What is claimed is:

1. A method of processing memory, comprising:

forming a resistive memory material on a structure using high power impulse magnetron sputtering (HIPIMS);

wherein the resistive memory material is formed on the structure in an environment having a temperature of approximately 400 degrees Celsius or less.

2. The method of claim 1, wherein forming the resistive memory material on the structure includes:

forming plasma comprising the resistive memory material using HIPIMS; and

forming the resistive memory material in the plasma on the structure.

3. The method of claim 1, wherein forming the resistive memory material on the structure includes:

providing a first pulse of at least 1 kilowatt to a target having the resistive memory material for a duration of approximately 1 to 300 microseconds; and

providing a second pulse of at least 1 kilowatt to the target for a duration of approximately 1 to 300 microseconds.

4. The method of claim 3, wherein the method includes providing the second pulse to the target approximately 100 milliseconds after the first pulse is provided to the target.

5. The method of any one of claims 3-4, wherein the first and second pulses are provided to the target for a duration of approximately 100 to 200 microseconds.

6. The method of any one of claims 3-4, wherein forming the resistive memory material on the structure includes providing a third pulse of at least 1 kilowatt to the target for a duration of approximately 1 to 300 microseconds.

7. A method of processing memory, comprising:

forming a resistive memory material on a structure using high power impulse magnetron sputtering (HIPIMS);

wherein the resistive memory material is formed on the structure such that the resistive memory material on the structure has an ionization of at least 80%.

8. The method of claim 7, wherein forming the resistive memory material on the structure includes:

providing a first pulse of at least 1 megawatt to a target having the resistive memory material for a duration of approximately 1 to 300 microseconds; and

providing a second pulse of at least 1 megawatt to the target for a duration of approximately 1 to 300 microseconds, wherein the second pulse is provided to the target approximately 100 milliseconds after the first pulse is provided to the target.

9. The method of claim 8, wherein forming the resistive memory material on the structure includes providing no additional pulses to the target after the first pulse is provided to the target and before the second pulse is provided to the target.

10. The method of any one of claims 8-9, wherein the first and second pulses have a power of approximately 18 megawatts.

11. The method of any one of claims 8-9, wherein the first and second pulses are provided to the target for a duration of approximately 100 microseconds.

12. The method of any one of claims 7-9, wherein the resistive memory material is formed on the structure such that the resistive memory material on the structure has an ionization of approximately 80% to 95%.

13. A method of processing memory, comprising:

forming a resistive random access memory (RRAM) cell material on a memory structure using high power impulse magnetron sputtering (HIPIMS);

wherein the RRAM cell material is formed on the memory structure in a physical vapor deposition (PVD) chamber.

14. The method of claim 13, wherein forming the RRAM cell material on the memory structure includes:

forming plasma comprising the RRAM cell material by providing a number of pulses to a target having the RRAM cell material, wherein:

each pulse has a power of at least 1 kilowatt; and

each pulse has a duration of approximately 1 to 300 microseconds; and

depositing the RRAM cell material in the plasma on to the memory structure.

15. The method of claim 14, wherein the method includes providing a constant supply of power to the memory structure while depositing the RRAM cell material on the memory structure.

16. The method of claim 13, wherein:

the memory structure includes an opening; and

the RRAM cell material is formed in the opening.

17. The method of claim 13, wherein the method includes forming the RRAM cell material on the memory structure such that the RRAM cell material on the memory structure has a thickness of less 100 Angstroms.

18. The method of any one of claims 13-17, wherein the method includes forming the RRAM cell material on the memory structure such that the RRAM cell material on the memory structure is crystallized.

19. A system for processing memory, comprising:

a structure; and

a target facing toward the structure and configured to form a crystallized resistive random access memory (RRAM) cell material on the structure, wherein:

the target is configured to form the crystallized RRAM cell material on the structure in a physical vapor deposition (PVD) chamber having a temperature of approximately 400 degrees Celsius or less; and

the target is configured to form the crystallized RRAM cell material on the structure such that the crystallized RRAM cell material on the structure has an ionization of at least 80%.

20. The system of claim 19, wherein the target is configured to:

receive a first pulse of at least 1 kilowatt for a duration of approximately 1 to 300 microseconds; and

receive a second pulse of at least 1 kilowatt for a duration of approximately 1 to 300 microseconds.

21. The system of claim 19, wherein the target has a surface facing toward the structure.

22. The system of claim 19, wherein the structure is a damascene structure.

23. The system of claim 19, wherein the crystallized RRAM cell material is $Pr_{(1-x)}Ca_xMnO_3$ (PCMO).

24. The system of claim 19, wherein the target is approximately 3 to 4 inches from the structure.

25. The system of claim 19, wherein the target is configured to form the crystallized RRAM cell material on the structure such that the crystallized RRAM cell material on the structure has a thickness of approximately 40 to 70 Angstroms.

26. The system of any one of claims 19-25, wherein the crystallized RRAM cell material includes grain boundaries vertical to the structure.

27. The system of any one of claims 19-25, wherein the crystallized RRAM cell material does not include grain boundaries vertical to the structure.

28. A system for processing memory, comprising:

a target having a resistive memory material and configured to:

receive a number of pulses, wherein each pulse has a power of at least 1 kilowatt and a duration of approximately 1 to 300 microseconds; and

form plasma comprising the resistive memory material in response to receiving the number of pulses; and

a memory structure configured to receive the resistive memory material from the plasma, wherein the resistive memory material received by the structure is crystallized.

29. The system of claim 28, wherein the resistive memory material is a metal oxide.

30. The system of claim 29, wherein the metal oxide is an alkaline metal oxide.

31. The system of claim 29, wherein the metal oxide is a refractive metal oxide.

32. The system of any one of claims 28-31, wherein each pulse is separated by a duration of approximately 100 milliseconds.

33. The system of any one of claims 28-31, wherein the target faces the memory structure.

34. The system of any one of claims 28-31, wherein the target is horizontally oriented.

35. The system of any one of claims 28-31, wherein each pulse has an equal amount of power and an equal duration.

What is claimed is:

1. A method of forming memory, comprising:

forming a resistive material for resistive memory from a target on a structure using high power impulse magnetron sputtering (HIPIMS), wherein the target includes the resistive material before an initial pulse of the HIPIMS is provided to the target;

wherein the resistive material is formed on the structure in an environment having a temperature of 400 degrees Celsius or less.

2. The method of claim 1, wherein forming the resistive material on the structure includes:

forming plasma comprising the resistive material using HIPIMS; and

forming the resistive material in the plasma on the structure.

3. The method of claim 1, wherein forming the resistive material on the structure includes:

providing a first pulse of at least 1 kilowatt to the target for a duration of 1 to 300 microseconds; and

providing a second pulse of at least 1 kilowatt to the target for a duration of 1 to 300 microseconds.

4. The method of claim 3, wherein the first and second pulses are provided to the target for a duration of 100 to 200 microseconds.

5. The method of claim 3, wherein forming the resistive material on the structure includes providing a third pulse of at least 1 kilowatt to the target for a duration of 1 to 300 microseconds.

6. A method of forming memory, comprising:

forming a resistive material for resistive memory from a target on a structure using high power impulse magnetron sputtering (HIPIMS), wherein the target includes the resistive material before an initial pulse of the HIPIMS is provided to the target;

wherein the resistive material is formed on the structure such that the resistive material on the structure has an ionization of at least 80%.

7. The method of claim 6, wherein forming the resistive material on the structure includes:

providing a first pulse of at least 1 megawatt to the target for a duration of 1 to 300 microseconds; and

providing a second pulse of at least 1 megawatt to the target for a duration of 1 to 300 microseconds, wherein the second pulse is provided to the target 100 milliseconds after the first pulse is provided to the target.

8. The method of claim 7, wherein forming the resistive material on the structure includes providing no additional pulses to the target after the first pulse is provided to the target and before the second pulse is provided to the target.

9. The method of any one of claims 7-8, wherein the first and second pulses are provided to the target for a duration of 100 microseconds.

10. The method of any one of claims 6-8, wherein the resistive material is formed on the structure such that the resistive material on the structure has an ionization of 80% to 95%.

11. A method of forming memory, comprising:

forming a resistive material for a resistive random access memory (RRAM) cell from a target on a memory structure using high power impulse magnetron sputtering (HIPIMS), wherein the target includes the resistive material before an initial pulse of the HIPIMS is provided to the target;

wherein:

the resistive material is formed on the memory structure in a physical vapor deposition (PVD) chamber;

the memory structure includes an opening; and

the resistive material is formed in the opening.

12. The method of claim 11, wherein forming the resistive material on the memory structure includes:

forming plasma comprising the resistive material by providing a number of pulses to the target, wherein:

each pulse has a power of at least 1 kilowatt; and

each pulse has a duration of 1 to 300 microseconds; and

depositing the resistive material in the plasma on to the memory structure.

13. The method of claim 12, wherein the method includes providing a constant supply of power to the memory structure while depositing the resistive material on the memory structure.

14. The method of claim 11, wherein the method includes forming the resistive material on the memory structure such that the resistive material on the memory structure has a thickness of less 100 Angstroms.

15. A system for forming memory, comprising:

a structure; and

a target facing toward the structure and configured to form a crystallized resistive material for a resistive random access memory (RRAM) cell from the target on the structure, wherein:

the target is configured to form the crystallized resistive material on the structure in a physical vapor deposition (PVD) chamber having a temperature of 400 degrees Celsius or less;

the target is configured to form the crystallized resistive material on the structure such that the crystallized resistive material on the structure has an ionization of at least 80%; and

the target includes the resistive material.

16. The system of claim 15, wherein the target has a surface facing toward the structure.

17. The system of claim 15, wherein the structure is a damascene structure.

18. The system of claim 15, wherein the crystallized resistive material is $Pr_{(1-x)}Ca_xMnO_3$ (PCMO).

19. The system of claim 15, wherein the target is 3 to 4 inches from the structure.

20. The system of claim 15, wherein the target is configured to form the crystallized resistive material on the structure such that the crystallized resistive material on the structure has a thickness of 40 to 70 Angstroms.

21. The system of any one of claims 15-20, wherein the crystallized resistive material includes grain boundaries vertical to the structure.

22. The system of any one of claims 15-20, wherein the crystallized resistive material does not include grain boundaries vertical to the structure.

23. A system for forming memory, comprising:

a target having a resistive material for resistive memory and configured to:

receive a number of pulses, wherein each pulse has a power of at least 1 kilowatt and a duration of 1 to 300 microseconds; and

form plasma comprising the resistive material in response to receiving the number of pulses;

wherein the target includes the resistive material before receiving an initial pulse of the number of pulses; and

a memory structure configured to receive the resistive material from the plasma, wherein the resistive material received by the structure is crystallized.

24. The system of claim 23, wherein the resistive material is a metal oxide.

25. The system of claim 24, wherein the metal oxide is an alkaline metal oxide.

26. The system of claim 24, wherein the metal oxide is a refractive metal oxide.

27. The system of any one of claims 23-26, wherein the target is horizontally oriented.

28. The system of any one of claims 23-26, wherein each pulse has an equal amount of power and an equal duration.