CLAIMS

1. A contact lens comprising:

    a. a hydrogel lens body having a modulus (M); and

    b. a non-expandable object having a surface energy (SE) embedded within the hydrogel lens body,

    wherein the hydrogel of the hydrogel lens body is a silicone hydrogel; the hydrogel lens body is formed from a polymerisable composition comprising at least 10 wt% hydrophilic N-vinyl amide-containing monomer that contains a single N-vinyl polymerizable group and no other polymerizable group, the hydrogel lens body comprises an N-vinyl amide component, which is a polymer or copolymer of the hydrophilic N-vinyl amide-containing monomer; and wherein the hydrogel lens body is characterized by a bonding factor, X, of 0.01 to 1.0,

    wherein X is calculated using Equation I:

    $$X=SE/(M*100) \qquad (I)$$

    wherein M is in units of megapascal (MPa), and SE is in units of millinewton per meter (mN/m).

2. The contact lens of claim 1, wherein the hydrogel lens body has a percent swell of at least 5% to about 30%.

3. The contact lens of claim 1 or 2, wherein the hydrogel lens body has an equilibrium water content of about 10% to about 50%.

4. The contact lens of any one of claims 1 to 3, wherein the modulus (M) of the hydrogel lens body is at least 0.5 MPa.

5. The contact lens of any one of claims 1 to 4, wherein the surface energy (SE) of the non-expandable object is less than 40 mN/m.

6. The contact lens of any one of claims 1 to 5, wherein X in Formula I is less than 0.75.
7. The contact lens of any one of claims 1 to 6, wherein the non-expandable object has a surface area of at least 5 mm^2.
8. The contact lens of any one of claims 1 to 7, wherein the non-expandable object comprises at least one electronic component.
9. The contact lens of any one of claims 1 to 8, wherein the non-expandable object comprises a surface coating.
10. The contact lens of claim 9, wherein the surface coating is selected from polyimide, polydimethylsiloxane, and parylene.
11. The contact lens of any one of claims 1 to 10, wherein the non-expandable object comprises a lens.
12. The contact lens of any one of claims 1 to 11, wherein the non-expandable object is located in a cavity within the hydrogel lens body.
13. A method of manufacturing a contact lens, said method comprising:
    a. contacting a non-expandable object having a surface energy (SE) with a polymerizable hydrogel composition comprising at least 10 wt% of a hydrophilic N-vinyl amide-containing monomer that contains a single N-vinyl polymerizable group and no other polymerizable group;
    b. curing the polymerizable hydrogel composition and forming a hydrogel lens body having a modulus (M) with the non-expandable object embedded within the hydrogel lens body; and

c. washing the hydrogel lens body with a washing liquid to form a contact lens comprising a hydrated hydrogel lens body and a non-expandable object embedded within the washed hydrogel lens body,

wherein the hydrogel of the hydrogel lens body is a silicone hydrogel and the hydrogel lens body comprises an N-vinyl amide component, which is a polymer or copolymer of the hydrophilic N-vinyl amide-containing monomer, and is characterized by a bonding factor, X, of 0.01 to 1.0,

wherein X is calculated using Equation I:

$$X=SE/(M*100) \qquad (I)$$

wherein M is in units of megapascal (MPa), and SE is in units of millinewton per meter (mN/m).

14. The method of claim 13, wherein the hydrogel lens body is formed by cast molding.
15. The method of claim 13 or 14, wherein the hydrogel lens body is formed by lathing.
16. The method of any one of claims 13 to 15, wherein the hydrogel lens body has a percent swell of at least 5% to about 30%.
17. The method of any one of claims 13 to 16, wherein the washing liquid comprises an organic solvent.
18. The method of any one of claims 13 to 17, wherein the hydrogel lens body has an equilibrium water content of about 10% to about 50%.
19. The method of any one of claims 13 to 18, wherein the polymerizable hydrogel composition comprises N-vinyl-N-methyl acetamide (VMA), or N-vinyl pyrrolidone (NVP), or N-vinyl formamide, or N-vinyl acetamide, or N-vinyl-N-ethyl acetamide, or N-vinyl isopropylamide, or N-vinyl caprolactam, or N-vinyl-N-ethyl formamide, or any combination thereof.

20. The method of claim 19, wherein the polymerizable hydrogel composition comprises from about 25 wt.% up to about 75 wt.% of VMA or NVP, or a combination thereof.
21. The method of any one of claims 13 to 20, wherein during the washing step a space forms between the non-expandable object and the hydrogel lens body such that the non-expandable object is located in a cavity within the hydrogel lens body.