CLAIMS

1. A substrate with a conductive film comprising a conductive film on one of two main surfaces of the substrate, wherein

the conductive film comprises chromium,

the conductive film comprises a structure in which a lower layer and an upper layer are layered in this order from the substrate side,

the lower layer is amorphous,

the upper layer has a crystallinity, and

when a diffracted X-ray intensity with respect to a diffraction angle 2θ is measured by an X-ray diffraction method for the upper layer, a peak is detected in a range where the diffraction angle 2θ is 41 degrees or more and 47 degrees or less.

2. The substrate with a conductive film according to claim 1, wherein the upper layer is made of a material comprising nitrogen.

3. The substrate with a conductive film according to claim 1 or 2, wherein the lower layer is made of a material comprising oxygen.

4. The substrate with a conductive film according to any one of claims 1 to 3, wherein a chromium content of the upper layer is larger than a chromium content of the lower layer.

5. The substrate with a conductive film according to any one of claims 1 to 4, wherein the upper layer has a peak detected in a range where the diffraction angle 2θ is 56 degrees or more and 60 degrees or less.

6. The substrate with a conductive film according to any one of claims 1 to 5, wherein the upper layer has no peak detected in a range where the diffraction angle 2θ is 35 degrees or more and 38 degrees or less.

7. A substrate with a conductive film, wherein a multilayer reflective film in which a high refractive index layer and a low refractive index layer are alternately layered is formed on the main surface opposite to the main surface on which the conductive film of the substrate with a conductive film according to any one of claims 1 to 6 is formed.

8. The substrate with a conductive film according to claim 7, wherein a protective film is formed on the multilayer reflective film.

9. A reflective mask blank comprising a structure in which a multilayer reflective film and a pattern forming thin film are layered in this order on one main surface of a substrate,

the reflective mask blank comprising a conductive film on the other main surface of the substrate, wherein

the conductive film comprises chromium,

the conductive film comprises a structure in which a lower layer and an upper layer are layered in this order from the substrate side,

the lower layer is amorphous,

the upper layer has a crystallinity, and

when a diffracted X-ray intensity with respect to a diffraction angle 2θ is measured by an X-ray diffraction method for the upper layer, a peak is detected in a range where the diffraction angle 2θ is 41 degrees or more and 47 degrees or less.

10. The reflective mask blank according to claim 9, wherein the upper layer is made of a material comprising nitrogen.

11. The reflective mask blank according to claim 9 or 10, wherein the lower layer is made of a material comprising oxygen.

12. The reflective mask blank according to any one of claims 9 to 11, wherein a chromium content of the upper layer is larger than a chromium content of the lower layer.

13. The reflective mask blank according to any one of claims 9 to 12, wherein the upper layer has a peak detected in a range where the diffraction angle 2θ is 56 degrees or more and 60 degrees or less.

14. The reflective mask blank according to any one of claims 9 to 13, wherein the upper layer has no peak detected in a range where the diffraction angle 2θ is 35 degrees or more and 38 degrees or less.

15. The reflective mask blank according to any one of claims 9 to 14, wherein a protective film is formed between the multilayer reflective film and the pattern forming thin film.

16. A reflective mask comprising a transfer pattern formed on the pattern forming thin film of the reflective mask blank according to any one of claims 9 to 15.

17. A method for manufacturing a semiconductor device, the method comprising exposing and transferring a transfer pattern onto a resist film on a semiconductor substrate using the reflective mask according to claim 16.