PATENT CLAIMS

1. An optical light guide element having a first end section with a light entrance area designed for facing a light source and having a second end section with a light exit area designed for facing a light target area, wherein the light entrance area is defined by a surface area on the optical light guide element which faces the light source and wherein the first end section comprises an inclined surface area which forms an acute angle with the surface area of the light entrance area.

2. The optical light guide element of claim1, wherein the light entrance area is designed for facing a light-transparent opening in a cover through which the light is passing.

3. The optical light guide element of claim 1, wherein the inclined surface area is inclined in the main direction of the light propagation within the light guide element and the acute angle is formed by the surface lines of the inclined surface and the light entrance area in a cross-sectional view along the main direction of the light propagation.

4. The optical light guide element of claim 1 or 2, wherein the inclined surface of the first end section corresponds to an inclined front face of the optical light guide element.

5. The optical light guide element of claim 1 or 2, wherein the inclined surface area is inclined in a direction transverse to the main direction of the light propagation within the light guide element and the acute angle is formed by the surface lines of the inclined surface and the light entrance area in a cross-sectional view transverse to the main direction of the light propagation.

6. The optical light guide element of claim 1, 4 or 6, wherein the acute angle between the inclined surface area and the surface area of the light entrance area is at minimum 10°, preferably at minimum 20°, most preferably at minimum 30° and at maximum 80°, preferably at maximum 70°, most preferably at maximum 60°.

7. The optical light guide element of claim 1, wherein the light entrance area is defined by a plane which faces the light source or the light-transparent opening.

8. The optical light guide element of claim 1, wherein the inclined surface area of the first end section forms a plane.

9. The optical light guide element of claim 1, wherein the light exit area is defined by a surface area of the optical light guide element which faces the light target area and wherein the second end section forms an inclined surface area which encloses an acute angle with the surface area of the light exit area.

10. The optical light guide element of claim 1 or 10, wherein the light target area is a light sensor.

11. The optical light guide element of claim 10, wherein the inclined surface area is inclined in the main direction of the light propagation and the acute angle is formed by the surface lines of the inclined surface and the light entrance area in a cross-sectional view along the main direction of the light propagation.

12. The optical light guide element of claim 10 or 11, wherein the inclined surface of the second end section corresponds to an inclined front face of the optical light guide element.

13. The optical light guide element of claim 10, wherein the inclined surface area is inclined in a direction transverse to the main direction of the light propagation within the light guide element, and the acute angle is formed by the surface lines of the inclined surface and the light entrance area in a cross-sectional view transverse to the main direction of the light propagation.

14. The optical light guide element of claim 10, 11 or 13, wherein the acute angle between the inclined surface area and the surface area of the light entrance area is at minimum 10°, preferably at minimum 20°, most preferably at minimum 30° and at maximum 80°, preferably at maximum 70°, most preferably at maximum 60°.

15. The optical light guide element of claim 10, wherein the light exit area is defined by a plane which faces the light target area.

16. The optical light guide element of claim 10, wherein the inclined surface area of the second end section forms a plane.

17. The optical light guide element of claim 1, wherein the optical light guide element contains a first surface which comprises the light entrance area and a second surface which comprises the light exit area, and wherein the second surface runs parallel and in a distance to the first surface.

18. The optical light guide element of claim 1, wherein the optical light guide element is an elongated element which extends from the light source to the light target area.

19. The optical light guide element of claim 1, wherein the optical light guide element has a polygonal shape in a cross section transverse to the main direction of the light propagation within the optical light guide element.

20. The optical light guide element of claim 1, wherein the optical light guide element is rhomboid-shaped in a cross-sectional view along the main direction of the light propagation within the light guide element.

21. The optical light guide element of claim 1, wherein the optical light guide element is formed by plane surface areas, which abut against each other in an angle.

22. The optical light guide element of claim 17, wherein the optical light guide element is a flat element and the distance between the first and second surface is at minimum 0.1 mm, preferably at minimum 0.2 mm, and is at maximum 1 mm, preferably at maximum 0.6 mm, most preferably the distance is about 0.3 to 0.5 mm.

23. The optical light guide element of claim 1, wherein the distance between the first and second end sections of the optical light guide element is at minimum 2 mm and at maximum 5 mm, preferably the distance is of about 3 mm.

24. The optical light guide element of claim 1, wherein the location and dimension of the light entrance area, the location and dimension of the inclined surface of the first end section and the acute angle between the inclined surface and the light entrance are such that at least some, preferably most of the incoming light between an angle of incident of -30° and 30°, preferably of -60° and 60° is reflected on the inclined surface of the first end section within the optical light guide element.

25. The optical light guide element of claim 1, wherein the location and dimension of the light exit area, the location and dimension of the inclined surface of the second end section and the acute angle between the inclined surface and the light exit are such that at least some, preferably most of the light propagating within

the optical light guide from the first end section towards the second end section is reflected on the inclined surface of the second end section within the optical light guide element towards the light exit area.

26. The optical light guide element of claim 1, wherein the surfaces of the optical light guide element are at least partially coated with a reflective layer.

27. The optical light guide element of claim 26, wherein the reflective layer is a metallic layer, preferably a layer made of aluminum.

28. An electronic device, comprising an optical light guide element having a first end section with a light entrance area designed for facing a light source and having a second end section with a light exit area designed for facing a light target area, the light guide element is designed and arranged within the electronic device for transporting light from a light source to a light target area, wherein the light source and the light target area are laterally displaced, i.e. not located along a common axis.

29. The electronic device of claim 28, comprising an optical light guide element according to claim 1.

30. The electronic device of claim 28 or 29, comprising:

a housing having integrated therein:

- a cover with a light-transparent opening for passing light into the housing;
- a light sensor, being arranged below the cover and being laterally displaced from the light-transparent opening;

wherein the light-transparent opening is optically connected to the light sensor by means of the optical light guide element, wherein the light guide element is

arranged below the cover an extends between the light-transparent optical opening and the light sensor.

31. The electronic device of claim 30, wherein the light sensor is an ambient light sensor.

32. The electronic device of claim 28 or 29, wherein the optical light guide element is arranged below a cover of the housing and above an electronic unit within the housing.

PATENT CLAIMS

1. An optical light guide element having a first end section with a light entrance area designed for facing a light source and having a second end section with a light exit area designed for facing a light target area,
- wherein the light entrance area is defined by a surface area on the optical light guide element, referred to as first surface area, which faces the light source, and
- wherein the first end section comprises an inclined surface area, referred to as first inclined surface, which forms an acute angle with the first surface area, and
- wherein the light exit area is defined by a surface area of the optical light guide element, referred to as second surface area, which faces the light target area, and
- wherein the second end section forms an inclined surface area, referred to as second inclined surface, which encloses an acute angle with the second surface area.

2. The optical light guide element of claim1, wherein the light entrance area is designed for facing a light-transparent opening in a cover through which the light is passing.

3. The optical light guide element of claim 1, wherein the first inclined surface area is inclined in a main direction of the light propagation within the light guide element, and the acute angle is formed by surface lines of the first inclined surface and of the light entrance area in a cross-sectional view comprising the main direction of the light propagation.

4. The optical light guide element of claim 1 or 2, wherein the first inclined surface corresponds to an inclined front face of the optical light guide element.

5. The optical light guide element of claim 1 or 4, wherein the acute angle between the first inclined surface area and the first surface area is at minimum 10°, pref-

erably at minimum 20°, most preferably at minimum 30° and at maximum 80°, preferably at maximum 70°, most preferably at maximum 60°.

6. The optical light guide element of claim 2, wherein the light entrance area is defined by a plane which faces the light source or the light-transparent opening.

7. The optical light guide element of claim 1, wherein the first inclined surface area forms a plane.

8. The optical light guide element of claim 1, wherein the light target area is a light sensor.

9. The optical light guide element of claim 8, wherein the second inclined surface area is inclined in a main direction of the light propagation and the corresponding acute angle is formed by surface lines of the second inclined surface and of the light entrance area in a cross-sectional view along the main direction of the light propagation.

10. The optical light guide element of claim 8 or 9, wherein the second inclined surface corresponds to an inclined front face of the optical light guide element.

14. The optical light guide element of claim 8 or 9, wherein the acute angle between the second inclined surface area and the second surface area is at minimum 10°, preferably at minimum 20°, most preferably at minimum 30° and at maximum 80°, preferably at maximum 70°, most preferably at maximum 60°.

12. The optical light guide element of claim 8, wherein the light exit area is defined by a plane which faces the light target area.

13. The optical light guide element of claim 8, wherein the second inclined surface area forms a plane.

14. The optical light guide element of claim 1, wherein the optical light guide element contains a first surface which comprises the light entrance area and a second surface which comprises the light exit area, and wherein the second surface runs parallel and in a distance to the first surface.

15. The optical light guide element of claim 1, wherein the optical light guide element is an elongated element which extends from the light source to the light target area.

16. The optical light guide element of claim 1, wherein the optical light guide element has a polygonal shape in a cross section transverse to the main direction of the light propagation within the optical light guide element.

17. The optical light guide element of claim 1, wherein the optical light guide element is rhomboid-shaped in a cross-sectional view comprising the main direction of the light propagation within the light guide element.

18. The optical light guide element of claim 1, wherein the optical light guide element is formed by plane surface areas, which abut against each other in an angle.

19. The optical light guide element of claim 14, wherein the optical light guide element is a flat element, and the distance between the first and second surface is at minimum 0.1 mm, preferably at minimum 0.2 mm, and is at maximum 1 mm, preferably at maximum 0.6 mm, most preferably the distance is about 0.3 to 0.5 mm.

20. The optical light guide element of claim 1, wherein the distance between the first and second end sections of the optical light guide element is at minimum 2 mm and at maximum 5 mm, preferably the distance is of about 3 mm.

21. The optical light guide element of claim 1, wherein the location and dimension of the light entrance area, the location and dimension of the first inclined surface and the acute angle between the first inclined surface and the light entrance area are such that at least some, preferably most incoming light incident at an angle of incidence of between -30° and 30°, preferably between of -60° and 60°, is reflected at the first inclined surface within the optical light guide element.

22. The optical light guide element of claim 1, wherein location and dimension of the light exit area, location and dimension of the second inclined surface, and the acute angle between the second inclined surface and the light exit are such that at least some, preferably most of the light propagating within the optical light guide from the first end section towards the second end section is reflected at the second inclined surface within the optical light guide element towards the light exit area.

23. The optical light guide element of claim 1, wherein the surfaces of the optical light guide element are at least partially coated with a reflective layer.

24. The optical light guide element of claim 23, wherein the reflective layer is a metallic layer, preferably a layer made of aluminum.

25. An electronic device, the electronic device comprising a housing, a cover with a light-transparent opening for passing light into the housing being integrated in the housing, the electronic device further comprising an optical light guide element according to claim 1.

26. The electronic device of claim 25, wherein the cover element is arranged above the light guide element and the light entrance area faces the light-transparent opening, and wherein the light-transparent opening has an axis which is oriented perpendicularly to the light entrance area and oriented perpendicularly to a main direction of the light propagation within the light guide element.

27. The electronic device of claim 26, comprising a light sensor arranged below the cover, wherein the light sensor is laterally displaced from the light-transparent opening, and the light-transparent opening is optically connected to the light sensor by means of the optical light guide element which runs between the light-transparent opening and the light sensor.

28. The electronic device of claim 25, wherein the light sensor is an ambient light sensor serving to sense an ambient light level outside the electronic device.