CLAIMS:

1. A method of preparing a single crystal silicon ingot by the Continuous Czochralski method, the method comprising:

adding an initial charge of polycrystalline silicon to a crucible, the initial charge further comprising a source of nitrogen;

heating the crucible comprising the initial charge of polycrystalline silicon and the source of nitrogen to cause a silicon melt to form in the crucible, the silicon melt comprising an initial volume of molten silicon and having an initial melt elevation level;

contacting a silicon seed crystal with ~~a~~the silicon melt;

withdrawing the silicon seed crystal to grow a neck portion, wherein the silicon seed crystal is withdrawn at a neck portion pull rate during growth of the neck portion, and further wherein the neck portion has a neck portion nitrogen concentration of at least ~~about~~ $1x10^{13}$ atoms/cm^3, wherein the neck portion nitrogen concentration varies by no more than 20% above and no less than 20% below an average neck portion nitrogen concentration over an axial length of the neck portion;

~~withdrawing the silicon seed crystal to grow an outwardly flaring seed-cone adjacent the neck portion, wherein the silicon seed crystal is withdrawn at a seed-cone pull rate during growth of the outwardly flaring seed-cone, and further wherein the outwardly flaring seed-cone has an outwardly flaring seed-cone nitrogen concentration of at least about $1x10^{13}$ atoms/cm^3; and~~

withdrawing the silicon seed crystal to grow an outwardly flaring seed-cone adjacent the neck portion, wherein the silicon seed crystal is withdrawn at a seed-cone pull rate during growth of the outwardly flaring seed-cone, and further wherein the outwardly flaring seed-cone has an outwardly flaring seed-cone nitrogen concentration of at least ~~about~~ $1x10^{13}$ atoms/cm^3, wherein the outwardly flaring seed-cone nitrogen concentration varies by no more than 20% above and no less than 20% below ~~an average~~ a set point outwardly flaring seed-cone nitrogen concentration; and

withdrawing the silicon seed crystal to grow a main body of the single crystal silicon ingot adjacent the outwardly flaring seed-cone, wherein the silicon melt comprises a volume of molten silicon and a melt elevation level during growth of the

main body of the single crystal silicon ingot, and further wherein the main body of the single crystal silicon has a main body nitrogen concentration of at least ~~about~~ $1x10^{13}$ atoms/cm^3, wherein the main body of the single crystal silicon ingot is at least ~~about~~ 1000 millimeters long, and further wherein the main body nitrogen concentration varies by no more than 20% above and no less than 20% below an average main body nitrogen concentration over at least 40% of axial length of the main body of the single crystal silicon ingot;

wherein the main body of the single crystal silicon ingot is grown at an initial variable main body pull rate and a constant main body pull rate, wherein the main body of the single crystal silicon ingot is grown at the initial variable main body pull rate for less than ~~about~~ 20% of a length of the main body of the single crystal silicon ingot and grown at the constant main body pull rate during growth for at least ~~about~~ 30% of the length of the main body of the single crystal silicon ingot, wherein the constant main body pull rate is between ~~about~~ 0.4 mm/min and ~~about~~ 0.8 mm/min, and further wherein the main body of the single crystal silicon ingot has a diameter of at least ~~about~~ 150 millimeters; and

further wherein polycrystalline silicon is continuously fed or periodically fe~~e~~d to the crucible to thereby replenish a volume of molten silicon and to thereby maintain a melt elevation level in the crucible during growth of the main body of the single crystal silicon ingot and the source of nitrogen is continuously fed or periodically fed to the crucible to thereby replenish an amount of nitrogen.

2. The method of claim 1 wherein the source of nitrogen is a solid source of nitrogen.

3. The method of claim 1 wherein the source of nitrogen is silicon nitride powder.

4. The method of claim 1 wherein the source of nitrogen is a silicon wafer having a silicon nitride film on a surface thereof, wherein the silicon wafer is optionally crushed.

5. The method of claim 1 wherein the source of nitrogen is silicon oxynitride glass.

6. The method of claim 1 wherein the source of nitrogen is nitrogen gas.

7. The method of claim 1 wherein the neck portion nitrogen concentration is between ~~about~~ $1x10^{13}$ atoms/cm^3 and ~~about~~ $1x10^{15}$ atoms/cm^3.

8. The method of claim 1 wherein the outwardly flaring seed-cone nitrogen concentration is between ~~about~~ $1x10^{13}$ atoms/cm^3 and ~~about~~ $1x10^{15}$ atoms/cm^3.

9. The method of claim 1 wherein the source of nitrogen is continuously fed or periodically fed to the crucible in an amount between ~~about~~ 1 milligram nitrogen and ~~about~~ 100 milligrams nitrogen per 50 mm of axial length of the main body of the single crystal silicon ingot.

10. The method of claim 1 wherein silicon nitride is continuously fed or periodically fed to the crucible during growth of the main body of the single crystal silicon ingot in an amount between ~~about~~ 2.5 milligrams silicon nitride and 250 milligrams silicon nitride per 50 mm of axial length of the main body of the single crystal silicon ingot.

11. The method of claim 1 wherein the main body nitrogen concentration is between ~~about~~ $1x10^{13}$ atoms/cm^3 and ~~about~~ $1x10^{15}$ atoms/cm^3.

12. The method of claim 1 wherein the main body nitrogen concentration is between ~~about~~ $5x10^{13}$ atoms/cm^3 and ~~about~~ $1x10^{14}$ atoms/cm^3, over at least 40% of axial length of the main body of the single crystal silicon ingot.

13. The method of claim 1 wherein the main body nitrogen concentration is between ~~about~~ $1x10^{13}$ atoms/cm^3 and ~~about~~ $1.5x10^{14}$ atoms/cm^3, and further wherein the main body nitrogen concentration varies by no more than 20% above and no less than 20% below an average main body nitrogen concentration over at least 40% of axial length of the main body of the single crystal silicon ingot.

14. The method of claim 1 wherein the main body nitrogen concentration is between ~~about~~ $5x10^{13}$ atoms/cm^3 and ~~about~~ $1x10^{14}$ atoms/cm^3 and further wherein the main body nitrogen concentration varies by no more than 20% above and no less than

20% below an average main body nitrogen concentration over at least 40% of axial length of the main body of the single crystal silicon ingot.

15. The method of claim 1 wherein a magnetic field is applied to the silicon melt during growth of the main body of the single crystal silicon ingot, and further wherein the main body of the single crystal silicon ingot comprises a main body interstitial oxygen concentration between ~~about~~ 10 PPMA and ~~about~~ 35 PPMA, and further wherein the main body interstitial oxygen concentration varies by no more than 20% above and no less than 20% below an average main body oxygen concentration.

16. The method of claim 15 wherein a horizontal magnetic field is applied to the silicon melt during growth of the main body of the single crystal silicon ingot.

17. The method of claim 15 wherein a cusp magnetic field is applied to the silicon melt during growth of the main body of the single crystal silicon ingot.

18. The method of claim 15 wherein the applied magnetic field maintains a substantially constant melt/solid interface profile during at least ~~about~~ 70% of the growth of the main body of the single crystal silicon ingot.

19. The method of claim 15 wherein the applied magnetic field maintains a substantially constant melt/solid interface profile during between ~~about~~ 70% and ~~about~~ 90% of the growth of the main body of the single crystal silicon ingot.

20. The method of claim 1 wherein the main body of the single crystal silicon ingot is at least ~~about~~ 1400 millimeters long.

21. The method of claim 1 wherein the main body of the single crystal silicon ingot has a diameter of at least ~~about~~ 200 millimeters.

22. The method of claim 1 wherein the constant main body pull rate is between ~~about~~ 0.4 mm/min and ~~about~~ 0.7 mm/min.

23. The method of claim 1 wherein the main body of the single crystal silicon ingot is grown at the initial variable main body pull rate for between ~~about~~ 5% and ~~about~~ 20% of the length of the main body of the single crystal silicon ingot.

24. The method of claim 1 wherein the main body of the single crystal silicon ingot is grown at the constant main body pull rate during growth for at least ~~about~~ 50% of the length of the main body of the single crystal silicon ingot.

25. The method of claim 1 wherein the main body of the single crystal silicon ingot is grown at the constant main body pull rate during growth for at least ~~about~~ 70% of the length of the main body of the single crystal silicon ingot.

26. The method of claim 1 wherein the main body of the single crystal silicon ingot is grown at the constant main body pull rate during growth for at least ~~about~~ 80% of the length of the main body of the single crystal silicon ingot.

27. The method of claim 1 wherein the main body of the single crystal silicon ingot is grown at the constant main body pull rate during growth for at least ~~about~~ 90% of the length of the main body of the single crystal silicon ingot.

28. The method of claim 1 wherein the main body pull rate is a constant critical pull rate sufficient to avoid agglomerated point defects over at least 70% of the length of the main body of the single crystal silicon ingot.

29. The method of claim 1 wherein the main body pull rate is a constant critical pull rate sufficient to avoid agglomerated point defects over at least 90% of the length of the main body of the single crystal silicon ingot.

30. The method of claim 1 wherein the volume of molten silicon varies by no more than ~~about~~ 1.0 volume % during growth of at least ~~about~~ 90% the main body of the single crystal silicon ingot.

31. The method of claim 1 wherein the volume of molten silicon varies by no more than ~~about~~ 0.5 volume % during growth of at least ~~about~~ 90% the main body of the single crystal silicon ingot.

32. The method of claim 1 wherein the volume of molten silicon varies by no more than ~~about~~ 0.1 volume % during growth of at least ~~about~~ 90% the main body of the single crystal silicon ingot.

33. The method of claim 1 wherein the melt elevation level varies by less than ~~about~~ +/- 0.5 millimeter during growth of at least ~~about~~ 90% the main body of the single crystal silicon ingot.

34. The method of claim 1 wherein the main body of the single crystal silicon ingot comprises perfect silicon over at least ~~about~~ 70% of the length of the main body of the single crystal silicon ingot.

35. The method of claim 1 wherein the main body of the single crystal silicon ingot comprises perfect silicon over at least ~~about~~ 80% of the length of the main body of the single crystal silicon ingot.

36. The method of claim 1 wherein the main body of the single crystal silicon ingot comprises perfect silicon over at least ~~about~~ 90% of the length of the main body of the single crystal silicon ingot.