We Claim:

1. An aqueous polishing composition comprising

(A) at least one type of abrasive particles and

(B) at least one amphiphilic nonionic surfactant selected from the group consisting of water-soluble or water-dispersible surfactants having

(b1) at least one hydrophobic group selected from the group consisting of branched alkyl groups having 5 to 20 carbon atoms; and

(b2) at least one hydrophilic group selected from the group consisting of polyoxyalkylene groups comprising

(b21) oxyethylene monomer units and

(b22) at least one type of substituted oxyalkylene monomer units wherein the substituents are selected from the group consisting of alkyl, cycloalkyl, or aryl, alkyl-cycloalkyl, alkyl-aryl, cycloalkyl-aryl and alkyl-cycloalkyl-aryl groups;

the said polyoxyalkylene group containing the monomer units (b21) and (b22) in random, alternating, gradient and/or blocklike distribution.

2. The aqueous polishing composition according to claim 1, wherein the hydrophobic groups (b1) are selected from the group consisting of branched alkyl groups having 8 to 15 carbon atoms.

3. The aqueous polishing composition according to claim 1 or 2, characterized in that the oxyalkylene monomer units (b22) are derived from substituted oxiranes wherein the substituents are selected from the group consisting of alkyl, cycloalkyl, or aryl, alkyl-cycloalkyl, alkyl-aryl, cycloalkyl-aryl and alkyl-cycloalkyl-aryl groups.

4. The aqueous polishing composition according to claim 3, characterized in that the substituents are selected from the group consisting of alkyl groups having 1 to 10 carbon atoms, cycloalkyl groups having 5 to 10 carbon atoms in spirocyclic, exocyclic and/or annealed configuration, aryl groups having 6 to 10 carbon atoms, alkyl-cycloalkyl groups having 6 to 20 carbon atoms, alkyl-aryl groups having 7 to 20 carbon atoms, cycloalkyl-arylgroup 11 to 20 carbon atoms, and alkyl-cycloalkyl-aryl groups having 12 to 30 carbon atoms.

5. The aqueous polishing composition according to claim 4, characterized in that the molar ratio of monomer units (b21) to monomer units (b22) is from 100:1 to 1:1.

6. The aqueous polishing composition of according to anyone of the claims 1 to 3, characterized in that the polyoxyalkylene groups have a degree of polymerization of from 5 to 100.

7. The aqueous polishing composition according to anyone of the claims 1 to 6, characterized in that the concentration of the surfactant (B) is from 1 ppm to 0.1% by weight, the weight specifications being based on the complete weight of the composition.

8. The aqueous polishing composition according to anyone of the claims 1 to 7, characterized in that the abrasive particles (A) are selected from the group consisting of alumina, silica, titania, ceria, zirconia, germania, magnesia, co-formed products thereof, and mixtures thereof.

9. The aqueous polishing composition according to anyone of the claims 1 to 8, characterized in that it contains at least one additional functional component (C) which is different from the components (A) and (B).

10. A process for chemically mechanically polishing substrates having patterned or unpatterned low-k or ultra-low-k dielectric layers having a dielectric constant of 3.5 or less comprising the steps of

(1) contacting the substrate material at least once with an aqueous polishing composition comprising

(A) at least one type of abrasive particles and

(Ba) at least one amphiphilic nonionic surfactant selected from the group consisting of water-soluble or water-dispersible surfactants having

(b1a) at least one hydrophobic group selected from the group consisting of linear alkyl groups having 5 to 20 carbon atoms and branched alkyl groups (b1); and

(b2) at least one hydrophilic group selected from the group consisting of polyoxyalkylene groups comprising

(b21) oxyethylene monomer units and

(b22) at least one type of substituted oxyalkylene monomer units wherein the substituents are selected from the group consisting of alkyl, cycloalkyl, or aryl, alkyl-cycloalkyl, alkyl-aryl, cycloalkyl-aryl and alkyl-cycloalkyl-aryl groups;

the said polyoxyalkylene group containing the monomer units (b21) and (b22) in random, alternating, gradient and/or blocklike distribution.;

(2) chemically mechanically polishing the substrate for a time and at a temperature sufficient to achieve the desired global planarity; and

(3) removing the substrate from the contact with the aqueous polishing composition.

11. The process according to claim 10, characterized in that the low-k and ultra-low-k dielectric layer material is selected from the group consisting of porous and non-porous organically modified silicon glasses and organic polymers.

12. The process according to claim 11, characterized in that the organically modified silicon glass is carbon-doped silicon dioxide (CDO).

13. The process according to claim 11, characterized in that the substrate furthermore contains at least one layer selected from the group consisting of dielectric layers other than the low-k and ultra-low-k dielectric layers, barrier layers and metal layers.

14. The process according to claim 13, characterized in that the dielectric layer is a silicon dioxide layer.

15. The process according to claim 14, characterized in that it has a silicon dioxide over low-k and ultra-low-k dielectric selectivity >3 with regard to the material removal rates (MRRs).

16. The use of the aqueous polishing composition according to anyone of the claims 1 to 9 for manufacturing electrical, mechanical and optical devices.

We claim:

1. An aqueous polishing composition, comprising

(A) silica; and

(B) at least one amphiphilic nonionic surfactant selected from the group consisting of water-soluble or water-dispersible surfactants comprising

(b1) at least one hydrophobic group selected from the group consisting of a branched alkyl group comprising 5 to 20 carbon atoms; and

(b2) at least one hydrophilic group selected from the group consisting of a polyoxyalkylene group comprising

(b21) an oxyethylene monomer unit and

(b22) at least one substituted oxyalkylene monomer unit, wherein the substituents are selected from the group consisting of alkyl, cycloalkyl, aryl, alkyl-cycloalkyl, alkyl-aryl, cycloalkyl-aryl, and alkyl-cycloalkyl-aryl groups;

wherein the polyoxyalkylene group comprises the monomer units (b21) and (b22) in random, alternating, gradient and/or block distribution, and wherein the pH of the composition is from 8 to 12.

2. The aqueous polishing composition of claim 1, wherein the hydrophobic group (b1) is selected from the group consisting of branched alkyl group comprising 8 to 15 carbon atoms.

3. The aqueous polishing composition of claim 1, wherein the oxyalkylene monomer unit (b22) is derived from a substituted oxirane, wherein the substituents are selected from the group consisting of alkyl, cycloalkyl, aryl, alkyl-cycloalkyl, alkyl-aryl, cycloalkyl-aryl, and alkyl-cycloalkyl-aryl groups.

4. The aqueous polishing composition of claim **3**, wherein the substituents are selected from the group consisting of an alkyl group comprising 1 to 10 carbon atoms, a cycloalkyl group comprising 5 to 10 carbon atoms in spirocyclic, exocyclic and/or annealed configuration, an aryl group comprising 6 to 10 carbon atoms, an alkyl-cycloalkyl group comprising 6 to 20 carbon atoms, an alkyl-aryl group comprising 7 to 20 carbon atoms, a cycloalkyl-aryl group comprising 11 to 20 carbon atoms, and an alkyl-cycloalkyl-aryl group comprising 12 to 30 carbon atoms.

5. The aqueous polishing composition of claim **4**, wherein the molar ratio of monomer units (b21) to monomer units (b22) is from 100:1 to 1:1.

6. The aqueous polishing composition of claim **1**, wherein the polyoxyalkylene group has a degree of polymerization of from 5 to 100.

7. The aqueous polishing composition of claim **1**, wherein the concentration of the surfactant (B) is from 1 ppm to 0.1% by weight, based on a complete weight of the composition.

8. The aqueous polishing composition of claim **1**, further comprising at least one additional functional component (C), which is different from components (A) and (B).

9. A process for chemically mechanically polishing a substrate comprising patterned or unpatterned low-k or ultra-low-k dielectric layers having a dielectric constant of 3.5 or less, the process comprising:

(1) contacting the substrate material with an aqueous polishing composition comprising

(A) silica; and

(Ba) at least one amphiphilic nonionic surfactant selected from the group consisting of water-soluble or water-dispersible surfactants comprising

(b1a) at least one hydrophobic group selected from the group consisting of a linear alkyl group comprising 5 to 20 carbon atoms and branched alkyl groups (b1); and

(b2) at least one hydrophilic group selected from the group consisting of a polyoxyalkylene group comprising

(b21) an oxyethylene monomer unit and

(b22) at least one substituted oxyalkylene monomer unit, wherein the substituents are selected from the group consisting of alkyl, cycloalkyl, aryl, alkyl-cycloalkyl, alkyl-aryl, cycloalkyl-aryl and alkyl-cycloalkyl-aryl groups;

wherein the polyoxyalkylene group comprises the monomer units (b21) and (b22) in random, alternating, gradient and/or block distribution, and wherein the pH of the aqueous polishing composition is from 8 to 12;

(2) chemically mechanically polishing the substrate for a time and at a temperature sufficient to achieve the desired global planarity; and

(3) removing the substrate from the contact with the aqueous polishing composition.

10. The process of claim **9**, wherein the low-k and ultra-low-k dielectric layer material is selected from the group consisting of porous and non-porous organically modified silicon glasses and organic polymers.

11. The process of claim **10**, wherein the organically modified silicon glass is carbon-doped silicon dioxide (CDO).

12. The process of claim **10**, wherein the substrate further comprises at least one layer selected from the group consisting of a dielectric layer other than the low-k and ultra-low-k dielectric layer, a barrier layer, and a metal layer.

13. The process of claim **12**, wherein the dielectric layer is a silicon dioxide layer.

14. The process of claim **13**, having a silicon dioxide over low-k and ultra-low-k dielectric selectivity >3 with regard to the material removal rates (MRRs).