Claims

We claim:

1. A method for stabilizing contact lenses comprising: a) providing a lens design with a nominal set of stabilization zone parameters, b) applying a merit function to the lens design based on balancing moments of momentum, and c) creating a contact lens design with improved stabilization based on the application of said merit functions to the lens design with a nominal set of stabilization zone parameters.

2. The method of claim 1 wherein steps b and c are conducted iteratively.

3. The method of claim 2 wherein a virtual model that simulates the effects of eye mechanics is used to validate contact lens designs.

4. The method of claim 3 wherein blinking is one of the eye mechanics and adjusts the stabilization scheme accordingly.

5. A method for stabilizing contact lenses comprising a) providing a lens design with a nominal set of stabilization zone parameters, b) evaluating the on-eye performance of the lens design, c) calculating a merit function based on said performance, and c) optimizing the stabilization zone parameters by applying the merit function.

6. The method of claim 5 performed iteratively with a virtual model.

7. The method of claim 6 wherein the model simulates the effects of eye mechanics.

8. The method of claim 7 wherein said mechanics include blinking.

9. A contact lens made according the method of claim 1.

10. A contact lens made according to the method of claim 2.

11. A contact lens made according the method of claim 3.

12. A contact lens designed with improved stabilization relative to a nominal stabilized design wherein the moments of momentum are balanced.

We claim:

1. A method for stabilizing contact lenses comprising: a) providing a lens design with a initial set of stabilization zone parameters, b) applying a merit function to the lens design based on balancing moments of momentum, and c) creating a contact lens design with improved stabilization based on the application of said merit function to the lens design with a initial set of stabilization zone parameters; wherein said merit function is selected from the group consisting of

$$MF_1=\sqrt{W_R(\mathrm{Rot}/R_{REF})^2+W_C(\mathrm{Cent}/C_{REF})^2} \quad \text{(Equation 1)}$$

$$MF_2=\frac{}{\sqrt{W_X(X_{range}/X_{REF})^2+W_Y(Y_{range}/Y_{REF})^2+W_\theta(\theta_{range}/\theta_{REF})^2}} \quad \text{(Equation 2)}$$

and

$$MF_3=\frac{}{\sqrt{(\mathrm{Rod}/R_{REF})^2+W_C(\mathrm{Cent}/C_{REF})^2+W_S(\mathrm{Stab}/S_{REF})^2}} \quad \text{(Equation 3)}$$

and wherein; W_R and W_C are weighting factors and can take values between 0 and 1; X_{Range}, Y_{Range} and θ_{Range} are lens performance variables in stability in horizontal direction vertical direction and rotation of the completed lens design; X_{REF}, Y_{REF} and θ_{REF} are lens performance variables in stability in horizontal direction, vertical direction and rotation of the initial lens design; W_X, W_Y, W_S and W_θ are weighting factors. Rot Cent and Stab are lens performance variables in rotation centration and stability of the completed lens design; R_{REF}, C_{REF} and S_{REF} are lens performance variables in rotation centration and stability of the initial lens design, and R_{REF}, C_{REF} and S_{REF} are weighting factors.

2. The method of claim 1 wherein steps b and c are conducted iteratively.

3. The method of claim 2 wherein a virtual model that simulates the effects of eye mechanics is used to determine the contact lens designs.

4. The method of claim 3 wherein blinking is one of the eye mechanics and the simulated effects of blinking is used to adjust the stabiliztaion.

5. A contact lens made according to the method of claim 1.

6. A contact lens made according to the method of claim 2.

7. A contact lens made according to the method of claim 3.