Claims:

1. A chemical delivery system, comprising:

an enclosure;

a first compartment disposed within the enclosure and having a plurality of first conduits to carry a first set of chemical species, the first compartment further having a first draw opening and a first exhaust opening to facilitate flow of a purge gas through the first compartment; and

a second compartment disposed within the enclosure and having a plurality of second conduits to carry a second set of chemical species, the second compartment further having a second draw opening and a second exhaust opening to facilitate flow of the purge gas through the second compartment, wherein the first set of chemical species is different than the second set of chemical species, and wherein a draw velocity of the purge gas through the second compartment is higher than the draw velocity of the purge gas through the first compartment.

2. The chemical delivery system of claim 1, wherein the second exhaust opening has a smaller cross sectional area than the first exhaust opening.

3. The chemical delivery system of claim 1, wherein at least some of the first set of chemical species comprise Group III elements and wherein at least some of the second set of chemical species comprise Group V elements, or wherein at least some of the first set of chemical species comprise Group III elements and no Group V elements, and wherein at least some of the second set of chemical species comprise Group V elements and no Group III elements.

4. The chemical delivery system of any of claims 1-3, wherein the enclosure further comprises:

a third compartment to receive at least some chemical species for the first or the second sets from a location external to the enclosure and having at least some of the plurality of first and second conduits originating in the third compartment to carry the at least some chemical species respectively to the first and second compartments.

5. The chemical delivery system of claim 4, wherein the third compartment further comprises:

a third draw opening and a third exhaust opening to facilitate flow of the purge gas through the third compartment, wherein a draw velocity of the purge gas through the third compartment is greater than the draw velocity of the purge gas through the first compartment.

6. The chemical delivery system of claim 5, wherein the third exhaust opening of the third compartment is coupled to the second exhaust opening of the second compartment to provide a common upstream pressure to both the second compartment and the third compartment.

7. The chemical delivery system of claim 4, wherein the third compartment further comprises:

a plurality of joints disposed in the third compartment, wherein each joint couples one of a plurality of third conduits to a corresponding one of the plurality of first and second conduits, and wherein each third conduit enters the enclosure from an external location and carries a chemical species from at least one of the first or second sets of chemical species.

8. The chemical delivery system of any of claims 1-3, further comprising:

a first fluid line to couple each of the plurality of first conduits to a process chamber; and

a second fluid line to couple each of the plurality of second conduits to the process chamber.

9. The chemical delivery system of claim 8, further comprising:

a first switching valve disposed between the first fluid line and the process chamber; and

a second switching valve disposed between the second fluid line and the process chamber, wherein the first and second switching valves switch between

flowing one or more chemical species from the respective first and second sets of chemical species to the process chamber and to an exhaust system.

10. The chemical delivery system of claim 8, further comprising:

a plurality of mass flow controllers, wherein each mass flow controller couples one of the pluralities of first or second conduits to the corresponding first or second fluid lines.

11. The chemical delivery system of claim 8, further comprising one or more of:

a plurality of liquid injection apparatus, wherein each liquid injection apparatus couples one of the pluralities of first or second conduits to the corresponding first or second fluid lines; or

an ampoule coupled between one of the pluralities of first or second conduits and a corresponding first or second fluid lines.

12. The chemical delivery system of claim 8, further comprising an ampoule coupled between one of the pluralities of first or second conduits and a corresponding first or second fluid line, wherein the ampoule holds a solid or liquid form of a chemical species and wherein a gas provided by the first or second conduit coupled to the ampoule is a carrier gas.

13. The chemical delivery system of claim 12, wherein the ampoule is disposed in a heating apparatus to sublime or vaporize a corresponding solid or liquid form of the chemical species and wherein the sublimed or vaporized chemical species from the ampoule can be carried into the correspond first or second conduit via the carrier gas.

14. The chemical delivery system of claim 13, wherein the heating apparatus comprises a heating bath.

15. The chemical delivery system of claim 8, further comprising one or more of:

a first dopant source coupled to the first fluid line, and a second dopant source coupled to the second fluid line, wherein the first and second dopant sources are disposed in the first compartment;

an etching gas source coupled to the second fluid line, wherein the etching gas source is disposed in the first compartment; or

a cleaning gas source coupled to the first and the second fluid lines, wherein the cleaning gas source is disposed in the first compartment.

The invention claimed is:

1. A chemical delivery system, comprising:

an enclosure;

a first compartment disposed within the enclosure and having a plurality of first conduits to carry a first set of chemical species, the first compartment further having a first draw opening and a first exhaust opening to facilitate flow of a purge gas through the first compartment; and

a second compartment disposed within the enclosure and having a plurality of second conduits to carry a second set of chemical species, the second compartment further having a second draw opening and a second exhaust opening to facilitate flow of the purge gas through the second compartment, wherein the first set of chemical species is different than the second set of chemical species, and wherein a draw velocity of the purge gas through the second compartment is higher than the draw velocity of the purge gas through the first compartment.

2. The chemical delivery system of claim 1, wherein the second exhaust opening has a smaller cross sectional area than the first exhaust opening.

3. The chemical delivery system of claim 1, wherein the enclosure further comprises:

a third compartment to receive at least some chemical species for the first or the second sets from a location external to the enclosure and having at least some of the plurality of first and second conduits originating in the third compartment to carry the at least some chemical species respectively to the first and second compartments.

4. The chemical delivery system of claim 3, wherein the third compartment further comprises:

a third draw opening and a third exhaust opening to facilitate flow of the purge gas through the third compartment, wherein a draw velocity of the purge gas through the third compartment is greater than the draw velocity of the purge gas through the first compartment.

5. The chemical delivery system of claim 3, wherein third exhaust opening of the third compartment is coupled to the second exhaust opening of the second compartment to provide a common upstream pressure to both the second compartment and the third

compartment.

6. The chemical delivery system of claim 3, wherein at least some of the first set of chemical species comprise Group III elements and wherein at least some of the second set of chemical species comprise Group V elements.

7. The chemical delivery system of claim 3, wherein at least some of the first set of chemical species comprise Group III elements and no Group V elements, and wherein at least some of the second set of chemical species comprise Group V elements and no Group III elements.

8. The chemical delivery system of claim 3, the third compartment further comprising:

a plurality of joints disposed in the third compartment; wherein each joint couples one of a plurality of third conduits to a corresponding one of the plurality of first and second conduits and wherein each third conduit enters the enclosure from an external location and carries a chemical species from at least one of the first or second sets of chemical species.

9. The chemical delivery system of claim 8, further comprising:

a first fluid line to couple each of the plurality of first conduits to a process chamber; and

a second fluid line to couple each of the plurality of second conduits to the process chamber.

10. The chemical delivery system of claim 9, further comprising:

a first switching valve disposed between the first fluid line and the process chamber; and

a second switching valve disposed between the second fluid line and the process chamber, wherein the first and second switching valves switch between flowing one or more chemical species from the respective first and second sets of chemical species to the process chamber and to an exhaust system.

11. The chemical delivery system of claim 9, further comprising:

a plurality of mass flow controllers, wherein each mass flow controller couples one of the pluralities of first or second conduits to the corresponding first or second fluid lines.

12. The chemical delivery system of claim 9, further comprising:

a plurality of liquid injection apparatus, wherein each liquid injection apparatus couples one of the pluralities of first or second conduits to the corresponding first or second fluid lines.

13. The chemical delivery system of claim 9, further comprising:

an ampoule coupled between one of the pluralities of first or second conduits and a corresponding first or second fluid lines.

14. The chemical delivery system of claim 13, wherein the ampoule holds a solid or liquid form of a chemical species and wherein a gas provided by the first or second conduit coupled to the ampoule is a carrier gas.

15. The chemical delivery system of claim 14, wherein the ampoule is disposed in a heating apparatus to sublime or vaporize a corresponding solid or liquid form of the chemical species and wherein the sublimed or vaporized chemical species from the ampoule can be carried into the correspond first or second conduit via the carrier gas.

16. The chemical delivery system of claim 15, wherein the heating apparatus comprises a heating bath.

17. The chemical delivery system of claim 9, further comprising:

a first dopant source coupled to the first fluid line; and

a second dopant source coupled to the second fluid line, wherein the first and second dopant sources are disposed in the first compartment.

18. The chemical delivery system of claim 9, further comprising:

an etching gas source coupled to the second fluid line, wherein the etching gas source is disposed in the first compartment.

19. The chemical delivery system of claim 9, further comprising:

a cleaning gas source coupled to the first and the second fluid lines, wherein the cleaning gas source is disposed in the first compartment.

20. A chemical delivery system, comprising:

an enclosure;

a first compartment disposed within the enclosure and having a plurality of first conduits to carry a first set of chemical species, the first compartment further having a first draw opening and a first exhaust opening to facilitate flow of a purge gas through the first compartment;

a second compartment disposed within the enclosure and having a plurality of second conduits to carry a second set of chemical species, the second compartment further having a second draw opening and a second exhaust opening to facilitate flow of the purge gas through the second compartment, wherein the first set of chemical species is different than the second set of chemical species; and

a third compartment disposed within the enclosure and having at least some of the plurality of first conduits and at least some of the plurality of second conduits originating in the third compartment and having a fitting to couple at least some first and second conduits to an external supply of at least some of the chemical species from the first and second sets, wherein the third compartment further includes a third draw opening and a third exhaust opening to facilitate flow of the purge gas through the third compartment, and wherein draw velocities of the purge gas through the second compartment and the third compartment are higher than the draw velocity of the purge gas through the first compartment.