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;

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;

wherein the device produces a sharp image projected onto a retina; and

wherein a viewing distance between the pixel and a front of the retina is between 5 cm and 100 cm.

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;

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;

wherein the method produces a sharp image projected onto a retina; and

wherein a viewing distance between the pixel and a front of the retina is between 5 cm and 100 cm.

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,

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 a viewing distance between the pixel and a front of the retina is between 5 cm and 100 cm.

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.