What is claimed is:

1. A picocrystalline (oxy)silaborane solid compound formed by chemical vapor deposition comprising the chemical elements of boron, silicon, hydrogen and optionally oxygen wherein boron is present in a higher atomic concentration than the other elements.

2. The compound of Claim 1 having stoichiometric composition of: $(B_{12}H_w)_xSi_yO_z$ wherein $3 \leq w \leq 5$, $2 \leq x \leq 3$, $2 \leq y \leq 5$ and $0 \leq z \leq 3$.

3. The compound of Claim 2 wherein $w = 4$, $x = 3$, $y = 5$ and $z = 0$.

4. The compound of Claim 2 wherein $w = 4$, $x = 2$, $y = 4$ and $z = 2$.

5. The compound of Claim 1 and further comprising a trace significant impurity of a coinage metal.

6. The compound of Claim 1 and further comprising a trace significant impurity of gold.

7. The compound of any one of Claims 1-6 wherein the atomic concentration of boron is from 63% to 89%.

8. A picocrystalline (oxy)silaborane solid compound having stoichiometric composition of: $(B_{12}H_4)_xSi_yO_z$ wherein $2 \leq x \leq 4$, $3 \leq y \leq 5$ and $0 \leq z \leq 2$.

9. The compound of Claim 8 wherein $x = 3$, $y = 5$ and $z = 0$.

10. The compound of Claim 8 wherein $x = 2$, $y = 4$ and $z = 2$.

11. The compound of Claim 8 wherein the atomic concentration of boron is from 63% to 89%.

12. A composition of matter wherein the compound of Claim 8 is formed on a substrate comprising monocrystalline silicon.

13. The compound of Claim 1 wherein said chemical vapor deposition is performed at temperatures of from 200 to 350 degrees C and pressures from ~~about~~ 1 to ~~about~~ 30 torr.

14. The compound of Claim 1 wherein said chemical vapor deposition is performed on a substrate.

15. The compound of Claim 14 wherein said substrate is monocrystalline silicon.

16. The compound of Claim 1 wherein the compound is further formed by self-assembly.

17. The compound of Claim 16 wherein said boron is present is substantially icosahedron form.

18. The compound of Claim 16 and further comprising a trace significant impurity of gold.

19. The compound of Claim 1 formed by the process of:

a) heating a substrate to a temperature of from 200 to 350 degrees C in a vacuum chamber,

b) introducing into said chamber gases comprising the elements of boron, hydrogen, and silicon and optionally oxygen; and

c) forming a film on said substrate from such gases.

20. The compound of Claim 19 wherein said vacuum chamber is maintained at a pressure between 1 torr and 30 torr.

21. The compound of Claim 19 wherein said temperature is kept below 300 degrees C.

22. The compound formed by the process of Claim 19 wherein the process comprises the additional use of a gas comprising gold.

23. The compound formed by the process of Claim 22 wherein said gold is introduced via a mixture of hydrogen and dimethylgold (III) acetate ($(CH_3)_2$ Au(OAc)).

24. The compound formed by the process of Claim 23 using a metal organic chemical vapor deposition chamber.

25. The compound formed by the process of Claim 23 using a rapid-thermal chemical deposition chamber.

26. The compound formed by the process of Claim 19 wherein said gases are selected from the group consisting of nitrous oxide (N_2O), diborane (B_2H_6), monosilane (SiH_4) water (H_2O) and hydrogen gas (H_2).

27. The compound formed by the process of Claim 19 wherein the resulting film has a relative boron atomic concentration of 80%.

28. The compound formed by the process of Claim 19 wherein said substrate comprises monocrystalline silicon.

29. A method of making a picocrystalline (oxy)silaborane solid compound comprising:

a) providing a substrate in an enclosed chamber;

b) controllably introducing into the chamber a gas mixture comprising hydrogen, boron and silicon and optionally oxygen;

c) heating the substrate to a temperature in the range of from 200 to 350 degrees C to form the compound on said substrate, said compound having the formula:

$(B_{12}H_w)_xSi_yO_z$,

where: $0< w \leq 5$, $2 \leq x \leq 4$, $2 \leq y \leq 5$ and $0 \leq z \leq 3$.

30. The method of Claim 29 and further introducing a gas containing gold.

31. The method of Claim 29 wherein said substrate is silicon.

32. The method of Claim 29 and further comprising the step of minimizing hydration by isolating the enclosed chamber from ambient moisture.

33. The method of Claim 29 wherein said compound is formed as an epitaxial layer on said substrate.

34. A method for forming a picocrystalline (oxy)silaborane solid compound with oxygen enriched regions comprising:

a) providing a substrate in an enclosed chamber;

b) heating the substrate to temperatures in the range of from 200 to 350º C;

c) controllably introducing into the chamber a gas mixture comprising hydrogen, boron silicon and optionally oxygen;

d) controllably varying the oxygen gas introduction over time to form the compound having regions substantially devoid of oxygen and regions with oxygen content,

wherein the compound has regions with and without oxygen all within the range of the formula:

$(B_{12}H_w)_xSi_yO_z$, wherein: $3 \leq w \leq 5$, $2 \leq x \leq 3$, $2 \leq y \leq 5$ and $0 \leq z \leq 3$.

35. The method of Claim 34 wherein the composition is formed as a layered film comprising a first layer substantially devoid of oxygen and a second layer with oxygen content.

36. The compound of Claim 1, and having:

a) no sharp x-ray diffraction peak for a diffraction angle 2θ when said compound is subjected to ω-2θ x-ray diffraction, wherein the x-ray angle of incidence ω is maintained at half of the diffraction angle 2θ, which is varied over $7° \leq 2\theta \leq 80°$; ~~and~~

b) one broad x-ray diffraction peak within the range of diffraction angles $32° < 2\theta < 36°$ when said compound is subjected to ω -2θ x-ray diffraction, wherein the x-ray angle

of incidence w is maintained at half of the diffraction angle 2θ, which is varied over 7° ≤ 2θ ≤ 80°;

c) one broad x-ray diffraction peak at a diffraction angle 2θ contained in 12°< 2θ < 16° when said compound is subjected to ω -2θ x-ray diffraction, wherein the x-ray angle of incidence w is maintained at half of the diffraction angle 2θ, which is varied over 7° ≤ 2θ ≤ 80°; and

d) a sharp x-ray diffraction peak for a fixed x-ray angle of incidence ω that corresponds to half of a diffraction angle 2θ in the range 12°< 2θ < 16° when said compound is subjected to grazing-incidence x-ray diffraction, wherein the x-ray angle of incidence is fixed at an angle ω ≤8° and the diffraction angle is varied over the range 7°≤ 2θ ≤ 80°.

37. The compound of Claim 36 specifically having stoichiometric composition of $(B_{12}H_w)_xSi_yO_z$ with 3≤ w ≤ 5, 2 ≤ x ≤ 3, 2≤ y ≤ 5 and 0 ≤ z ≤ 3.

38. The compound of Claim 37 wherein an isotopic enrichment exists such that the ratio of boron $^{11}_5B$ to boron $^{10}_5B$ is lower than the naturally-occurring ratio.

39. The compound of claim 1 wherein oxygen is present.

40. The compound of Claim 39 having stoichiometric composition of: $(B_{12}H_w)_xSi_yO_z$ wherein, 3≤ w ≤ 5, 2 ≤ x ≤ 3, 2 ≤ y ≤ 5 and 0 ≤ z ≤ 3.

41. The compound of Claim 39 and further comprising a trace significant impurity of a coinage metal.

42. The compound of Claim 39 and further comprising a trace significant impurity of gold.

43. The compound of any one of Claims 39-42 wherein the atomic concentration of boron is from 63% to 89%.

44. The compound of Claim 1 wherein the atomic concentration of at least boron, silicon and any optional oxygen present is measured by XPS.