

CLAIMS

1. A customized IOL for a specific eye of a specific patient comprising:
a clear optic comprising an astigmatic axis, and
an optic border surrounding a clear lens including two positioning holes located on opposite sides of the clear optic and desirably oriented with respect to the cylinder axis of the astigmatic correction.
2. The customized IOL of claim 1, where in the holes in the optic border surrounding the clear lens are distinguishably shaped.
3. The customized IOL of claim 1, wherein the clear optic comprises a correction of at least one high-order aberration based on preoperative measurements for the specific eye of the specific patient.
4. The customized IOL of claim 3 further comprising haptics positioned based on the preoperative measurements for the specific eye of the specific patient.
5. The customized IOL of claim 4, wherein the haptics are positioned to minimize negative dysphotopsia when the astigmatic axis of the IOL is properly oriented in the specific eye of the specific patient.
6. The customized IOL of claim 3 further comprising a power with a precision of 0.05 D or 0.1 D increments in sphere and cylinder and increments of 0.05-micron root mean square error in total high-order aberrations or in any specific aberration.
7. The customized IOL of claim 3 further comprising a spherical aberration offset of 0.1 to 0.3-micron root mean square error in a central 2 or 3 mm zone of the customized IOL's optic.

8. The customized IOL of claim 1, wherein the clear optic further comprises an astigmatic correction specific in magnitude and orientation based on preoperative measurements for a specific eye of a specific patient.

9. The customized IOL of claim 2, wherein the optic border further comprises at least two distinguishable markings that have a dimension between 50 microns and 200 microns at specific azimuthal positions relative to preoperative measurements for the specific eye of the specific patient.

10. The customized IOL of claim 9, wherein the distinguishable markings are placed at the 3 o'clock and 9 o'clock positions.

11. The customized IOL of claim 1, wherein the clear optic comprises a square edge on its posterior outer edge to minimize posterior capsule opacification.

12. The customized IOL of claim 1 further comprises a haptic with square posterior haptic edges.

13. An internal subtractive method for customizing IOLs comprising:
pairing a diffusive species with a lens blank matrix with a specific desired property;
impregnating the diffusive species into the lens blank matrix;
conducting a spatially-resolved reaction between the diffusive species and the lens blank matrix; and
extracting excess diffusive species to create a lens that is customized based on preoperative measurements of a specific eye of a specific patient.

14. A method of providing a customized IOL, comprising:
evaluating patient-specific measurement data;
compiling patient-specific measurement data;
manufacturing the customized IOL based on patient-specific measurement data;

delivering the customized IOL to a surgeon; and
matching the customized IOL to the patient-specific measurement data.

15. The method of claim 14, wherein manufacturing the customized IOL further comprises applying a subtractive process to a lens blank.

16. The method of claim 14, wherein manufacturing the customized IOL further comprises applying an additive process to a lens blank.

17. The method of claim 14, wherein manufacturing the customized IOL further comprises applying an internal additive process on a lens blank matrix.

18. The method of claim 14, wherein manufacturing the customized IOL further comprises applying an internal subtractive process on a lens blank matrix.

19. The method of claim 14, wherein manufacturing the customized IOL further comprises applying an internal redistributive process on a lens blank matrix.

20. The method of claim 14, wherein delivering the customized IOL to a surgeon further comprises utilizing any global, regional, or local methodologies available for package delivery with at least one of encryption, data security measures, or HIPAA compliance.