What is claimed is:

1. A method for producing coated silicone hydrogel contact lenses each having a hydrogel coating thereon, comprising the steps of:

(1) obtaining a preformed silicone hydrogel contact lens comprising a silicone hydrogel material as lens bulk material;

(2) forming a base coating on the preformed silicone hydrogel contact lens according to a coating process to form a treated silicone hydrogel contact lens having the base coating thereon, wherein the solution-coating process comprises dipping the preformed silicone hydrogel contact lens in a bath of a coating solution for a coating period of time, wherein the coating solution has a pH of from 0 to about 4.5 and comprises from about 0.01% to about 2.5% by weight of a polyanionic polymer, wherein the polyanionic polymer is a homo- or copolymer of acrylic acid or C_1-C_3 alkylacrylic acid, wherein the coating solution is prepared by dissolving the polyanionic polymer is a mixture of water and one or more organic solvents, an organic solvent, or a mixture of one or more organic solvent;

(3) rinsing the treated silicone hydrogel contact lens obtained in step (2) with a mixture of water and one or more organic solvent miscible with water for a first rinsing period of time;

(4) rinsing the treated silicone hydrogel contact lens obtained in step (3) with a buffered saline for a second rinsing period of time, wherein the buffered saline has a pH of from about 7.6 to about 8.5 and a salt concentration of at least 20 mM; and

(5) heating the treated silicone hydrogel contact lens having the base coating thereon in an aqueous solution having a pH of from about 6.5 to about 9.5 and including a water-soluble, thermally-crosslinkable hydrophilic polymeric material at a temperature from about 60°C to about 140°C to form a coated silicone hydrogel contact lens that has a hydrogel coating thereon, a polyquaternium-1 uptake of less than 0.4 micrograms/lens, and a friction rating of about 2 or lower after 30 cycles of digital rubbing test, wherein the hydrogel coating is covalently attached onto the base coating.

2. The method of claim 1, wherein the buffered saline has a salt concentration of at least 25 mM.

3. The method of claim 2, wherein the polyanionic polymer is polyacrylic acid, polymethacrylic acid, poly(ethylacrylic acid), poly(propyacrylic acid), poly(acrylic acid-co-methacrylic acid), poly(acrylic acid-co-ethylacrylic acid), poly(acrylic acid-co-propylacrylic acid), poly[ethylacrylic acid-co-(meth)acrylic acid], poly[propylacrylic acid-co-(meth)acrylic acid], poly[ethylacrylic acid-co-propylacrylic acid], or mixtures thereof, wherein the polyanionic polymer has a weight average molecular weight of from about 50,000 to about 10,000,000 Daltons.

4. The method of claim 3, wherein the coating solution comprises about 50% or less by weight of

any organic solvent, wherein the buffered saline is a phosphate-buffered or bicarbonate-buffered saline.

5. The method of claim 3, wherein the coating solution comprises about 50% or less by weight of water, wherein the buffered saline is a phosphate-buffered or bicarbonate-buffered saline.
6. The method of claim 4, wherein the buffered saline comprises a sodium or potassium salt of phosphoric acid, carbonic acid, acetic acid, and combinations thereof.
7. The method of claim 6, wherein the coating period of time is from about 5 minutes to about 240 minutes, wherein the first and second rinsing periods of time independent of each other are from about 5 minutes to about 240 minutes.
8. The method of claim 7, wherein the coated silicone hydrogel contact lens having the hydrogel coating thereon has a polyquaternium-1 uptake (“PU”) of about 0.35 micrograms/lens or less.
9. The method of claim 8, wherein the aqueous solution in step (5) a lens packaging solution, wherein the step of heating is performed by autoclaving the treated silicone hydrogel contact lens immersed in the lens packaging solution in a sealed lens package at a temperature of from about 115°C to about 125°C for approximately 20-90 minutes.
10. The method of claim 9, wherein the thermally-crosslinkable hydrophilic polymeric material is a partially-crosslinked polymeric material that comprises a three-dimensional network and thermally-crosslinkable groups within the network or being attached to the network.
11. The method of claim 10, wherein the thermally-crosslinkable hydrophilic polymeric material comprises azetidinium groups and is a partial reaction product of at least one azetidinium-containing polymer with at least one hydrophilicity-enhancing agent having at least one carboxyl, primary amine, secondary amine, or thiol group.
12. The method of claim 5, wherein the buffered saline comprises a sodium or potassium salt of phosphoric acid, carbonic acid, acetic acid, and combinations thereof.
13. The method of claim 12, wherein the coating period of time is from about 5 minutes to about 240 minutes, wherein the first and second rinsing periods of time independent of each other are from about 5 minutes to about 240 minutes.
14. The method of claim 13, wherein the coated silicone hydrogel contact lens having the hydrogel coating thereon has a polyquaternium-1 uptake (“PU”) of about 0.35 micrograms/lens or less.
15. The method of claim 14, wherein the aqueous solution in step (5) a lens packaging solution, wherein the step of heating is performed by autoclaving the treated silicone hydrogel contact lens immersed in the lens packaging solution in a sealed lens package at a temperature of from about 115°C to about 125°C for approximately 20-90 minutes.
16. The method of claim 15, wherein the thermally-crosslinkable hydrophilic polymeric material is a

partially-crosslinked polymeric material that comprises a three-dimensional network and thermally-crosslinkable groups within the network or being attached to the network.

17. The method of claim 16, wherein the thermally-crosslinkable hydrophilic polymeric material comprises azetidinium groups and is a partial reaction product of at least one azetidinium-containing polymer with at least one hydrophilicity-enhancing agent having at least one carboxyl, primary amine, secondary amine, or thiol group.

18. The method of claim 1, wherein the polyanionic polymer is polyacrylic acid, polymethacrylic acid, poly(ethylacrylic acid), poly(propyacrylic acid), poly(acrylic acid-co-methacrylic acid), poly(acrylic acid-co-ethylacrylic acid), poly(acrylic acid-co-propylacrylic acid), poly[ethylacrylic acid-co-(meth)acrylic acid], poly[propylacrylic acid-co-(meth)acrylic acid], poly[ethylacrylic acid-co-propylacrylic acid], or mixtures thereof, wherein the polyanionic polymer has a weight average molecular weight of from about 50,000 to about 10,000,000 Daltons, wherein the coating solution comprises about 50% or less by weight of any organic solvent, wherein the buffered saline is a phosphate-buffered or bicarbonate-buffered saline, wherein the solution-coating procedure is free of step (3), wherein the buffered saline comprises a sodium or potassium salt of phosphoric acid, carbonic acid, acetic acid, and combinations thereof, wherein the coating period of time is from about 5 minutes to about 240 minutes, wherein the first and second rinsing periods of time independent of each other are from about 5 minutes to about 240 minutes, wherein the coated silicone hydrogel contact lens having the hydrogel coating thereon has a polyquaternium-1 uptake (“PU”) of about 0.35 micrograms/lens or less.

19. The method of claim 18, wherein the aqueous solution in step (5) a lens packaging solution, wherein the step of heating is performed by autoclaving the treated silicone hydrogel contact lens immersed in the lens packaging solution in a sealed lens package at a temperature of from about 115°C to about 125°C for approximately 20-90 minutes, wherein the thermally-crosslinkable hydrophilic polymeric material is a partially-crosslinked polymeric material that comprises a three-dimensional network and thermally-crosslinkable groups within the network or being attached to the network, wherein the thermally-crosslinkable hydrophilic polymeric material comprises azetidinium groups and is a partial reaction product of at least one azetidinium-containing polymer with at least one hydrophilicity-enhancing agent having at least one carboxyl, primary amine, secondary amine, or thiol group.

20. The method of claim 1, wherein the polyanionic polymer is polyacrylic acid, polymethacrylic acid, poly(ethylacrylic acid), poly(propyacrylic acid), poly(acrylic acid-co-methacrylic acid), poly(acrylic acid-co-ethylacrylic acid), poly(acrylic acid-co-propylacrylic acid), poly[ethylacrylic acid-co-(meth)acrylic acid], poly[propylacrylic acid-co-(meth)acrylic acid], poly[ethylacrylic acid-

co-propylacrylic acid], or mixtures thereof, wherein the coating solution comprises about 50% or less by weight of water, wherein the buffered saline is a phosphate-buffered or bicarbonate-buffered saline, wherein the solution-coating procedure is free of step (3), wherein the buffered saline comprises a sodium or potassium salt of phosphoric acid, carbonic acid, acetic acid, and combinations thereof, wherein the coating period of time is from about 5 minutes to about 240 minutes, wherein the first and second rinsing periods of time independent of each other are from about 5 minutes to about 240 minutes, wherein the coated silicone hydrogel contact lens having the hydrogel coating thereon has a polyquaternium-1 uptake ("PU") of about 0.35 micrograms/lens or less, wherein the aqueous solution in step (5) a lens packaging solution, wherein the step of heating is performed by autoclaving the treated silicone hydrogel contact lens immersed in the lens packaging solution in a sealed lens package at a temperature of from about 115°C to about 125°C for approximately 20-90 minutes, wherein the thermally-crosslinkable hydrophilic polymeric material is a partially-crosslinked polymeric material that comprises a three-dimensional network and thermally-crosslinkable groups within the network or being attached to the network, wherein the thermally-crosslinkable hydrophilic polymeric material comprises azetidinium groups and is a partial reaction product of at least one azetidinium-containing polymer with at least one hydrophilicity-enhancing agent having at least one carboxyl, primary amine, secondary amine, or thiol group.