CLAIMS

[Claim 1] A pattern forming method using EUV lithography, the pattern forming method comprising steps of:

forming a resist upper layer film on at least one surface side of a substrate;

irradiating the resist upper layer film with EUV light; and

developing the resist upper layer film to form a pattern, wherein

a multilayer reflective film layer is disposed between the substrate and the resist upper layer film, and

the multilayer reflective film layer has a structure in which two or more materials different in refractive index n by 0.01 or more at a wavelength of the EUV light are alternately laminated,

wherein the multilayer reflective film layer comprises: a low refractive index film comprising a material comprising any one or more metals of Ti, Cr, Ni, Zr, Nb, Mo, Ru, Rh, Hf, Ta, W, and Bi,

wherein the low refractive index film has a film thickness of 10 nm or less per layer.

[Claim 2] The pattern forming method according to claim 1, wherein the multilayer reflective film layer comprises: one layer or two or more layers of a high refractive index film comprising a material comprising Si and one or more elements selected from nitrogen, carbon, hydrogen, and oxygen; and one layer or two or more layers of a low refractive index film comprising a material comprising any one or more metals of Ti, Cr,

Ni, Zr, Nb, Mo, Ru, Rh, Hf, Ta, W, and Bi.

[Claim 3] The pattern forming method according to claim 1, wherein the multilayer reflective film layer comprises: one layer or two or more layers of a high refractive index film comprising a material comprising carbon and one or more elements selected from nitrogen, hydrogen, and oxygen; and one layer or two or more layers of a low refractive index film comprising a material comprising any one or more metals of Ti, Cr, Ni, Zr, Nb, Mo, Ru, Rh, Hf, Ta, W, and Bi.

[Claim 4] The pattern forming method according to claim 1, wherein the multilayer reflective film layer comprises two or more layers of a low refractive index film comprising a material comprising any one or more metals of Ti, Cr, Ni, Zr, Nb, Mo, Ru, Rh, Hf, Ta, W, and Bi.

[Claim 5] The pattern forming method according to any one of claims 2 to 4, wherein the low refractive index film has a refractive index n of 0.97 or less at a wavelength of the EUV light.

[Claim 6] The pattern forming method according to any one of claims 1 to 5, wherein at least one or more layers of an adhesive film are disposed between the resist upper layer film and the multilayer reflective film layer, the adhesive film being selected from: a silicon-containing hard mask film comprising a material comprising Si and one or more elements selected from nitrogen, carbon, hydrogen, and oxygen; and a carbon-containing hard mask film comprising a material

comprising carbon and one or more elements selected from nitrogen, hydrogen, and oxygen.

[Claim 7] The pattern forming method according to any one of claims 1 to 6, further comprising a step of transferring a pattern up to a layer to be processed on the substrate by dry etching while using the resist upper layer film having the pattern as a mask.

[Claim 8] A laminate comprising: a substrate to be processed in which a pattern is to be formed; a multilayer reflective film layer on the substrate to be processed; and a resist upper layer film on the multilayer reflective film layer, wherein the multilayer reflective film layer has a structure in which two or more materials different in refractive index n by 0.01 or more at a wavelength of EUV light are alternately laminated,

wherein the multilayer reflective film layer comprises: a low refractive index film comprising a material comprising any one or more metals of Ti, Cr, Ni, Zr, Nb, Mo, Ru, Rh, Hf, Ta, W, and Bi,

wherein the low refractive index film has a film thickness of 10 nm or less per layer.