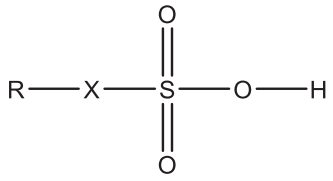
CLAIM(S):

1. A chemical-mechanical polishing composition comprising:

(a) an abrasive comprising colloidal silica,

(b) about 0.001 wt.% to about 1 wt.% of a compound of formula (I):



(I)

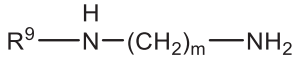
wherein R is

CH_2=CHCONHC(CH_3)$_2$$CH_2$-,

wherein X is independently O or a covalent bond,

or an alkali metal salt thereof,

(c) a compound of formula (II):



(II)

wherein R^9 is H or a hydroxyalkyl, and

wherein m is an integer of from 2 to about 6,

(d) hydrogen peroxide, and

(e) water,

wherein the polishing composition has a pH of about 1 to about 5.

2. The polishing composition of claim 1, wherein the colloidal silica has an average particle size of about 10 nm to about 200 nm.

3. The polishing composition of claim 1, wherein the abrasive further comprises fused silica.

4. The polishing composition of claim 3, wherein the fused silica has an average particle size of about 100 nm to about 800 nm.

5. The polishing composition of claim 1, wherein the compound of formula (I) is 2-acrylamido-2-methyl-1-propanesulfonic acid.

6. The polishing composition of claim 1, wherein the compound of formula (II) is selected from ethylenediamine, 1,3-diaminopropane, and combinations thereof.

7. The polishing composition of claim 1, wherein the polishing composition comprises about 0.001 wt.% to about 1 wt.% of the compound of formula (II).

8. The polishing composition of claim 1, wherein the polishing composition comprises about 0.1 wt.% to about 10 wt.% of a combination of colloidal silica and fused silica.

9. A method of chemically mechanically polishing a substrate comprising:

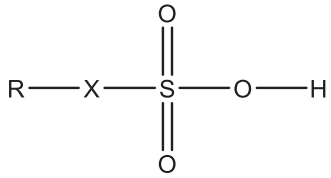
(i) providing a substrate,

(ii) providing a polishing pad,

(iii) providing a chemical-mechanical polishing composition comprising:

(a) an abrasive comprising colloidal silica,

(b) about 0.001 wt.% to about 1 wt.% of a compound of formula (I):



(I)

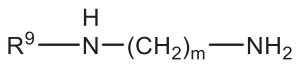
wherein R is

CH_2=CHCONHC(CH_3)$_2$$CH_2$-,

wherein X is independently O or a covalent bond,

or an alkali metal salt thereof,

(c) a compound of formula (II):



(II)

wherein R^9 is H or a hydroxyalkyl, and

wherein m is an integer of from 2 to about 6,

(d) hydrogen peroxide, and

(e) water,

wherein the polishing composition has a pH of about 1 to about 5,

(iv) contacting the substrate with the polishing pad and the chemical-mechanical polishing composition, and

(v) moving the polishing pad and the chemical mechanical polishing composition relative to the substrate to abrade at least a portion of a surface of the substrate to thereby polish the substrate.

10. The method of claim 9, wherein the colloidal silica has an average particle size of about 10 nm to about 200 nm.

11. The method of claim 9, wherein the abrasive further comprises fused silica.

12. The method of claim 11, wherein the fused silica has an average particle size of about 100 nm to about 800 nm.

13. The method of claim 9, wherein the compound of formula (1) is 2-acrylamido-2-methyl-1-propanesulfonic acid.

14. The method of claim 9, wherein the compound of formula (II) is selected from ethylenediamine, 1,3-diaminopropane, and combinations thereof.

15. The method of claim 9, wherein the polishing composition comprises about 100 ppm to about 500 ppm of the compound of formula (I).

16. The method of claim 9, wherein the polishing composition comprises about 100 ppm to about 2000 ppm of the compound of formula (II).

17. The method of claim 9, wherein the polishing composition comprises about 0.1 wt.% to about 10 wt.% of a combination of colloidal silica and fused silica.

18. The method of claim 9, wherein the substrate is a nickel-phosphorous-coated aluminum memory disk, wherein the substrate comprises nickel-phosphorous on a surface of the substrate, and wherein at least a portion of the nickel-phosphorous on a surface of the substrate is abraded to polish the substrate.