Claims:

1. A colored hydrogel contact lens, comprising:
a hydrogel material; at least one cosmetic colored film;
wherein the cosmetic colored film is made of a thermal plastic material and is surrounded by the hydrogel material, wherein the thermal plastic material is selected from the group consisting of acrylic, PLA, PGA, copolymers thereof, polyester, polyethylene and polypropylene, wherein the cosmetic film is embossed to raise a cosmetic pattern to create a 3D graphic, wherein the cosmetic film is porous to achieve a good adhesion between the cosmetic film to a lens forming material for avoiding the delamination.
wherein the cosmetic film is flexible and has a thickness at least 5 micron and less than 80 micron,
wherein the colored hydrogel contact lens is capable of absorbing from 10% to 75% by weight of water when being fully hydrated,
wherein the contact lens has an anterior surface and an opposite posterior surface and a circumferential edge where the anterior and posterior surfaces are tapered off,
wherein the contact lens comprises a central optical zone, a peripheral zone surrounding the central optical zone, and an edge zone surrounding the peripheral zone.

2. The contact lens of claim 1, wherein the lens body is composed of a silicone hydrogel material.

3. The contact lens of claim 1, wherein the lens body is composed of a non-silicone hydrogel material.

4. The contact lens of claim 1, wherein the cosmetic film has a donut shape with an empty circle in the center corresponding to non-opaque pupil section when the contact lens is on-eye and centered.

5. The contact lens of claim 1, wherein the cosmetic film is a tinted film made from a reactive dye with thermal plastic material or thermal setting material.

6. The contact lens of claim 1, wherein the cosmetic film is printed with a cosmetic

pattern.

7. The contact lens of claim 1, wherein the cosmetic film has a shape of a donut which is concentric with the center of the contact lens and has a substantially even exterior peripheral edge having a diameter of from 8 mm to 14 mm.

8. The contact lens of claim 1, wherein the cosmetic film has an opaque colored pattern and partially or completely overly the lens iris's area when the contact lens is on-eye and centered, provided that the innermost border or edge, closest to the geometric center of the lens, of the flat annular ring is 5 mm to 12 mm from the geometric center of the contact lens.

9. A method for producing colored hydrogel contact lenses each having at least one cosmetic colored film embedded therein, comprising the steps of:

(1) obtaining a polymerizable composition for forming a hydrogel material,

(2) obtaining a lens mold, wherein the lens mold comprises a male mold half having a first molding surface and a female mold half having a second molding surface, wherein the male and female mold halves are configured to receive each other such that a mold cavity is formed between the first and second molding surfaces when the mold is closed;

(3) obtaining a cosmetic colored film, wherein the cosmetic colored film is made of a thermal plastic material, wherein the thermal plastic material is selected from the group consisting of acrylic, PLA, PGA, copolymers thereof, polyester, polyethylene and polypropylene, wherein the cosmetic film is embossed to raise a cosmetic pattern to create a 3D graphic, wherein the cosmetic film is porous to achieve a good adhesion between the cosmetic film to a lens forming material for avoiding the delamination.

wherein the cosmetic film is flexible and has a thickness at least 5 micron and less than 80 micron;

(4) placing the cosmetic colored film at a specified position in the lens mold and introducing the polymerizable composition in the lens mold, wherein the cosmetic colored film is immersed in the polymerizable composition in the lens mold;

(5) curing the polymerizable composition in the lens mold to form a cosmetic hydrogel contact lens having the cosmetic colored film surrounded by the hydrogel material;

(6) separating the lens mold obtained in step (5) into the male and female mold

halves, with the cosmetic hydrogel contact lens adhered on a lens-adhered mold half which is one of the male and female mold halves;

(7) removing the cosmetic hydrogel contact lens from the lens-adhered mold half; and

(8) subjecting the cosmetic hydrogel contact lens to post-molding processes including a hydration process and one or more other processes selected from the group consisting of extraction, surface treatment, packaging, sterilization, and combinations thereof.