CLAIMS

1. A purge ring, comprising:

a supply port configured for receiving gas;

an outer channel connected to the supply port;

an outlet network configured for an exit flow of the gas proximate to an inner diameter of the purge ring;

a plurality of channels configured for flow of the gas in a radial direction from the outer channel to the outlet network;

a plurality of passageways configured for reduced flow of the gas in the radial direction between the outer channel and the outlet network,

wherein the plurality of channels and the plurality of passageways are configured for providing a uniform pressure of the exit flow of the gas across a circumference of the outlet network.

2. The purge ring of claim 1,

wherein the outer channel is configured to achieve pressure equilibrium before radial flow of the gas to the outlet network occurs.

3. The purge ring of claim 1, further comprising:

a distribution volume connecting the outer channel and the outlet network, the distribution volume including the plurality of channels and the plurality of passageways.

4. The purge ring of claim 3, further comprising:

a reservoir connecting the distribution volume to the outlet network, and configured to achieve pressure equilibrium before radial flow of the gas to the outlet network occurs.

5. The purge ring of claim 1,

wherein a first radial width of a first channel centered at a first radial distance from the purge ring inlet is larger than a second radial width of a second channel centered at a second radial distance that is closer to the purge ring inlet.

6. The purge ring of claim 1,

wherein a first radial width of a first passageway centered at a first radial distance from the purge ring inlet is smaller than a second radial width of a second passageway centered at a second radial distance that is closer to the purge ring inlet.

7. The purge ring of claim 1, wherein a passageway in the plurality of passageways comprises a porous media.

8. The purge ring of claim 1, wherein the outlet network includes an array of exit apertures, each exit aperture configured for providing a corresponding portion of the exit flow of the gas.

9. The purge ring of claim 8, wherein exit apertures in the array of exit apertures are distributed symmetrically around the circumference of the outlet network.

10. The purge ring of claim 8, wherein the array of exit apertures is configured on a bottom surface of the purge ring.

11. The purge ring of claim 1, wherein the outlet network includes one or more continuous channels configured about the circumference.

12. The purge ring of claim 11, wherein at least one continuous channel comprises a porous media.

13. A pedestal assembly of a process chamber, the pedestal assembly comprising:

a pedestal for supporting a substrate;

a purge ring configured for placement about a periphery of the pedestal, the purge ring including:

a supply port configured for receiving gas;

an outer channel connected to the supply port;

an outlet network configured for an exit flow of the gas proximate to an inner diameter of the purge ring;

a plurality of channels configured for flow of the gas in a radial direction from the outer channel to the outlet network;

a plurality of passageways configured for reduced flow of the gas in the radial direction between the outer channel and the outlet network,

wherein the plurality of channels and the plurality of passageways are configured for providing a uniform pressure of the exit flow of the gas across a circumference of the outlet network.

14. The pedestal assembly of claim 13, wherein the purge ring is configured to sit below the substrate.

15. The process chamber of claim 13,

wherein in the purge ring the outer channel is configured to achieve pressure equilibrium before radial flow of the gas to the outlet network occurs.

16. The process chamber of claim 13,

wherein the purge ring comprises a distribution volume connecting the outer channel and the outlet network, the distribution volume including the plurality of channels and the plurality of passageways.

17. The process chamber of claim 16,

the purge ring further comprising a reservoir connecting the distribution volume to the outlet network, and configured to achieve pressure equilibrium before radial flow of the gas to the outlet network occurs.

18. The process chamber of claim 13,

wherein in the purge ring a first radial width of a first channel centered at a first radial distance from the purge ring inlet is larger than a second radial width of a second channel centered at a second radial distance that is closer to the purge ring inlet.

19. The process chamber of claim 13,

wherein in the purge ring a first radial width of a first passageway centered at a first radial distance from the purge ring inlet is smaller than a second radial width of a second passageway centered at a second radial distance that is closer to the purge ring inlet.

20. The process chamber of claim 13,

wherein in the purge ring a passageway in the plurality of passageways comprises a porous media.

21. The process chamber of claim 13, wherein in the purge ring the outlet network includes an array of exit apertures, each exit aperture configured for providing a corresponding portion of the exit flow of the gas.

22. The process chamber of claim 21, wherein in the purge ring exit apertures in the array of exit apertures are distributed symmetrically around the circumference of the outlet network.

23. The process chamber of claim 21, wherein in the purge ring the array of exit apertures is configured on a bottom surface of the purge ring.

24. The process chamber of claim 13, wherein in the purge ring the outlet network includes one or more continuous channels configured about the circumference.

25. The process chamber of claim 16, wherein at least one continuous channel comprises a porous media.

26. A process chamber, the process chamber including:

a plurality of stations, each station including a pedestal assembly, each pedestal assembly including:

a pedestal for supporting a substrate;

a purge ring configured for placement about a periphery of the pedestal, the purge ring including:

a supply port configured for receiving gas;

an outer channel connected to the supply port;

an outlet network configured for an exit flow of the gas proximate to an inner diameter of the purge ring;

a plurality of channels configured for flow of the gas in a radial direction from the outer channel to the outlet network;

a plurality of passageways configured for reduced flow of the gas in the radial direction between the outer channel and the outlet network,

wherein the plurality of channels and the plurality of passageways are configured for providing a uniform pressure of the exit flow of the gas across a circumference of the outlet network; and

a gas distribution system for distributing the gas with even gas flow to pedestal assemblies of each of the plurality of stations.

27. The process chamber of claim 26, further comprising:

a gas delivery structure that is routed through station partition walls of the process chamber, the gas delivery structure providing for the delivery of the gas to each of the plurality of stations via a corresponding access port in the gas delivery structure for connecting the gas delivery structure to a corresponding pedestal assembly of a corresponding station via a corresponding conduit;

at least one flow resistor in the corresponding conduit to regulate gas flow to the corresponding station such that the gas flow to each of the plurality of stations is approximately equal.

28. The process chamber of claim 27, wherein the at least one flow resistor includes a first flow resistor and a second flow resistor configured in the corresponding conduit.

29. The process chamber of claim 26, wherein the purge ring is configured to sit below the substrate.

30. The process chamber of claim 26,

wherein in the purge ring the outer channel is configured to achieve pressure equilibrium before radial flow of the gas to the outlet network occurs.

31. The process chamber of claim 26,

wherein the purge ring comprises a distribution volume connecting the outer channel and the outlet network, the distribution volume including the plurality of channels and the plurality of passageways.

32. The process chamber of claim 31,

the purge ring further comprising a reservoir connecting the distribution volume to the outlet network, and configured to achieve pressure equilibrium before radial flow of the gas to the outlet network occurs.

33. The process chamber of claim 26,

wherein in the purge ring a first radial width of a first channel centered at a first radial distance from the purge ring inlet is larger than a second radial width of a second channel centered at a second radial distance that is closer to the purge ring inlet.

34. The process chamber of claim 26,

wherein in the purge ring a first radial width of a first passageway centered at a first radial distance from the purge ring inlet is smaller than a second radial width of a second passageway centered at a second radial distance that is closer to the purge ring inlet.

35. The process chamber of claim 26,

wherein in the purge ring a passageway in the plurality of passageways comprises a porous media.

36. The process chamber of claim 26, wherein in the purge ring the outlet network includes an array of exit apertures, each exit aperture configured for providing a corresponding portion of the exit flow of the gas.

37. The process chamber of claim 36, wherein in the purge ring exit apertures in the array of exit apertures are distributed symmetrically around the circumference of the outlet network.

38. The process chamber of claim 36, wherein in the purge ring the array of exit apertures is configured on a bottom surface of the purge ring.

39. The process chamber of claim 26, wherein in the purge ring the outlet network includes one or more continuous channels configured about the circumference.

40. The process chamber of claim 39, wherein at least one continuous channel comprises a porous media.