

Claims

1. An apparatus for processing a substrate, comprising:
a chamber body defining a processing volume;
a radiation source coupled to the chamber body;
one or more pyrometers coupled to the chamber body
opposite the radiation source;
a support ring disposed within the processing volume;
an edge ring disposed on the support ring; and
a radiation shield disposed above the edge ring, wherein
an inner diameter of the radiation shield extends radi-
ally inward over a substrate support member of the
edge ring and above a top most surface of the edge ring,
and
wherein the inner diameter of the radiation shield is less
than an outer diameter of a substrate disposed within
the chamber.
2. The apparatus of claim 1, further comprising:
an absorbing surface disposed on the chamber body
adjacent a region where the pyrometers are coupled to
the chamber body.
3. The apparatus of claim 2, wherein a first distance
between an outer edge of a substrate and an inner edge of the
radiation shield is less than a second distance between the
inner edge of the radiation shield and a region on a ceiling
of the chamber where the pyrometers are coupled to the
chamber body.

4. The apparatus of claim 3, wherein a third distance between the radiation shield and the substrate is less than a fourth distance between the chamber ceiling and the substrate.

5. The apparatus of claim 2, wherein the pyrometers are coupled to the chamber near a central region of the chamber body.

6. The apparatus of claim 1, wherein a quartz window separates the processing volume from the radiation source.

7. The apparatus of claim 6, wherein the radiation source is coupled to the chamber body above the quartz window.

8. The apparatus of claim 1, wherein the edge ring and the radiation shield comprise a ceramic material.

9. The apparatus of claim 1, wherein the edge ring further comprises a plurality of discrete protrusions extending from an upper portion of the edge ring.

10. The apparatus of claim 1, wherein the edge ring further comprises a plurality of voids sized to allow passage of lift pins therethrough.

11. The apparatus of claim 1, wherein the radiation shield further comprises a plurality of supports extending therefrom.

12. The apparatus of claim 11, wherein the supports are coupled to a bottom surface of the radiation shield, the supports comprising a first member, a second member, and a support member.

13. The apparatus of claim 12, wherein the first member extends vertically from the radiation shield, the second member extends horizontally from the first member, and the support member extends vertically from the second member.

14. An apparatus for processing a substrate, comprising:
a chamber body defining a processing volume;
a radiation source coupled to the chamber body, wherein
a window separates the processing volume from the radiation source, and wherein the radiation source is coupled to the chamber body below the window;
one or more pyrometers coupled to the chamber body opposite the radiation source;
a support ring disposed within the processing volume;
an edge ring disposed on the support ring;
a radiation shield disposed above the edge ring, wherein
an inner diameter of the radiation shield extends radially inward over a substrate support member of the edge ring and above a top most surface of the edge ring;
and
an absorbing surface disposed on the chamber body adjacent a region where the pyrometers are coupled to the chamber body, the absorbing surface comprising a dielectric material selected to absorb or reflect radiation within a desired wavelength, wherein the inner diameter of the radiation shield is less than an outer diameter of a substrate disposed within the chamber.

15. The apparatus of claim 14, wherein a first distance between an outer edge of a substrate and an inner edge of the radiation shield is less than a second distance between the inner edge of the radiation shield and a region on a ceiling of the chamber where the pyrometers are coupled to the chamber body.

16. The apparatus of claim 15, wherein a third distance between the radiation shield and a substrate is less than a fourth distance between the chamber ceiling and the substrate.

17. An apparatus for processing a substrate, comprising:
a chamber body defining a processing volume;
a radiation source coupled to the chamber body, wherein a window separates the processing volume from the radiation source, and wherein the radiation source is coupled to the chamber body above the window;
one or more pyrometers coupled to the chamber body opposite the radiation source;
a support ring disposed within the processing volume;
an edge ring disposed on the support ring; and
an absorbing surface disposed on a bottom of the chamber body adjacent a region where the pyrometers are coupled to the chamber body wherein the absorbing surface has a topology which directs radiation away from the pyrometers, and
wherein an inner diameter of the absorbing surface is less than an outer diameter of a substrate disposed within the chamber.

18. The apparatus of claim 17, wherein the edge ring further comprises a plurality of discrete protrusions extending from an upper portion of the edge ring.