CLAIMS

[claim 1]

An optical device, comprising:

a light guiding layer;

a first optically functional layer provided on a first principal face of the light guiding layer;

a second optically functional layer provided on a second principal face of the light guiding layer that is on an opposite side to the first principal face, the second optically functional layer having at least one first material portion that has a refractive index lower than a refractive index of the light guiding layer, and the second optically functional layer having at least one second material portion that has a refractive index equal to the refractive index of the light guiding layer, the at least one first material portion and the at least one second material portion being disposed along the second principal face;

an optical medium layer provided on a surface of the second optically functional layer that is on an opposite side to the light guiding layer; and

an optical adhesion layer that adhesively bonds the at least one first material portion and the optical medium layer, wherein

a refractive index of the first optically functional layer is lower than the refractive index of the light guiding layer.

[claim 2]

The optical device of claim 1, wherein,

the first principal face is a light-extracting surface of the light guiding layer; and

the first optically functional layer is a uniform layer that is formed uninterruptedly of a low-refractive index material.

[claim 3]

The optical device of claim 1 or 2, wherein,

occupancy of the at least one second material portion in an interface between the second optically functional layer and the light guiding layer has a gradient along an optical axis direction of the light guiding layer.

[claim 4]

The optical device of claim 3, wherein

occupancy of the at least one second material portion in the interface increases along the optical axis direction.

[claim 5]

The optical device of any one of claims 1 to 4, wherein

the second optically functional layer or the light guiding layer is adhesively bonded, detachably, to a layer at least including the optical medium layer.

[claim 6]

The optical device of any one of claims 1 to 4, wherein,

the second optically functional layer, the light guiding layer, and the first optically functional layer constitute a first stacked body;

the optical device comprises a second stacked body at a surface of the optical medium layer that is on an opposite side to the first stacked body, the second stacked body at least including a second light guiding layer; and

at least one of the first stacked body and the second stacked body is adhesively bonded, detachably, to the optical medium layer.

[claim 7]

The optical device of any one of claims 1 to 6, wherein

at least one of the first optically functional layer and the second optically functional layer has a function selected from reflection, transmission, polarization, and refraction.

[claim 8]

The optical device of any one of claims 1 to 7, wherein

the first optically functional layer is a total reflection film with respect to light propagating in the light guiding layer.

[claim 9]

The optical device of any one of claims 1 to 8, wherein

the first optically functional layer and the second optically functional layer have different refractive index values.

[claim 10]

The optical device of any one of claims 1 to 9, further comprising a third functional layer through which light is extracted to the outside from the light guiding layer.

[claim 11]

The optical device of claim 10, wherein

the third functional layer has an optical pattern including a plurality of discrete profiles, or including a plurality of profiles which are at least partially continuous.