CLAIMS

1. An optical device comprising:

a waveguide, the waveguide having an eye-side surface and a world-side surface opposing the first surface, wherein an input coupler and an output coupler are disposed over the eye-side surface or the world-side surface;

a first prism disposed over at least the output coupler and over the eye-side surface, wherein the first prism has a first tapered thickness that increases from a first end of the output coupler adjacent to the input coupler to a second end of the output coupler opposite the first end of the output coupler; and

a second prism disposed under at least the output coupler and under the world-side surface, wherein the second prism has a second tapered thickness that decreases from the first end of the output coupler to the second end of the output coupler.

2. The optical device of claim 1, wherein the first prism comprises an optically transparent material having a refractive index of greater than about 1.4.

3. The optical device of claim 1, wherein the first prism comprises glass, aluminum oxide based materials, polycarbonate materials, acrylic materials, titanium dioxide based materials, or combinations thereof.

4. The optical device of claim 1, wherein the second prism comprises an optically transparent material having a refractive index of greater than about 1.4.

5. The optical device of claim 1, wherein the second prism comprises glass, aluminum oxide based materials, polycarbonate materials, acrylic materials, titanium dioxide based materials, or combinations thereof.

6. An optical device comprising:

a waveguide, the waveguide having a first surface and a second surface opposing the first surface, wherein an input coupler and an output coupler are disposed over the first surface or the second surface; and

an eye-side lens integrated with an eye-side prism, the eye-side lens disposed over at least the output coupler and over the first surface; and

a world-side lens integrated with a world-side prism, the world-side lens disposed over at least the output coupler and over the second surface.

7. The optical device of claim 6, wherein the eye-side prism is disposed over the first surface and the world-side prism is disposed over the second surface.

8. The optical device of claim 7, wherein the first material and the second material both comprise a silica-containing aerogel material.

9. The optical device of claim 6, wherein the eye-side prism has a first thickness, wherein the first thickness increases from a first end of the output coupler to a center of the output coupler and decreases from the center to a second end of the output coupler.

10. The optical device of claim 9, wherein the world-side prism has a second thickness, wherein the second thickness increases from the first end of the output coupler to the center of the output coupler and decreases from the center to a second end of the output coupler.

11. An optical device comprising:

a waveguide, the waveguide having a first surface and a second surface opposing the first surface, wherein an input coupler and an output coupler are disposed over the first surface or the second surface;

a push lens disposed over the first surface, the push lens having a first prism disposed on or in the push lens, the first prism has a first thickness that decreases from a first end of the first prism to a second end of the first prism; and

a pull lens disposed under the second surface, the pull lens having a second prism disposed on or in the pull lens, wherein:

the second prism comprises a second thickness that increases from a first end of the second prism to a second end of the second prism,

the first end of the first prism is opposite the first end of the second prism, and

the second end of the first prism is opposite the second end of the second prism.

12. The optical device of claim 11, wherein the first prism and the second prism are disposed over the output coupler.

13. The optical device of claim 12, wherein the first prism is disposed in a cavity of the push lens.

14. The optical device of claim 12, wherein the second prism is disposed in a cavity of the pull lens.

15. The optical device of claim 12, wherein the first prism and the second prism are optically equivalent.