What is claimed is:

1. A shield for a thermal annealing apparatus, comprising:

a substantially flat member with a central opening defined by a wall, the wall having a gas inlet portal and a gas outlet portal, the gas inlet portal in fluid communication with a gas inlet conduit formed in the member, and the gas outlet portal in fluid communication with a gas outlet conduit formed in the member.

2. The shield of claim 1, further comprising a window covering the central opening, wherein the substantially flat member comprises a first plate and a second plate, the window covers the central opening at the first plate, and the gas inlet and outlet conduits extend to openings in the first plate.

3. The shield of claim 2, wherein the central opening has a plurality of gas inlet portals connected by a first channel formed between the first plate and an annular member that attaches the window to the first plate and a plurality of gas outlet portals connected by a second channel formed between the first plate and the second plate.

4. The shield of claim 1, wherein the gas inlet portal is disposed around a circumference of the central opening.

5. The shield of claim 2, wherein the substantially flat member comprises aluminum.

6. The shield of claim 1, further comprising an annular connection member attached to the substantially flat member in a coaxial relationship, and a window disposed between the substantially flat member and the annular connection member and covering the central opening.

7. The shield of claim 6, wherein the central opening has a gas inlet portal in fluid communication with the gas inlet conduit of the substantially flat member and a gas outlet portal in fluid communication with the gas outlet conduit of the substantially flat member.

8. The shield of claim 1, wherein the central opening has a first end and a second end that together define an axis substantially perpendicular to a plane defined by the substantially flat member, and wherein the gas inlet portal is disposed near the first end and the gas outlet portal is spaced apart from the first and second ends.

9. The shield of claim 3, wherein the plurality of gas inlet portals are substantially coplanar, and the plurality of gas outlet portals are substantially coplanar.

10. The shield of claim 9, wherein the plurality of gas inlet portals are in fluid communication with a gas inlet plenum disposed around the central opening, and the gas outlet portals are in fluid communication with a gas outlet plenum disposed around the central opening, and wherein the gas outlet plenum has a larger circumference than the gas inlet plenum.

11. An apparatus for annealing a semiconductor substrate, comprising:

an annealing energy source;

a substrate support having a substrate receiving surface facing the annealing energy source; and

a shield member between the annealing energy source and the substrate receiving surface, the shield member having a dimension larger than the substrate receiving surface.

12. The apparatus of claim 11, wherein the shield member comprises a substantially flat member with a central opening covered by a window, the central opening, window, and substrate receiving surface cooperatively defining a processing volume.

13. The apparatus of claim 12, wherein the substantially flat member comprises a first plate and a second plate, each plate having grooves that cooperatively define thermal control fluid conduits.

14. The apparatus of claim 11, wherein the shield member comprises gas portals in fluid communication with the central opening and with gas conduits formed in the substantially flat member.

15. The apparatus of claim 14, wherein the gas portals comprise a plurality of gas inlet portals and a plurality of gas outlet portals, the gas inlet portals in fluid communication with a gas inlet plenum and the gas outlet portals in fluid communication with a gas outlet plenum, the gas inlet plenum and gas outlet plenum formed in the substantially flat member surrounding the central opening.

16. A method of thermally processing a substrate, comprising:

defining a processing zone in a portion of the substrate surface, the processing zone having a dimension smaller than the substrate surface;

enclosing the processing zone with a shield member that defines a processing volume proximate the processing zone;

flowing a first purge gas through the processing volume; and

directing annealing energy through the processing volume to the processing zone.

17. The method of claim 16, wherein flowing the first purge gas comprises flowing a purge gas toward the substrate surface and across the substrate surface in a radial direction.

CLAIMS

1. A method of thermally processing a substrate, comprising:

defining a processing zone in a portion of the substrate surface, the processing zone having a dimension smaller than the substrate surface;

enclosing the processing zone with a shield member that defines a processing volume proximate the processing zone;

flowing a first purge gas through the processing volume;

directing annealing energy through the processing volume to the processing zone; and

wherein flowing the first purge gas comprises flowing a purge gas toward the substrate surface and across the substrate surface in a radial direction.