CLAIMS

1. An integrated extreme ultraviolet blank production system, comprising:

a wafer handling vacuum chamber for disposing a substrate in a vacuum;

a first vacuum chamber and a second vacuum chamber, the second vacuum chamber being a depositing system for depositing, without removing the substrate from the vacuum, a multilayer stack that reflects extreme ultraviolet rays; and

a treatment system for treating, above the multilayer stack, a layer and forming an amorphous metal layer.

2. The system of claim 1, wherein the treatment system includes an alloyed deposit of the amorphous metal layer.
3. The system of claim 1, wherein the treatment system supplies a gas in order to destroy a crystal structure of the amorphous metal layer.
4. The system of claim 1, wherein the treatment system cools the multilayer stack in order to suppress grain growth of the amorphous metal layer.
5. The system of claim 1, wherein the depositing system includes a magnetron for sputtering the multilayer stack.
6. The system of claim 1, comprising: a second depositing system for depositing an additional layer in order to form an extreme ultraviolet mirror.
7. An extreme ultraviolet blank, comprising:

a substrate;

a multilayer stack that has an amorphous metal layer on the substrate and reflects extreme ultraviolet rays;

a capping layer on the multilayer stack; and

an absorber layer that absorbs extreme ultraviolet rays and is on the capping layer; wherein the amorphous metal layer is an alloyed amorphous metal layer.

8. The blank of claim 7, wherein the amorphous metal layer is alloyed with boron, nitrogen, or carbon.
9. The blank of claim 7, wherein the amorphous metal layer is amorphous molybdenum.
10. The blank of claim 7, wherein the amorphous metal layer has a destroyed crystal structure.
11. The blank of claim 7, wherein the amorphous metal layer has suppressed grain growth.
12. The blank of claim 7, wherein the multilayer stack forms an extreme ultraviolet mask blank.
13. The blank of claim 7, wherein the multilayer stack forms an extreme ultraviolet mirror.
14. The blank of claim 7, wherein the substrate is an ultra-low thermal expansion material.

15. The blank of claim 7, wherein the substrate is glass.

16. A method of making an extreme ultraviolet blank, comprising:

a step of providing a substrate;

a step of forming on the substrate a multilayer stack having an amorphous metal layer, the multilayer stack reflecting extreme ultraviolet rays;

a step of forming a capping layer on the multilayer stack; and

a step of forming an absorber layer that absorbs extreme ultraviolet rays and is on the capping layer; wherein

the step of forming the multilayer stack having the amorphous metal layer forms an alloyed amorphous metal layer.

17. The method of claim 16, wherein the step of forming the multilayer stack having the amorphous metal layer deposits the amorphous metal layer by sputtering a metal having an alloy.

18. The method of claim 16, wherein the step of forming the multilayer stack having the amorphous metal layer deposits the amorphous metal layer by sputtering while cooling the substrate.

19. The method of claim 16, wherein the step of forming the multilayer stack having the amorphous metal layer forms the amorphous metal layer alloyed with boron, nitrogen, or carbon.

20. The method of claim 16, wherein the step of forming the multilayer stack having the amorphous metal layer forms the amorphous metal layer of amorphous molybdenum.

21. The method of claim 16, wherein the step of forming the multilayer stack having the amorphous metal layer forms the amorphous metal layer of a destroyed crystal structure.

22. The method of claim 16, wherein the step of forming the multilayer stack having the amorphous metal layer forms the amorphous metal layer having suppressed grain growth.

23. The method of claim 16, wherein the step of forming the multilayer stack forms an extreme ultraviolet mask blank.

24. The method of claim 16, wherein the step of forming the multilayer stack forms an extreme ultraviolet mirror.

25. The method of claim 16, wherein the step of providing the substrate provides a substrate of an ultra-low thermal expansion material.

26. The method of claim 16, wherein the step of providing the substrate provides a substrate of glass.