CLAIMS

1. A waveguide combiner, comprising:

a substrate having a top surface;

a plurality of structures disposed over the top surface; and

a cover glass disposed over the top surface, the cover glass comprising an absorption region and a transparent region, wherein the absorption region comprises an absorption material.

2. The waveguide combiner of claim 1, wherein the transparent region is disposed over each structure of the plurality of structures.

3. The waveguide combiner of claim 1, wherein the substrate has a substrate transmission (T_{NG}) and a substrate reflectivity (R_{NG}), wherein the substrate transmission (ti) is greater than the substrate reflectivity (R_{NG}).

4. The waveguide combiner of claim 3, wherein the substrate further has a structure transmission (T_G) and a structure reflectivity (R_G), and a diffraction order ($D_{G,n}$), wherein n is a non-zero integer.

5. The waveguide combiner of claim 4, wherein a total of the substrate transmission (T_{NG}) and the substrate reflectivity (R_{NG}) are greater than a total of the structure transmission (T_G) and the structure reflectivity (R_G).

6. The waveguide combiner of claim 4, wherein the cover glass has an absorption transmission (T_A) and a region transmission (T_C).

7. The waveguide combiner of claim 6, wherein a product of the structure transmission (T_G) and the absorption transmission (T_A) equal a product of the substrate transmission (T_{NG}) and the region transmission (T_C).

8. The waveguide combiner of claim 1, wherein the absorption material comprises titanium, titanium oxide (TiO_2), silicon (Si), zirconium oxide (ZrO_2), chromium, zinc oxide (ZnO), ferrosoferric oxide (Fe_3O_4), germanium (Ge), silicon carbide (SiC), diamond, dopants thereof, or any combination thereof.

9. The waveguide combiner of claim 1, wherein the absorption material comprises one or more metal films.

10. The waveguide combiner of claim 9, wherein the absorption material comprises one or more metal films.

11. The waveguide combiner of claim 1, wherein the absorption region has a refractive index of about 1.7 or greater and an optical density of about 2.0 or greater.

12. The waveguide combiner of claim 1, wherein the absorption material comprises at least one of one or more dyes or one or more pigments.

13. The waveguide combiner of claim 1, wherein the absorption material comprises a polymer matrix of one or more binders.

14. A waveguide combiner, comprising:

a substrate having a top surface;

a plurality of structures disposed over the top surface, the plurality of structures comprising a first grating, a second grating, and a third grating; and

a cover glass disposed over the top surface, the cover glass comprising an absorption region and a transparent region, wherein the absorption region comprises an absorption material.

15. The waveguide combiner of claim 14, wherein the first grating comprises a spatially varying grating.

16. The waveguide combiner of claim 14, wherein the second grating comprises a spatially varying grating.

17. The waveguide combiner of claim 14, wherein the third grating comprises a spatially varying grating.

18. A method, the method comprising:

disposing a plurality of structures over a substrate, the substrate having a top surface;

disposing a cover glass over the top surface of the substrate, wherein the cover glass comprises an absorption region and a transparent region, the transparent region disposed over each structure of the plurality of structures; and

coupling the cover glass and the substrate using an edge material.

19. The method of claim 18, further comprising disposing an aerogel material between the substrate and the cover glass.

20. The method of claim 18, wherein coupling the cover glass and the substrate further comprises disposing an adhesive material on an inner surface of the edge material and coupling the cover glass and the substrate using the adhesive material.