CLAIMS:

1. A system for assisting in corneal cross-linking, the system comprising:

a body portion having a top side and a bottom side, wherein the bottom side includes a concave portion configured for conforming placement on an epithelial layer of a cornea for uniformly distributing pressure across the epithelial layer when the device is in use;

a plurality of epithelial spikes, each epithelial spike having a height of approximately 50 microns and is dimensioned to perforate the epithelial layer without penetrating Bowman's layer, wherein the plurality of epithelial spikes is positioned on the bottom side of the body portion, the plurality of epithelial spikes being arranged in a predetermined pattern configured to create corresponding micro-perforations in the epithelial layer; and

a delivery system configured to enable delivery of riboflavin and oxygen through the micro-perforations into the corneal stroma.

2. The system of claim 1, wherein the plurality of epithelial spikes is positioned on the concave portion.

3. The system of claim 1 or claim 2, wherein the body portion is constructed from an elastomer including one or more of silicone, latex, and rubber.

4. The system of any one of the above claims, wherein the plurality of epithelial spikes is constructed of silicone.

5. The system of any one of the above claims, wherein the plurality of epithelial spikes is evenly distributed across the bottom side of the body portion.

6. The system of claim 1, wherein the delivery system is integrated with the body portion.

7. The system of claim 1 or claim 6, wherein the delivery system is configured to control the amount and rate of riboflavin and oxygen delivery to the corneal stroma based on the plurality of epithelial spikes.

8. The system of claim 1 or claim 6 or claim 7, wherein the delivery system includes the plurality of epithelial spikes being configured as solid microneedles.

9. The system of claim 1 or claim 6 or claim 7, wherein the delivery system includes the plurality of epithelial spikes being configured as hollow microneedles.

10. The system of claim 1 or claim 6 or claim 7, wherein the delivery system includes the plurality of epithelial spikes being configured as dissolving microneedles.

11. The system of any one of the above claims, wherein the body portion and the plurality of epithelial spikes are constructed from a single piece of material.

12. The system of claim 1, wherein the predetermined pattern is configured based on a measured defect or characteristic of the cornea.

13. The system of claim 1, wherein each epithelial spike is dimensioned to penetrate the epithelial layer to a controlled depth without penetrating stromal tissue.

14. The system of claim 1, wherein the predetermined pattern is configured to modify a refractive property of the cornea.

15. The system of claim 1, wherein the delivery system is configured to control a volume and/or rate of delivery of riboflavin and oxygen to the corneal stroma.