Claims

1. A glass structure comprising:

a glass substrate;

a first dielectric layer formed over the glass substrate and having a high refractive index;

a second dielectric layer formed over the first dielectric layer and having a low refractive index;

a third dielectric layer formed over the second dielectric layer and having a high refractive index such that the second dielectric layer interposes the first dielectric layer and the third dielectric layer;

a fourth dielectric layer formed over the third dielectric layer and having a low refractive index such that the third dielectric layer interposes the second dielectric layer and the fourth dielectric layer; and

a fifth dielectric layer formed over the fourth dielectric layer and having a high refractive index such that the fourth dielectric layer interposes the third dielectric layer and the fifth dielectric layer,

wherein each of the first dielectric layer, the third dielectric layer and the fifth dielectric layer being formed from at least one of SiN2, NbO, NbO2 and Nb2O5, and having a refractive index of between and including 2.0 and 2.7, wherein the first dielectric layer has a thickness of between and including 60 nm and 150 nm, the third dielectric layer has a thickness of between and including 20nm and 120nm and the fifth dielectric layer has a thickness of not more than 80nm, and

wherein the first dielectric layer being thicker than the third dielectric layer and the second dielectric layer being thicker than the fourth dielectric layer.

2. The glass substrate as in claim 1, each of the second dielectric layer and the fourth dielectric layer being formed from SiO2.

3. The glass substrate as in claim 1, the second dielectric layer having a thickness of between and including 60nm and 180nm and the fourth dielectric layer having a thickness of between and including 60nm and 180nm.

4. The glass substrate as in claim 1, further comprising a protective layer formed over the fifth dielectric layer.

5. The glass substrate as in claim 4, the protective layer being formed from at least one of ZrO2, Si3N4, SiC and TiO2.

6. The glass substrate as in claim 4, the protective layer having a thickness of between and including 5nm to 80nm.

7. The glass substrate as in claim 1, each of the first dielectric layer, the second dielectric layer, the third dielectric layer and the fourth dielectric layer being at least one of formed by magnetron sputtering, formed from inorganic material and is Au and Ag free.

8. A glass structure forming method comprising:

forming a first dielectric layer formed having a high refractive index over a glass substrate by magnetron sputtering;

forming a second dielectric layer having a low refractive index over the first dielectric layer by magnetron sputtering;

forming a third dielectric layer having a high refractive index over the second dielectric layer by magnetron sputtering such that the second dielectric layer interposes the first dielectric layer and the third dielectric layer;

forming a fourth dielectric layer having a low refractive index over the third dielectric layer by magnetron sputtering such that the third dielectric layer interposes the second dielectric layer and the fourth dielectric layer; and

forming a fifth dielectric layer over the fourth dielectric layer and having a high refractive index such that the fourth dielectric layer interposes the third dielectric layer and the fifth dielectric layer,

wherein each of the first dielectric layer, the third dielectric layer and the fifth dielectric layer being formed from at least one of SiN2, NbO, NbO2 and Nb2O5, and having a refractive index of between and including 2.0 and 2.7, wherein the first dielectric layer has a thickness of between and including 60 nm and 150 nm, the third dielectric layer has a thickness of between and including 20nm and 120nm and the fifth dielectric layer has a thickness of not more than 80nm, and

wherein the first dielectric layer being thicker than the third dielectric layer and the second dielectric layer being thicker than the fourth dielectric layer.

9. The method as in claim 8, each of the second dielectric layer and the fourth dielectric layer being formed from SiO_2, wherein the second dielectric layer has a thickness of between and including 60nm and 180nm and the fourth dielectric layer has a thickness of between and including 60nm and 180nm.

10. The method as in claim 8, further comprising:

forming a protective layer formed over the fifth dielectric layer by magnetron sputtering, the protective layer being formed from at least one of ZrO_2, Si_3N_4, SiC and TiO_2, and having a thickness of between and including 5nm to 80nm.

11. The method as in claim 8, each of the first dielectric layer, the second dielectric layer, the third dielectric layer and the fourth dielectric layer being at least one of formed from inorganic material and is Au and Ag free.