Claims:

1. An upper reflector assembly for use in a process chamber, comprising:

an upper reflector plate comprising:

an upper surface;

a lower surface;

a plurality of linear channels extending substantially parallel to each other across the lower surface, wherein the plurality of linear channels have different cross-sectional shapes; and

a plurality of air cooling slots extending from the upper surface to the lower surface, the plurality of air cooling slots comprising a plurality of first slots and a plurality of second slots, the plurality of first slots having a smaller depth than the plurality of second slots.

2. The upper reflector assembly of claim 1, wherein the plurality of second slots extend orthogonal to the upper surface.

3. The upper reflector assembly of claim 1, wherein the plurality of first slots extend at an angle less than 90 degrees with respect to the upper surface.

4. The upper reflector assembly of claim 1, wherein the upper surface includes a plurality of coolant channels.

5. The upper reflector assembly of claim 1, wherein the plurality of linear channels have at least one of a U-shaped cross section, a V-shaped cross section, an elliptical cross section, a parabolic cross section, or a rectangular cross section.

6. The upper reflector assembly of claim 1, further comprising a reflector mounting ring coupled to the upper reflector plate and an inner housing coupled to the reflector mounting ring and a top plate coupled to the inner housing, wherein the top plate includes

an air inlet configured to facilitate a flow of air through the inner housing and through the air cooling slots.

7. The upper reflector assembly of claim 6, further comprising one or more flow turning vanes disposed between the top plate and the upper reflector plate to direct the flow of air from the air inlet to various zones of the upper reflector plate.

8. An upper lamp module, comprising:

an upper reflector assembly including a reflector mounting ring coupled to an upper reflector plate having an upper surface and lower surface, wherein the lower surface includes a plurality of linear channels extending substantially parallel to each other across the lower surface, and wherein the upper reflector plate includes air cooling slots extending from the upper surface to the lower surface; and

a shroud assembly including an outer housing coupled to a lamp mounting ring and a plurality of linear heating lamps coupled to the lamp mounting ring, wherein the lamp mounting ring is removably coupled to the reflector mounting ring, and wherein the plurality of linear heating lamps extend within the plurality of linear channels to reflect heat off of sidewalls of the plurality of linear channels.

9. The upper lamp module of claim 8, wherein the lamp mounting ring includes alignment pins configured to extend through openings in the reflector mounting ring to align and removably couple the lamp mounting ring to the reflector mounting ring.

10. The upper lamp module of claim 8, wherein each linear lamp of the plurality of linear heating lamps is coupled to the lamp mounting ring at a first end via a lamp clamping mechanism, wherein the lamp clamping mechanism includes a mounting block having a clamp rotatably coupled to the mounting block, wherein an upper surface of the mounting block is contoured to position each linear lamp.

11. The upper lamp module of claim 10, further comprising a rear block having a slot disposed in the mounting block, wherein the first end of the linear lamp is disposed in the slot to prevent rotational movement of the linear lamp with respect to the mounting block.

12. The upper lamp module of claim 8, wherein the upper reflector assembly includes a top plate having an air inlet and the shroud assembly includes an exhaust port, and wherein the upper reflector assembly and the shroud assembly are configured to flow air from the air inlet to the exhaust port via the air cooling slots of the upper reflector plate.

13. The upper lamp module of claim 8, wherein the upper reflector plate includes an opening therethrough covered with a transparent window and the upper reflector assembly includes a temperature sensor configured to measure a temperature through the transparent window or includes a laser configured to transmit photon energy through the transparent window.

14. An upper reflector plate for use in a process chamber, comprising:

an upper surface;

a lower surface;

a plurality of linear channels extending substantially parallel to each other across the lower surface, wherein each of the plurality of linear channels have one of a U-shaped cross section, a V-shaped cross section, an elliptical cross section, a parabolic cross section, or a rectangular cross section, and one or more of the plurality of linear channels have different cross sectional shapes;

a plurality of air cooling slots extending from the upper surface to the lower surface; and

a plurality of coolant channels formed in the upper surface.

15. The upper reflector plate of claim 14, wherein the air cooling slots include a plurality of first slots and a plurality of second slots, wherein the plurality of first slots have a smaller depth than the plurality of second slots.

16. The upper reflector plate of claim 15, wherein the plurality of first slots extend at an angle of less than 90 degrees with respect to the upper surface.

17. The upper reflector plate of claim 14, wherein the upper reflector plate includes an opening extending from the upper surface to the lower surface and covered with a transparent window.

18. The upper reflector plate of claim 14, further comprising a gold plating disposed thereon.

19. An upper reflector assembly for use in a process chamber, comprising:

an upper reflector plate comprising:

an upper surface;

a lower surface;

a plurality of linear channels extending substantially parallel to each other across the lower surface; and

a plurality of air cooling slots extending from the upper surface to the lower surface, the plurality of air cooling slots comprising a plurality of first slots and a plurality of second slots, the plurality of first slots having a smaller depth than the plurality of second slots, wherein the plurality of first slots extend at an angle less than 90 degrees with respect to the upper surface.

20. An upper reflector plate for use in a process chamber, comprising:

an upper surface;

a lower surface;

a plurality of linear channels extending substantially parallel to each other across the lower surface, wherein each of the plurality of linear channels have one of a U-shaped cross section, a V-shaped cross section, an elliptical cross section, a parabolic cross section, or a rectangular cross section;

a plurality of air cooling slots extending from the upper surface to the lower surface, wherein the plurality of air cooling slots include a plurality of first slots extending at an angle of less than 90 degrees with respect to the upper surface; and

a plurality of coolant channels formed in the upper surface.

21. The upper reflector plate of claim 20, wherein the plurality of air cooling slots include a plurality of second slots, wherein the plurality of first slots have a smaller depth than the plurality of second slots.