CLAIMS

1. A contact lens comprising:

a hydrogel skirt, wherein the hydrogel skirt is molded into a shape of the contact lens, with an arcuate back surface placed proximate to a user's cornea during a use of the contact lens;

an encapsulated hard lens element, wherein the encapsulated hard lens element is gas impermeable and impermeable to fluid flow through its body, wherein the encapsulated hard lens element is encapsulated within the hydrogel skirt, the encapsulated hard lens element comprising a dual chamber structure with spacers that determine the height of each chamber in the dual chamber structure, the spacers being 100 microns or less;

a first region of the hydrogel skirt, wherein the first region of the hydrogel skirt is that portion of the hydrogel skirt that is between a surface of the encapsulated hard lens element and a cornea of a user during the use of the contact lens; and

a means within the contact lens of enhancing oxygen levels within a fluid in contact with the first region comprising a first laser cut pore in the hard lens element traversing at least one of the spacers, the first laser cut pore having a diameter of between 10 and 20 microns and positioned to be in a fluid contact with the first region.

2. The contact lens according to Claim 1, wherein the first laser cut pore is back-filled with a silicone containing material.

3. The contact lens according to Claim 1, wherein the first laser cut pore is one of a plurality of laser cut pores, wherein the plurality of laser cut pores traverse the body of the hard lens element.

4. The contact lens according to Claim 3, wherein the plurality of laser cut pores are back-filled with the silicone containing material.

5. The contact lens according to Claim 1, wherein the means within the contact lens of enhancing oxygen levels comprises a layer of absorptive material, wherein the absorptive material absorbs oxygen gas.

6. The contact lens according to Claim 7, wherein the absorptive material comprises hemoglobin.

7. The contact lens according to Claim 7, wherein the absorptive material comprises hemocyanin.

8. The contact lens according to Claim 7, wherein the absorptive material comprises a porphyrin based material.

9. The contact lens according to Claim 7, wherein the absorptive material comprises a metal organic framework molecular species.

10. A method of enhancing oxygen levels at a user's cornea when the user wears a contact lens, the method comprising:

forming a pore through a contact lens encapsulated hard lens element the encapsulated hard lens element comprising a dual chamber structure with spacers that determine the height of each chamber in the dual chamber structure, the spacers being 100 microns or less;

backfilling the pore with a silicone containing polymer; and

providing the contact lens comprising the contact lens encapsulated hard lens element, wherein during the use of the contact lens, oxygen diffuses through the pore with the silicone containing polymer to a region of tear fluid underneath the contact lens.

11. A method of enhancing oxygen levels at a user's cornea when the user wears a contact lens as claimed in any one of claims 1-9, the method comprising:

forming a layer of oxygen absorptive material within a body of the contact lens;

placing the contact lens in an ambient with high partial pressure of oxygen; and

providing the contact lens, wherein during a use of the contact lens, oxygen diffuses from the absorptive material to a region of tear fluid underneath the contact lens.