What is claimed is:

1. A method for polishing a through-silicon via (TSV) wafer, comprising a step of subjecting a surface of the TSV wafer to a polishing treatment with a polishing composition comprising:
an organic alkaline compound;
an oxidizing agent selected from a chlorite salt and/or a bromated salt, wherein the oxidizing agent is not hydrogen peroxide;
silicon oxide abrasive particles and a solvent, so as to simultaneously remove Si and a conductive material on the TSV wafer, wherein both the conductive material and the Si are removed at a higher rate than if either the organic alkaline compound or the oxidizing agent selected from a chlorite salt and/or a bromated salt, was omitted, and wherein the silicon oxide abrasive particles are present in the polishing composition from 1.25 wt% to 10 wt%.

2. The method for polishing a TSV wafer of claim 1, wherein the organic alkaline compound is selected from a group consisting of diamines, triamines, tetramines and combinations thereof.

3. The method for polishing a TSV wafer of claim 1, wherein the organic alkaline compound is selected from a group consisting of ethylenediamine, N-(-2-hyroxyethyl)ethylenediamine, 1,2-diaminopropane, diethylenetriamine, triethyleneteramine and combinations thereof.

4. The method for polishing a TSV wafer of claim 1, wherein the organic alkaline compound is ethylenediamine.

5. The method for polishing a TSV wafer of claim 1, wherein the solvent is water.

6. The method for polishing a TSV wafer of claim 1, wherein the polishing composition further comprises an amino acid.

7. The method for polishing a TSV wafer of claim 6, wherein the amino acid is selected from a group consisting of alanine, β-alanine, aspartic acid, arginine, glutamic acid,

ethylenediaminetetraacetic acid, diethylenetriaminepentaacetic acid, propylenediaminetetraacetic acid, glycine and combination thereof.

8. The method for polishing a TSV wafer of claim 6, wherein the amino acid is glycine.

9. The method for polishing a TSV wafer of claim 1, wherein the organic alkaline compound is present in the polishing composition from about 0.01 wt% to about 10 wt%.

10. The method for polishing a TSV wafer of claim 9, wherein the organic alkaline compound is present in the polishing composition from about 0.1 wt% to about 5 wt%.

11. The method for polishing a TSV wafer of claim 1, wherein the oxidizing agent is present in the polishing composition from about 0.01 wt% to about 10 wt%.

12. The method for polishing a TSV wafer of claim 11, wherein the oxidizing agent is present in the polishing composition from about 0.1 wt% to about 5 wt%.

13. The method for polishing a TSV wafer of claim 1, wherein the SiO_2 abrasive particles are present in the polishing composition from about 0.01 wt% to about 30 wt%.

14. The method for polishing a TSV wafer of claim 6, wherein the amino acid is present in the polishing composition from about 0.01 wt% to about 5 wt%.

15. The method for polishing a TSV wafer of claim 1, wherein the conductive material is made of copper.

16. A polishing composition for polishing a TSV wafer, comprising:

an organic alkaline compound;

an oxidizing agent selected from a group consisting of sodium chlorite, potassium bromate and combinations thereof;

SiO_2 abrasive particles; and

a solvent.

17. The polishing composition for polishing a TSV wafer of claim 16, wherein the organic alkaline compound is selected from a group consisting of diamines, triamines, tetramines and combinations thereof.

18. The polishing composition for polishing a TSV wafer of claim 17, wherein the organic alkaline compound is ethylenediamine.

19. The polishing composition for polishing a TSV wafer of claim 16, wherein the polishing composition further comprises an amino acid.

20. The polishing composition for polishing a TSV wafer of claim 19, wherein the amino acid is glycine.

CLAIMS

1. A method for polishing a through-silicon via (TSV) wafer, comprising a step of subjecting a surface of a TSV wafer to a polishing treatment with a polishing composition comprising:

   an organic alkaline compound;

   an oxidizing agent selected from a chlorite salt and/or a bromated salts, wherein the oxidizing agent is not hydrogen peroxide;

   silicon oxide abrasive particles and a solvent, so as to simultaneously remove Si and a conductive material on the TSV wafer, wherein both the conductive material and the Si are removed at a higher rate than if either the organic alkaline compound or the oxidizing agent selected from a chlorite salt and/or a bromated salt, was omitted, and wherein the silicon oxide abrasive particles are present in the polishing composition from 1.25 wt% to 10 wt%.

2. The method for polishing a TSV wafer of claim 1, wherein the organic alkaline compound is selected from a group consisting of diamines, triamines, tetramines and combinations thereof.

3. The method for polishing a TSV wafer of claim 1, wherein the organic alkaline compound is selected from a group consisting of ethylenediamine, N-(-2-hyroxyethyl)ethylenediamine, 1,2-diaminopropane, diethylenetriamine, triethyleneteramine and combinations thereof.

4. The method for polishing a TSV wafer of claim 1, wherein the organic alkaline compound is ethylenediamine.

5. The method for polishing a TSV wafer of claim 1, wherein the solvent is water.

6. The method for polishing a TSV wafer of claim 1, wherein the polishing composition further comprises an amino acid.

7. The method for polishing a TSV wafer of claim 6, wherein the amino acid is selected from a group consisting of alanine, β-alanine, aspartic acid, arginine, glutamic acid,

ethylenediaminetetraacetic acid, diethylenetriaminepentaacetic acid, propylenediaminetetraacetic acid, glycine and combination thereof.

8. The method for polishing a TSV wafer of claim 6, wherein the amino acid is glycine.

9. The method for polishing a TSV wafer of claim 1, wherein the organic alkaline compound is present in the polishing composition from about 0.01 wt% to about 10 wt%.

10. The method for polishing a TSV wafer of claim 9, wherein the organic alkaline compound is present in the polishing composition from about 0.1 wt% to about 5 wt%.

11. The method for polishing a TSV wafer of claim 1, wherein the oxidizing agent is present in the polishing composition from about 0.01 wt% to about 10 wt%.

12. The method for polishing a TSV wafer of claim 11, wherein the oxidizing agent is present in the polishing composition from about 0.1 wt% to about 5 wt%.

13. The method for polishing a TSV wafer of claim 1, wherein the SiO_2 abrasive particles are present in the polishing composition from about 0.01 wt% to about 30 wt%.

14. The method for polishing a TSV wafer of claim 6, wherein the amino acid is present in the polishing composition from about 0.01 wt% to about 5 wt%.

15. The method for polishing a TSV wafer of claim 1, wherein the conductive material is made of copper.