, patterning, passivation, annealing, and combinations thereof, prior to separating said first and second substrates, prior to separating said first and second substrates.

33. The method of claim **14**, wherein said separating comprises heating said stack to a temperature sufficiently high so as to soften said bonding layer sufficiently to allow said first and second substrates to be separated.

34. The method of claim **14**, further comprising removing said bonding layer from said first substrate after said separating.

35. A temporary bonding method comprising:

providing a stack comprising:

a first substrate having a back surface and a front surface;

a bonding layer adjacent said front surface, said bonding layer being formed from a composition comprising a cyclic olefin polymer dissolved or dispersed in a solvent system; and

a second substrate having a first surface; and

separating said first and second substrates without subjecting said stack to heat, wherein said stack is exposed to a temperature of less than about 100° C. prior to and during said separating.

36. A temporary bonding method comprising:

providing a stack comprising:

a first substrate having a back surface and a front surface;

a bonding layer adjacent said front surface, said bonding layer being formed from a composition comprising a cyclic olefin polymer dissolved or dispersed in a solvent system; and

a second substrate having a first surface; and

separating said first and second substrates without subjecting said stack to heat, wherein said stack is subjected to processing prior to said separating, and said stack is exposed to a temperature of less than about 100° C. after said processing is complete.

37. A temporary bonding method comprising:

providing a stack comprising:

a first substrate having a back surface and a front surface;

a bonding layer adjacent said front surface; and

a second substrate having a first surface, said first surface including a polysiloxane nonstick layer adjacent said bonding layer, wherein said polysiloxane nonstick layer is formed from a composition comprising a polysiloxane dissolved or dispersed in a solvent system comprising a solvent selected from the group consisting of propylene glycol monomethyl ether, d-limonene, ethyl 3-ethoxypropionate, propoxy propanol ("PnP"), propylene glycol methyl ether acetate, ethyl lactate, and mixtures thereof; and

separating said first and second substrates.

38. A temporary bonding method comprising:

providing a stack comprising:

a first substrate having a back surface and a front surface;

a bonding layer adjacent said front surface, wherein said bonding layer is formed from a composition comprising a cyclic olefin polymer dissolved or dispersed in a solvent system; and

a second substrate having a first surface, said first surface including a polysiloxane nonstick layer adjacent said bonding layer; and

separating said first and second substrates, wherein said stack is subjected to processing prior to said separating, and said stack is exposed to a temperature of less than about 100° C. after said processing is complete.