CLAIMS

1. A nickel-based alloy sputtering target, characterized in that the nickel-based alloy sputtering target comprises nickel and a refining metal; the total amount of the refining metal is higher than or equal to 5 at% and less than or equal to 15 at% based on the total atoms of the nickel-based alloy sputtering target, and the refining metal comprises rhenium, wherein a normalized uniformity of grain sizes of the nickel-based alloy sputtering target is less than 20%.

2. The nickel-based alloy sputtering target as claimed in claim 1, wherein the refining metal comprises ruthenium, tungsten, tantalum, niobium, molybdenum, titanium, or any combinations thereof.

3. The nickel-based alloy sputtering target as claimed in claim 2, wherein the total amount of the refining metal is higher than or equal to 10 at% and less than or equal to 15 at% and the amount of rhenium atoms is higher than 0 at% and less than or equal to 10 at% based on the total atoms of the nickel-based alloy sputtering target.

4. The nickel-based alloy sputtering target as claimed in claim 3, wherein the total amount of the refining metal is higher than or equal to 10 at% and less than or equal to 15 at% and the amount of rhenium atoms is higher than 0 at% and less than or equal to 8 at% based on the total atoms of the nickel-based alloy sputtering target.

5. The nickel-based alloy sputtering target as claimed in claim 1, wherein the amount of rhenium atoms is higher than or equal to 6 at% and less than or equal to 8 at% based on the total atoms of the nickel-based alloy sputtering target.

6. The nickel-based alloy sputtering target as claimed in any one of claims 1 to 5, wherein the nickel-based alloy sputtering target comprises iron; the amount of iron atoms is higher than 0 at% and less than or equal to 30 at% based on the total atoms of the nickel-based alloy sputtering target.

7. The nickel-based alloy sputtering target as claimed in claim 2, wherein the nickel-based alloy sputtering target comprises iron; the total amount of the refining metal is higher than or equal to 5 at% and less than or equal to 15 at%, the amount of rhenium atoms is higher than or equal to 5 at% and less than or equal to 10 at%, and the amount of iron atoms is higher than 0 at% and less than or equal to 30 at% based on the total atoms of the nickel-based alloy sputtering target.

8. The nickel-based alloy sputtering target as claimed in claim 7, wherein the amount of iron atoms is higher than or equal to 25 at% and less than or equal to 30 at% based on the total atoms of the nickel-based alloy sputtering target.

9. The nickel-based alloy sputtering target as claimed in claim 1, wherein the nickel-based alloy sputtering target comprises iron; the amount of rhenium atoms is higher than or equal to 5 at% and less than or equal to 10 at% and the amount of iron atoms is higher than 0 at% and less than or equal to 30 at% based on the total atoms of the nickel-based alloy sputtering target.

10 The nickel-based alloy sputtering target as claimed in claim 7, wherein the amount of rhenium atoms is higher than or equal to 5 at% and less than or equal to 8 at% and the amount of iron atoms is higher than or equal to 15 at% and less than or equal to 28 at% based on the total atoms of the nickel-based alloy sputtering target.

11. The nickel-based alloy sputtering target as claimed in any one of claims 1 to 5 and 7 to 10, wherein a microstructure of the nickel-based alloy sputtering target consists of a face-centered cubic structure.

12. The nickel-based alloy sputtering target as claimed in claim 6, wherein a microstructure of the nickel-based alloy sputtering target consists of a face-centered cubic structure.

13. The nickel-based alloy sputtering target as claimed in any one of claims 1 to 5 and 7 to 10, wherein the average grain size of the nickel-based alloy sputtering target is smaller than or equal to 100 μm.

14. The nickel-based alloy sputtering target as claimed in claim 6, wherein the average grain size of the nickel-based alloy sputtering target is smaller than or equal to 100 μm.

15. The nickel-based alloy sputtering target as claimed in claim 1, wherein the refining metal is selected from the group consisting of a combination of rhenium and ruthenium, a combination of rhenium and tungsten, and a combination of rhenium, ruthenium, and tungsten.

16. A nickel-based alloy layer, characterized in that the nickel-based alloy layer is formed by sputtering the nickel-based alloy sputtering target as claimed in any one of claims 1 to 15.