WHAT IS CLAIMED IS:

1. A method for room temperature substrate bonding, the method comprising:

providing a first substrate that is substantially transparent to laser light of a transparency wavelength;

providing a second substrate;

mating the first substrate and the second substrate without melting the first substrate and second substrate to provide an interface of the first substrate and the second substrate, wherein the interface of the first substrate and the second substrate provides a transmissivity change for the laser light;

selecting a power and a pulse width for a laser of the transparency wavelength, wherein the power and pulse width for the laser are configured to create a plasma at the interface of the first substrate and the second substrate; and

emitting pulses of laser energy from the laser, the laser energy having the power and the pulse width configured to create the plasma at the interface of the first substrate and the second substrate, wherein the laser energy penetrates the first Substrate and is absorbed at the interface of the first substrate and the second substrate to create the plasma at the interface of the first Substrate and the second substrate, and wherein the plasma diffuses across the interface of the first substrate and the second substrate to fuse the first substrate and the second substrate.

2. The method of claim 1, the method further comprising positioning a heat absorption layer at the interface of the first substrate and the second substrate to provide the transmissivity change for the laser light.

3. The method of claim 1, the method further comprising positioning a heat absorption layer at the interface of the first substrate and the second substrate to provide the transmissivity change for the laser light, wherein the second substrate is substantially transparent to the laser light of the transparency wavelength.

4. The method of claim 1, the method further comprising positioning a heat absorption layer at the interface of the first substrate and the second substrate to provide the transmissivity change for the laser light, wherein the heat absorbing layer is conductive.

5. The method of claim 1, the method further comprising positioning a heat absorption layer at the interface of the first substrate and the second substrate to provide the transmissivity change

for the laser light, wherein the heat absorbing layer is conductive, wherein the laser energy causes a portion of the conductive heat absorption layer to diffuse into the first substrate leaving an underlying portion of the conductive heat absorption layer undiffused to provide a conductive trace that is bonded to the first substrate but yet conductive.

6. The method of claim 1, the method further comprising positioning a heat absorption layer at the interface of the first substrate and the second substrate to provide the transmissivity change for the laser light, wherein the heat absorbing layer is conductive, wherein the laser energy causes a portion of the conductive heat absorption layer to diffuse into the first substrate leaving an underlying portion of the conductive heat absorption layer undiffused to provide a conductive trace that is bonded to the first substrate but yet conductive, wherein the pulse width of the pulses of the laser energy is sufficiently short to diffuse the portion of the heat absorption layer into the first substrate leaving the underlying portion of the heat absorption layer undiffused.

7. The method of claim 1, wherein the second substrate is opaque to the laser light.

8. The method of claim 1, the method further comprising translating the mated first and second substrates such that the laser energy impinges on the mated first and second substrates along a bonding path.

9. The method of claim 1, wherein the first substrate comprises glass and wherein the second substrate comprises glass.

10. The method of claim 1, wherein the first substrate comprises glass and wherein the second substrate comprises metal.

11. The method of claim 1, wherein the first substrate comprises glass and wherein the second substrate comprises ceramic.

12. The method of claim 1, wherein the first substrate comprises glass and wherein the second substrate comprises plastic.

13. The method of claim 1, wherein the first substrate comprises glass and wherein the second substrate comprises silicon.

14. A process for room temperature substrate bonding comprising:

selecting a first substrate substantially transparent to a laser wavelength;

selecting a second substrate for mating at an interface with the first substrate;

creating a transmissivity change at the interface;

mating the first and second substrates;

selecting power and pulse width of a laser of the transparency wavelength to create a plasma at the interface; and

irradiating the first substrate with pulses from the laser to create the plasma, wherein irradiating the first substrate with pulses from the laser to create the plasma does not melt the first and second substrates;

wherein the plasma diffuses across the interface to fuse the first and second Substrates; and

wherein the step of mating the first and second substrates comprises applying pressure to ensure contact between the first and second substrates.

15. A process for room temperature Substrate bonding comprising:

selecting a first substrate substantially transparent to a laser wavelength;

selecting a second substrate for mating at an interface with the first substrate;

creating a transmissivity change at the interface;

mating the first and second substrates;

selecting power and pulse width of a laser of the transparency wavelength to create a plasma at the interface; and

irradiating the first substrate with pulses from the laser to create the plasma, wherein irradiating the first substrate with pulses from the laser to create the plasma does not melt the first and second substrates;

wherein the plasma diffuses across the interface to fuse the first and second Substrates; and

wherein the step of mating the first and second substrates comprises applying a vacuum to ensure contact between the first and second substrates.

16. A process for room temperature Substrate bonding comprising:

selecting a first substrate substantially transparent to a laser wavelength;

selecting a second substrate for mating at an interface with the first substrate;

creating a transmissivity change at the interface;

mating the first and second substrates;

selecting power and pulse width of a laser of the transparency wavelength to create a plasma at the interface; and

irradiating the first substrate with pulses from the laser to create the plasma, wherein irradiating the first substrate with pulses from the laser to create the plasma does not melt the first and second substrates;

wherein the plasma diffuses across the interface to fuse the first and second Substrates; and

wherein creating a transmissivity change at the interface comprises positioning a conductive heat absorption layer at the interface, wherein irradiating the first substrate causes a portion of the conductive heat absorption layer to diffuse into the first substrate leaving an underlying portion of the conductive heat absorption layer undiffused, providing a conductive trace that is bonded to the first substrate but yet conductive.

17. The method of claim 16, wherein the pulse width of the laser pulses is sufficiently short to diffuse the portion of the conductive heat absorption layer into the first substrate leaving the underlying portion of the conductive heat absorption layer undiffused.