CLAIMS

What is claimed is:

1. A method of forming a semiconductor structure, comprising:

forming a first conductive material over a structure comprising at least one opening defined by sidewalls of a dielectric material;

forming a second conductive material over the first conductive material; and

conducting at least one of annealing the structure to form a material comprising at least a portion of the first conductive material and the second conductive material and performing a polishing process to substantially redistribute at least one of the first conductive material and the second conductive material into an unfilled region of the at least one opening.

2. The method of claim 1, wherein forming a first conductive material over a structure comprising at least one opening defined by sidewalls of a dielectric material comprises forming the first conductive material over the sidewalls of the dielectric material and a surface of an electrode therebetween.

3. The method of claim 1, wherein forming a first conductive material over a structure comprising at least one opening defined by sidewalls of a dielectric material comprises forming the first conductive material over the at least one opening having at least one dimension of less than about 20 nm.

4. The method of claim 1, wherein forming a second conductive material over the first conductive material comprises forming silver over the first conductive material without substantially filling the at least one opening.

5. The method of claim 1, wherein annealing the structure to form a material comprising at least a portion of the first conductive material and the second conductive material comprises annealing the structure to form a material comprising a mixture of silver and tantalum.

6. The method of claim 1, wherein annealing the structure to form a material comprising at least a portion of the first conductive material and the second conductive material comprises annealing the structure to form a material comprising an alloy consisting of silver and at least one of platinum, aluminum, tin, copper, iridium, titanium, nickel, cobalt, ruthenium, and rhodium.

7. The method of claim 1, wherein annealing the structure to form a material comprising at least a portion of the first conductive material and the second conductive material comprises exposing the structure to a temperature of between about 200°C and about 600°C.

8. The method of claim 1, wherein performing a polishing process to substantially redistribute at least one of the first conductive material and the second conductive material into an unfilled region of the at least one opening comprises at least one of substantially filling the at least one opening with at least one of the first conductive material and the second conductive material and removing material from surfaces of the dielectric material adjacent to the at least one opening.

9. The method of claim 1, wherein performing a polishing process to redistribute at least one of the first conductive material and the second conductive material into an unfilled region of the at least one opening comprises performing the polishing process using a liquid component consisting of water.

10. The method of claim 1, further comprising forming a memory material over the structure comprising the at least one opening defined by sidewalls of the dielectric material.

11. The method of claim 10, wherein forming a memory material over the structure comprises forming at least one of a chalcogenide material and an oxide material over the structure.

12. The method of claim10, wherein forming a memory material over the structure comprises forming at least one of germanium sulfide, germanium selenide,

silicon dioxide, tantalum oxide, titanium oxide, nitrogen oxide, zirconium oxide, and hafnium oxide over the structure.

13. The method of claim 1, wherein forming a first conductive material over a structure comprising at least one opening defined by sidewalls of a dielectric material comprises forming the at least one opening having an aspect ratio of between 1:1 and about 20:1.

14. The method of claim 1, wherein forming a first conductive material over a structure comprises forming the first conductive material comprising silver over the structure.

15. The method of claim 1, wherein forming a first conductive material over a structure comprises forming the first conductive material comprising at least one of platinum, tantalum, aluminum, tin, copper, iridium, titanium, nickel, cobalt, ruthenium, and rhodium over the structure.

16. The method of claim 1, wherein forming a second conductive material over the first conductive material comprises forming the second conductive material comprising silver over the first conductive material.

17. The method of claim 1, wherein forming a second conductive material over the first conductive material comprises forming the second conductive material comprising at least one of platinum, tantalum, aluminum, tin, copper, iridium, titanium, nickel, cobalt, ruthenium, and rhodium over the first conductive material.

18. A semiconductor structure, comprising:

a conductive structure overlying an electrode;

at least one of a chalcogenide material and an oxide material in contact with the conductive structure; and

a conductive material overlying the at least one of a chalcogenide material and an oxide material, the conductive material comprising silver and tantalum and at least one region comprising another material.

19. The semiconductor structure of claim 18, wherein the conductive material comprises tantalum overlying the silver.

20. The semiconductor structure of claim 18 or claim 19, wherein the conductive structure overlying the electrode comprises an alloy of silver and at least one of platinum, aluminum, tin, copper, iridium, titanium, nickel, cobalt, ruthenium, and rhodium.

CLAIMS

What is claimed is:

1. A method of forming at least one conductive element, comprising: forming a first conductive material over a structure comprising at least one opening defined by sidewalls of a dielectric material, wherein the first conductive material comprises metal; forming a second conductive material comprising silver over the first conductive material; annealing the structure to form an annealed material comprising at least a portion of the first conductive material and the second conductive material; and redistributing at least one of the first conductive material, the second conductive material, and the annealed material into an unfilled region of the at least one opening.

2. The method of claim 1, further comprising forming a liner material comprising at least one of platinum, tantalum, aluminum, tin, copper, iridium, and titanium over the structure comprising the at least one opening defined by sidewalls of the dielectric material.

3. The method of claim 1, wherein forming a first conductive material over a structure comprising at least one opening defined by sidewalls of a dielectric material comprises forming the first conductive material over the sidewalls of the dielectric material and a surface of an electrode therebetween.

4. The method of claim 1, wherein forming a first conductive material over a structure comprising at least one opening defined by sidewalls of a dielectric material comprises forming the first conductive material over the at least one opening having at least one dimension of less than about 20 nm.

5. The method of claim 1, wherein forming a second conductive material comprising silver over the first conductive material comprises forming silver over the first conductive material without substantially filling the at least one opening.

6. The method of claim 1, wherein annealing the structure to form an annealed material comprising at least a portion of the first conductive material and the second conductive material comprises annealing the structure to form an annealed material comprising a mixture of silver and tantalum.

7. The method of claim 1, wherein annealing the structure to form an annealed material comprising at least a portion of the first conductive material and the second conductive material comprises annealing the structure to form an alloy consisting of silver and at least one of platinum, aluminum, tin, copper, iridium, and titanium.

8. The method of claim 1, wherein redistributing at least one of the first conductive material, the second conductive material, and the annealed material into an unfilled region of the at least one opening comprises performing a polishing process to redistribute the at least one of the first conductive material, the second conductive material, and the annealed material into the unfilled region of the at least one opening.

9. The method of claim 1, wherein redistributing at least one of the first conductive material, the second conductive material, and the annealed material into an unfilled region of the at least one opening comprises substantially filling the at least one opening with at least one of the first conductive material, the second conductive material, and the annealed material.

10. The method of claim 1, wherein forming a first conductive material comprises forming at least one of platinum, tantalum, aluminum, tin, copper, iridium, titanium, nickel, cobalt, ruthenium, and rhodium.

11. The method of claim 10, wherein annealing the structure comprises exposing the structure to a temperature of between about 200.degree. C. and about 600.degree. C. to form at least one of a mixture of the second conductive material and tantalum and an alloy of the second conductive material and the at least one of platinum, aluminum, tin, copper, iridium, titanium, nickel, cobalt, ruthenium, and rhodium.

12. The method of claim 8, wherein performing a polishing process to redistribute the at least one of the first conductive material, the second conductive material, and the annealed material into the unfilled region of the at least one opening comprises removing material from surfaces of the dielectric material adjacent to the at least one opening.

13. The method of claim 8, wherein performing a polishing process to redistribute the at least one of the first conductive material, the second conductive material, and the annealed material into the unfilled region of the at least one opening comprises performing the polishing process using a liquid component consisting of deionized water.

14. A method of forming a semiconductor structure, comprising: removing a portion of a dielectric material overlying a substrate to form at least one opening therein; forming a first conductive material over the dielectric material and exposed surfaces of the at least one opening wherein the first conductive material comprises metal; forming a second conductive material comprising silver over the first conductive material, a portion of the at least one opening remaining unfilled; and performing a polishing process to substantially fill the unfilled portion of the at least one opening.

15. The method of claim 14, wherein removing a portion of a dielectric material overlying a substrate to form at least one opening therein comprises forming the at least one opening having at least one dimension of less than about 20 nm.

16. The method of claim 14, wherein forming a first conductive material comprises forming at least one of platinum, tantalum, aluminum, tin, copper, iridium, titanium, nickel, cobalt, ruthenium, and rhodium.

17. The method of claim 16: wherein forming at least one of platinum, tantalum, aluminum, tin, copper, iridium, titanium, nickel, cobalt, ruthenium, and rhodium comprises forming platinum; and further comprising performing an annealing process to form an alloy of the platinum and the second conductive material.

18. The method of claim 14, wherein performing a polishing process to substantially fill the unfilled portion of the at least one opening comprises performing the polishing process using a liquid component consisting of water to redistribute the first conductive material and the second conductive material into the unfilled portion of the at least one opening.

19. The method of claim 14, wherein removing a portion of a dielectric material overlying a substrate to form at least one opening therein comprises removing the portion of the dielectric material overlying the substrate to form at least one opening having an aspect ratio of between about 1:1 and about 20:1.

20. The method of claim 14, wherein performing a polishing process to substantially fill the unfilled portion of the at least one opening comprises performing a polishing process using a liquid component consisting of water to redistribute at least one of the first conductive material and the second conductive material from surfaces adjacent to the at least one opening into the at least one opening.

21. The method of claim 16, further comprising performing an annealing process to form an alloy of the silver and at least one of the platinum, aluminum, tin, copper, iridium, titanium, nickel, cobalt, ruthenium, and rhodium.

22. The method of claim 2, wherein forming a liner material comprising at least one of platinum, tantalum, aluminum, tin, copper, iridium, and titanium over the structure comprises forming the liner material over the sidewalls of the dielectric material and a surface of an electrode therebetween.