CLAIMS

1. A device for altering vergence of light to improve and/or correct human vision of an electronic display, the device comprising:

a refractive element comprising at least one convex or plano-convex structure, that refracts rays, emitted from a pixel of an electronic display, at a predetermined vergence adapted for correcting a human vision condition selected from the list comprising presbyopia, hyperopia, myopia and astigmatism;

wherein the refractive element is located directly adjacent or on the electronic display; and

wherein the at least one convex or plano-convex structure substantially overlaps the pixel of the electronic display; and

wherein the device is housed or located in a film or casing; and

wherein the device produces a sharp image projected onto a retina.

2. The device of claim 1, wherein the at least one convex or plano-convex structure is tilted and/or shifted from the pixel of the electronic display thereby resulting in a prism correction.

3. The device of claim 1, wherein the refractive element comprises two or more convex or plano-convex structures positioned in front of two or more pixels of the electronic display; and

wherein the two or more convex or plano-convex structures have different dimensions thereby resulting in a prism correction.

4. The device of claim 1, wherein the convex or the plano-convex structure has a radius that collimates the rays emitted from the pixel.

5. The device of claim 1, wherein a thickness of the convex or the plano-convex structure is between about 100 µm and about 250 µm.

6. The device of claim 5, wherein the thickness of the convex or the plano-convex structure is between about 180 µm and about 190 µm.

7. The device of claim 1, wherein a radius of curvature of the convex or the plano-convex structure is between about 50 µm and about 200 µm.

8. The device of claim 7, wherein the radius of curvature of the convex or the plano-convex structure is between about 130 µm and about 140 µm.

9. The device of claim 1 wherein the refractive element collimates rays emitted from the pixel at a predetermined angle.

10. The device of claim 1, wherein refracted rays are substantially parallel.

11. The device of claim 1, wherein the refractive element is formed of a clear polymer.

12. The device of claim 11, wherein the clear polymer has a refractive index of between about 1.5 and about 1.8.

13. A method of improving and/or correcting human vision of an electronic display, the method including the steps of:

refracting rays, emitted from a pixel of the electronic display, through a refractive element of a device at a predetermined vergence adapted for correcting a human vision condition selected from the list comprising presbyopia, hyperopia, myopia and astigmatism;

wherein the refractive element comprises at least one convex or plano-convex structure; and

wherein the at least one convex or plano-convex structure substantially overlaps the pixel of the electronic display; and

wherein the refractive element is located directly adjacent or on the electronic display, to improve and/or correct human vision of an electronic display; and

wherein the device is housed or located in a film or casing; and

wherein the method produces a sharp image projected onto a retina.

14. The method of claim 13, wherein the at least one convex or plano-convex structure is tilted and/or shifted from the pixel of the electronic display thereby resulting in a prism correction.

15. The method of claim 13 or 14, wherein the refractive element comprises two or more convex or plano-convex structures positioned in front of two or more pixels of the electronic display and wherein the two or more convex or plano-convex structures have different dimensions thereby resulting in a prism correction.

16. A method of forming a device for altering vergence of light to improve and/or correct human vision of an electronic display, the method including the steps of:

forming in a device at least one refractive element comprising at least one convex or plano-convex structure that refracts rays, emitted from a pixel of an electronic display, at a predetermined vergence adapted for correcting a human vision condition selected from the list comprising presbyopia, hyperopia, myopia and astigmatism,

wherein the refractive element is located directly adjacent or on the electronic display, and

wherein the at least one convex or plano-convex structure substantially overlaps the pixel of the electronic display; and wherein the device is housed or located in a film or casing.

17. The method of claim 16, wherein the at least one convex or plano-convex structure is tilted and/or shifted from the pixel of the electronic display thereby resulting in a prism correction.

18. The method of claim 16 or 17, wherein the refractive element comprises two or more convex or plano-convex structures positioned in front of two or more pixels of the electronic display and wherein the two or more convex or plano-convex structures have different dimensions thereby resulting in a prism correction.