

1. A gas supply kit for an ion implantation system, comprising (i) a first gas storage and dispensing vessel holding a germanium dopant source gas, and (ii) a second gas storage and dispensing vessel holding a supplemental gas comprising at least one of a diluent gas and a co-species gas, wherein at least one of the dopant gas and, when present, a co-species gas, is isotopically enriched above natural abundance level in at least one germanium isotope.
2. The gas supply kit of claim 1, wherein the isotopically enriched gas is isotopically enriched above natural abundance level of at least one germanium isotope of mass 70, 72, 73, 74 or 76.
3. The gas supply kit of claim 1, wherein the isotopically enriched gas is isotopically enriched above natural abundance level of at least one germanium isotope of mass 72.
4. The gas supply kit of claim 1, wherein the germanium dopant source gas comprises germanium tetrafluoride.
5. The gas supply kit of claim 4, wherein said germanium tetrafluoride is isotopically enriched above natural abundance level of at least one germanium isotope of mass 72.
6. The gas supply kit of claim 4, wherein the supplemental gas comprises a co-species gas.
7. The gas supply kit of claim 6, wherein said co-species gas comprises germane.
8. The gas supply kit of claim 1, wherein the supplemental gas comprises gas selected from the group consisting of argon, fluorine, nitrogen, helium, ammonia, xenon, hydrogen, and germane.
9. The gas supply kit of claim 4, wherein the supplemental gas comprises gas selected from the group consisting of argon, fluorine, nitrogen, helium, ammonia, xenon, hydrogen, and germane.
10. The gas supply kit of claim 1, wherein the first and second gas storage and dispensing vessels comprise at least one vessel containing a sorbent medium for adsorption storage and desorption dispensing of gas.
11. The gas supply kit of claim 1, wherein the first and second gas storage and dispensing vessels comprise at least one vessel that is internally pressure-regulated.
12. A method for enhancing operation of an ion implantation system, comprising providing for use in the ion implantation system (i) a first gas storage and dispensing vessel holding a germanium dopant source gas, and (ii) a second gas storage and dispensing vessel holding a supplemental gas comprising at least one of a diluent gas and a co-species gas, wherein at least one of the dopant gas and, when present, a co-species gas, is isotopically enriched above natural abundance level in at least one germanium isotope.

13. The method of claim 12, wherein the isotopically enriched gas is isotopically enriched above natural abundance level of at least one germanium isotope of mass 70, 72, 73, 74 or 76.
14. A method of claim 12, wherein the isotopically enriched gas is isotopically enriched above natural abundance level of at least one germanium isotope of mass 72.
15. The method of claim 12, wherein the germanium dopant source gas comprises germanium tetrafluoride.
16. The method of claim 15, wherein said germanium tetrafluoride is isotopically enriched above natural abundance level of at least one germanium isotope of mass 72.
17. The method of claim 15, wherein the supplemental gas comprises a co-species gas.
18. The method of claim 17, wherein said co-species gas comprises germane.
19. The method of claim 12, wherein the supplemental gas comprises gas selected from the group consisting of argon, fluorine, nitrogen, helium, ammonia, xenon, hydrogen, and germane.
20. The method of claim 15, wherein the supplemental gas comprises gas selected from the group consisting of argon, fluorine, nitrogen, helium, ammonia, xenon, hydrogen, and germane.
21. The method of claim 12, wherein the first and second gas storage and dispensing vessels comprise at least one vessel containing a sorbent medium for adsorption storage and desorption dispensing of gas.
22. The method of claim 12, wherein the first and second gas storage and dispensing vessels comprise at least one vessel that is internally pressure-regulated.

CLAIMS

1. A gas supply kit for an ion implantation system, comprising (i) a first gas storage and dispensing vessel holding a germanium dopant source gas, and (ii) a second gas storage and dispensing vessel holding a supplemental gas comprising at least one of a diluent gas and a co-species gas, wherein at least one of the dopant gas and, when present, a co-species gas, is isotopically enriched above natural abundance level in at least one germanium isotope.
2. The gas supply kit of claim 1, wherein the isotopically enriched gas is isotopically enriched above natural abundance level of at least one germanium isotope of mass 70, 72, 73, 74 or 76.
3. The gas supply kit of claim 1, wherein the isotopically enriched gas is isotopically enriched above natural abundance level of at least one germanium isotope of mass 72.
4. The gas supply kit of claim 1, wherein the germanium dopant source gas comprises germanium tetrafluoride.
5. The gas supply kit of claim 4, wherein said germanium tetrafluoride is isotopically enriched above natural abundance level of at least one germanium isotope of mass 72.
6. The gas supply kit of claim 4, wherein the supplemental gas comprises a co-species gas.
7. The gas supply kit of claim 6, wherein said co-species gas comprises germane.
8. The gas supply kit of claim 1, wherein the supplemental gas comprises gas selected from the group consisting of argon, fluorine, nitrogen, helium, ammonia, xenon, hydrogen, and germane.
9. The gas supply kit of claim 4, wherein the supplemental gas comprises gas selected from the group consisting of argon, fluorine, nitrogen, helium, ammonia, xenon, hydrogen, and germane.

10. The gas supply kit of claim 1, wherein the first and second gas storage and dispensing vessels comprise at least one vessel containing a sorbent medium for adsorption storage and desorption dispensing of gas.

11. The gas supply kit of claim 1, wherein the first and second gas storage and dispensing vessels comprise at least one vessel that is internally pressure-regulated.

12. A method for enhancing operation of an ion implantation system, comprising providing for use in the ion implantation system (i) a first gas storage and dispensing vessel holding a germanium dopant source gas, and (ii) a second gas storage and dispensing vessel holding a supplemental gas comprising at least one of a diluent gas and a co-species gas, wherein at least one of the dopant gas and, when present, a co-species gas, is isotopically enriched above natural abundance level in at least one germanium isotope.

13. The method of claim 12, wherein the isotopically enriched gas is isotopically enriched above natural abundance level of at least one germanium isotope of mass 70, 72, 73, 74 or 76.

14. A method of claim 12, wherein the isotopically enriched gas is isotopically enriched above natural abundance level of at least one germanium isotope of mass 72.

15. The method of claim 12, wherein the germanium dopant source gas comprises germanium tetrafluoride.

16. The method of claim 15, wherein said germanium tetrafluoride is isotopically enriched above natural abundance level of at least one germanium isotope of mass 72.

17. The method of claim 15, wherein the supplemental gas comprises a co-species gas.

18. The method of claim 17, wherein said co-species gas comprises germane.

19. The method of claim 12, wherein the supplemental gas comprises gas selected from the group consisting of argon, fluorine, nitrogen, helium, ammonia, xenon, hydrogen, and germane.

20. The method of claim 15, wherein the supplemental gas comprises gas selected from the group consisting of argon, fluorine, nitrogen, helium, ammonia, xenon, hydrogen, and germane.

21. The method of claim 12, wherein the first and second gas storage and dispensing vessels comprise at least one vessel containing a sorbent medium for adsorption storage and desorption dispensing of gas.

22. The method of claim 12, wherein the first and second gas storage and dispensing vessels comprise at least one vessel that is internally pressure-regulated.

23. The gas supply kit of claim 5, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 55% to 100%.

24. The gas supply kit of claim 5, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 60% to 100%.

25. The gas supply kit of claim 5, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 65% to 100%.

26. The gas supply kit of claim 5, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 70% to 100%.

27. The gas supply kit of claim 5, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 75% to 100%.

28. The gas supply kit of claim 5, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 80% to 100%.

29. The gas supply kit of claim 5, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 85% to 100%.

30. The gas supply kit of claim 5, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 90% to 100%.

31. The gas supply kit of claim 23, wherein the supplemental gas comprises a diluent gas selected from xenon and hydrogen.

32. The method of claim 16, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 55% to 100%.

33. The method of claim 16, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 60% to 100%.

34. The method of claim 16, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 65% to 100%.

35. The method of claim 16, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 70% to 100%.

36. The method of claim 16, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 75% to 100%.

37. The method of claim 16, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 80% to 100%.

38. The method of claim 16, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 85% to 100%.

39. The method of claim 16, wherein isotopic enrichment level of said germanium tetrafluoride is in a range of from 90% to 100%.

40. The method of claim 32, wherein the supplemental gas comprises a diluent gas selected from xenon and hydrogen.

41. A gas supply kit for an ion implantation system, comprising (i) a first gas storage and dispensing vessel holding dopant source gas comprising germanium tetrafluoride isotopically enriched in mass 72 isotope at an enrichment in a range of from 55% to 100%, and (ii) a second gas storage and dispensing vessel holding a supplemental gas comprising at least one of a diluent gas and a co-species gas, wherein the dopant source gas is held in the first gas storage and dispensing vessel in an adsorbed state, a free gas state, or a liquefied gas state.

42. The gas supply kit of claim 41, wherein the isotopic enrichment germanium tetrafluoride is in a range of from 55% to 85%.

43. The gas supply kit of claim 41, wherein the dopant source gas is held in the first gas storage and dispensing vessel in an adsorbed state.

44. The gas supply kit of claim 41, wherein the dopant source gas is held the first gas storage and dispensing vessel in a free gas state.

45. The gas supply kit of claim 41, wherein the dopant source gas is held in the first gas storage and dispensing vessel in a liquefied gas state.

46. The gas supply kit of claim 41, wherein the supplemental gas comprises hydrogen.

47. The gas supply kit of claim 41, wherein the supplemental gas comprises xenon.

48. A method for enhancing operation of an ion implantation system, comprising providing for use in the ion implantation system (i) a first gas storage and dispensing vessel holding dopant source gas comprising germanium tetrafluoride isotopically enriched in mass 72 isotope at an enrichment in a range of from 55% to 100%, and (ii) a second gas storage and dispensing vessel holding a supplemental gas comprising at least one of a diluent gas and a co-species gas, wherein the dopant source gas is held

in the first gas storage and dispensing vessel in an adsorbed state, a free gas state, or a liquefied gas state.

49. The method of claim 48, wherein the isotopic enrichment germanium tetrafluoride is in a range of from 55% to 85%.

50. The method of claim 48, wherein the dopant source gas is held in the first gas storage and dispensing vessel in an adsorbed state.

51. The method of claim 48, wherein the dopant source gas is held the first gas storage and dispensing vessel in a free gas state.

52. The method of claim 48, wherein the dopant source gas is held in the first gas storage and dispensing vessel in a liquefied gas state.

53. The method of claim 48, wherein the supplemental gas comprises hydrogen.

54. The method of claim 48, wherein the supplemental gas comprises xenon.