Claims

1. A composition comprising:

a. water;

b. an alkanolamine having from two to seven carbon atoms;

c. a glycol ether;

d. a pH adjustor; and

e. a surface-active hydrophobic acid chosen from octanoic acid and nonanoic acid.

2. The composition of claim 1, wherein the alkanolamine is chosen from aminoethylethanolamine, N-methylaminoethanol, aminoethoxyethanol, aminoethoxyethoxyethanol, methoxypropylamine, butoxyisopropylamine, 2-ethylhexylisopropoxyamine, ethanolpropylamine, ethylethanolamine, n-hydroxyethylmorpholine, aminopropyldiethanolamine, dimethylaminoethoxyethanol, diethanolamine, N- methyldiethanolamine, monoethanolamine, triethanolamine, 1-amino-2-propanol, 3-amino propanol, diisopropylamine, aminomethylpropanediol, N,N-dimethylaminomethylpropanediol, aminoethylpropanediol, N,N-dimethylaminoethylpropanediol, isopropylamine, 2-amino-1-butanol, aminomethylpropanol, aminodimethylpropanol, N,N-dimethylaminomethylpropanol, isobutanolamine, diisopropanolamine, 3-amino,4-hydroxyoctane, 2-aminobutylanol, tris(hydroxymethyl)aminomethane, N,N-dimethyltris(hydroxymethyl)aminomethane, hydroxyproplyamine, benzylamine, hydroxyethyl amine, tris(hydroxyethyl)aminomethane, diglycolamine, and combinations thereof.

3. The composition of claim 2, wherein the alkanolamine is chosen from monoethanolamine, isopropanolamine, and diisopropanolamine.

4. The composition of claim 1, wherein the glycol ether possesses a methylene linking group of the formula $–(CH_2)_x-$, wherein x is an integer of from 2 to 6.

5. The composition of claim 1, wherein the glycol ether is chosen from diethylene glycol monomethyl ether, triethylene glycol monomethyl ether, diethylene glycol monoethyl ether, triethylene glycol monoethyl ether,

ethylene glycol monopropyl ether, ethylene glycol monobutyl ether, diethylene glycol monobutyl ether, triethylene glycol monobutyl ether, ethylene glycol monohexyl ether, diethylene glycol monohexyl ether, ethylene glycol phenyl ether, diethylene glycol phenylether, hexaethylene glycol monophenyl ether, propylene glycol methyl ether, dipropylene glycol methyl ether, tripropylene glycol methyl ether, dipropylene glycol dimethyl ether, dipropylene glycol ethyl ether, propylene glycol n-propyl ether, dipropylene glycol n-propyl ether, tripropylene glycol n-propyl ether, propylene glycol n-butyl ether, dipropylene glycol n-butyl ether, tripropylene glycol n-butyl ether, and dipropylene glycol phenyl ether, propylene glycol phenyl ether.

6. The composition of claim 5, wherein the glycol ether is chosen from triethylene glycol monobutyl ether, diethylene glycol monobutyl ether. ethylene glycol monobutyl ether, triethylene glycol monohexyl ether, diethylene glycol monohexyl ether, and ethylene glycol monohexyl ether.

7. The composition of claim 5, wherein the glycol ether is ethylene glycol monohexyl ether.

8. The composition of claim 1, wherein the pH adjustor is chosen from choline hydroxide and tetraethylammonium hydroxide.

9. The composition of claim 1, further comprising a corrosion inhibitor.

10. The composition of claim 9 wherein the corrosion inhibitor is chosen from phosphorous acid, hypophosphorous acid, sulfurous acid, diethyl hydroxylamine, hydroxylamine sulfate, sodium metabisulfite, potassium metabisulfite, ammonium metabisulfite, quaternary surfactants chosen from as *N*-alkyl-*N*-benzyl-*N*,*N*-dimethylammonium chloride, and 4-(3-phenylpropyl)pyridine, acetic acid, acetone oxime, acrylic acid, adipic acid, alanine, arginine, asparagine, aspartic acid, betaine, dimethyl glyoxime, formic acid, fumaric acid, gluconic acid, glutamic acid, glutamine, glutaric acid, glyceric acid, glycolic acid, glyoxylic acid, histidine, iminodiacetic acid, isophthalic acid, itaconic acid, lactic acid, leucine, lysine, maleic acid, maleic anhydride, malic acid, malonic acid, mandelic acid, 2,4-pentanedione, phenylacetic acid, phenylalanine, phthalic acid, proline, propionic acid, pyrocatecol, pyromellitic acid, quinic acid, serine, succinic acid, tartaric acid,

terephthalic acid, trimellitic acid, trimesic acid, tyrosine, valine, xylitol, oxalic acid, tannic acid, picolinic acid, 1,3-cyclopentanedione, catechol, pyrogallol, resorcinol, hydroquinone, cyanuric acid, barbituric acid, 1,2-dimethylbarbituric acid, pyruvic acid, propanethiol, benzohydroxamic acids, 2,5-dicarboxypryidine, 4-(2-hydroxyethyl)morpholine, N-aminoethylpiperazine (N-AEP), ethylenediaminetetraacetic acid, 1,2-cyclohexanediamine-N,N,N',N'-tetraacetic acid, N-(hydroxyethyl)-ethylenediaminetriacetic acid, iminodiacetic acid, 2-(hydroxyethyl)iminodiacetic acid, nitrilotriacetic acid, thiourea, 1,1,3,3-tetramethylurea, urea, urea derivatives, glycine, cysteine, glutamic acid, isoleucine, methionine, piperadine, N-(2-aminoethyl) piperadine, pyrrolidine, threonine, tryptophan, salicylic acid, p-toluenesulfonic acid, salicylhyroxyamic, 5-sulfosalicylic acid, triazole, aminotriazole, dimethylpropargyl alcohol, saccharine, and combinations thereof.

11. The composition of claim 9, wherein the corrosion inhibitor is chosen from ascorbic acid, L(+)-ascorbic acid, isoascorbic acid, ascorbic acid derivatives, sulfurous acid, ammonium sulfite, potassium sulfite, sodium sulfite, dopamine HCl, phosphorous acid, phosphinic acid, hypophosphorous acid, potassium metabisulfite, sodium metabisulfite, ammonium metabisulfite, potassium pyruvate, sodium pyruvate, ammonium pyruvate, formic acid, sodium formate, potassium formate, ammonium formate, dopamine, sulfur dioxide solution, and any combination thereof.

12. The composition of claim 9, wherein the corrosion inhibitor is chosen from ascorbic acid, phosphorous acid, hypophosphorous acid, sulfurous acid, diethyl hydroxylamine, hydroxylamine sulfate, sodium/ammonium/potassium metabisulfite and sulfite and quaternary surfactants chosen from as *N*-alkyl-*N*-benzyl-*N*,*N*-dimethylammonium chloride, and 4-(3-phenylpropyl)pyridine,

13. The composition of claim 1, further comprising a complexing agent.

14. The composition of claim 13, wherein the complexing agent is chosen from include phthalic acid, succinic acid, citric acid, tartaric acid, malic acid, gluconic acid, aspartic acid, arabitol, erythritol, glycerol, hydrogenated starch hydrolysates, isomalt, lactitol, maltitol, mannitol, sorbitol, xylitol, acetic acid, acetone oxime, acrylic acid, adipic acid, alanine, arginine, asparagine,

aspartic acid, betaine, dimethyl glyoxime, formic acid, fumaric acid, gluconic acid, glutamic acid, glutamine, glutaric acid, glyceric acid, glycerol, glycolic acid, glyoxylic acid, histidine, iminodiacetic acid, isophthalic acid, itaconic acid, lactic acid, leucine, lysine, maleic acid, maleic anhydride, malic acid, malonic acid, mandelic acid, 2,4-pentanedione, phenylacetic acid, phenylalanine, phthalic acid, proline, propionic acid, pyrocatecol, pyromellitic acid, quinic acid, serine, sorbitol, succinic acid, tartaric acid, terephthalic acid, trimellitic acid, trimesic acid, tyrosine, valine, xylitol, ethylenediamine, oxalic acid, tannic acid, picolinic acid, 1,3-cyclopentanedione, catechol, pyrogallol, resorcinol, hydroquinone, cyanuric acid, barbituric acid, 1,2-dimethylbarbituric acid, pyruvic acid, propanethiol, benzohydroxamic acids, tetraethylenepentamine, 4-(2-hydroxyethyl)morpholine, N-aminoethylpiperazine, ethylenediaminetetraacetic acid, 1,2-cyclohexanediamine-N,N,N',N'-tetraacetic acid, N-(hydroxyethyl)-ethylenediaminetriacetic acid, iminodiacetic acid, 2-(hydroxyethyl)iminodiacetic acid, nitrilotriacetic acid, amino tris(methylene phosphoric acid), hydroxyethylidine diphosphonic acid, ethylenediamino tetrakis (methylene phosphoric acid), ethylenediamino pentakis(methylene phosphoric acid), thiourea, 1,1,3,3-tetramethylurea, urea, urea derivatives, glycine, cysteine, glutamic acid, isoleucine, methionine, piperadine, N-(2-aminoethyl) piperadine, pyrrolidine, threonine, tryptophan, salicylic acid, dipicolinic acid, p-toluenesulfonic acid, 5-sulfosalicylic acid, propane-1,2,3-tricarboxylic acid, butane-1,2,3,4-tetracarboxylic acid, pentane-1,2,3,4,5-pentacarboxylic acid, trimellitic acid, trimesinic acid, pyromellitic acid, mellitic acid,

carboxylic acid group-containing oligomers and polymers derived from monomers that include one or more of acrylic acid, methacrylic acid, maleic acid, succinic acid, aspartic acid, 2-acrylamido-2-methyl-1-propanesulfonic, acrylamide, phosphonate methacrylamidopropyl trimethylammonium chloride, allyl halide,

and combinations of thereof.

15. The composition of claim 1, further comprising a water-soluble or water-dispersible polymer.

16. The composition of claim 15, wherein the water-soluble or water-dispersible polymer is chosen from methacrylic acid homopolymer and copolymers with, acrylamidomethylpropane sulfonic acid and maleic acid; maleic acid/vinyl ether copolymer; poly(vinylpyrrolidone)/vinyl acetate; phosphonated polyethyleneglycol oligomers, poly(acrylic acid), poly(acrylamide), poly(vinyl acetate), poly(ethylene glycol), polypropylene glycol), poly(styrene sulfonic acid), poly(vinyl sulfonic acid), poly(vinyl phosphonic acid), poly(vinyl phosphoric acid), poly(ethyleneimine), poly(propyleneimine), polyallylamine, polyethylene oxide, polyvinyl pyrrolidone, PPG-PEG-PPG block copolymers, PEG-PPG-PEG block copolymers, poly(vinyl alcohol), poly(hydroxyethyl)acrylate, poly(hydroxyethyl)methacrylate, hydroxyethyl cellulose, methylhydroxyethyl cellulose, hydroxypropyl cellulose, methylhydroxypropyl cellulose, xanthan gum, potassium alginate, pectin, carboxymethylcellulose, glucosamine, poly(diallyldimethylammonium) chloride, poly(2-acrylamido-2-methyl-1-propanesulfonic acid), poly(styrenesulfonic acid), polyvinyl pyrrolidone, PVA-poly(2-acrylamido-2-methyl-1-propanesulfonic acid) copolymers, polyethyleneglycolated) methacrylate/acrylate copolymers, poly (2-methacryloxyethyltrimethylammonium chloride), and copolymers thereof, dimethylaminomethacrylate polymers and compolymers thereof, trimethylammonium methylmethacrylate polymers and copolymers thereof, dimethylaminomethacrylate polymers and compolymers thereof, trimethylammonium methylmethacrylate polymers and copolymers thereof, and combinations thereof.

17. The composition of claim 1, further comprising a biocide.

18. The composition of claim 1, further comprising a hydrogen-bonding compound.

19. A method of removing residue and contaminants from a microelectronic device having the residue and contaminants thereon, the method comprising contacting the microelectronic device with a cleaning

composition for a time sufficient to at least partially clean the residue and contaminants from the microelectronic device, wherein the cleaning composition comprises:

a. water;

b. an alkanolamine having from two to seven carbon atoms;

c. a glycol ether;

d. a pH adjustor; and

e. a surface-active hydrophobic acid chosen from octanoic acid and nonanoic acid.