

Claims:

1. A method of treating a nickel-phosphorus surface at a low pH, the method comprising:

providing a substrate having a nickel-phosphorus surface,

5 providing a slurry having a pH below 3, the slurry comprising:

liquid carrier,

cationic silica abrasive particles dispersed in the liquid carrier, the

cationic silica abrasive particles containing cationic compound that is a nitrogen-

containing compound or a phosphorus-containing compound, wherein the silica abrasive

10 particles exhibit a zeta potential in a range from 5 to 60 millivolts in the slurry at the slurry pH, and

oxidizing agent, and

contacting the substrate surface with the slurry to remove nickel-phosphorus material from the surface.

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2. The method of claim 1 wherein the silica abrasive particles exhibit a zeta potential in a range from 10 to 50 millivolts in the slurry.

3. The method of claim 1 wherein the slurry contains abrasive particles that include
20 at least 95 weight percent silica particles based on total weight abrasive particles, and the silica particles contain at least 60 weight percent cationic silica particles based on total weight of silica particles.

4. The method of claim 1 wherein the slurry contains abrasive particles that include
25 less than 5 percent by weight alumina particles based on total weight of abrasive particles.

5. The method of claim 1 wherein the cationic silica abrasive particles have a DLS particle size of at least 50 nanometers.

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6. The method of claim 1 wherein the cationic compound is an aminosilane compound.

7. The method of claim 6 wherein the aminosilane compound is aminopropyltrimethoxysilane.

5 8. The method of claim 1 wherein the slurry pH is below 2.

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