

What is claimed is:

CLAIMS

1. A method of processing a substrate, comprising:
 - positioning the substrate in a process chamber, the substrate having a plurality of substrate features;
 - depositing a conformal layer on the substrate features, such that a seam is formed between neighboring substrate features; and
 - treating the substrate with a high pressure anneal ~~performed at a pressure of about 1 bar to about 70 bar~~ in the presence of an oxidizer comprising steam, such that the volume of the seams within the conformal layer are reduced.
2. The method of claim 1, wherein the ~~oxidizer comprises steam~~ high pressure anneal is performed at a temperature of about 200 degrees Celsius to about 500 degrees Celsius.
- ~~33.~~ The method of claim 1, wherein the high pressure anneal is performed for a time of about 5 minutes to about 120 minutes.
- ~~4.~~ The method of claim 1, wherein the conformal layer comprises a silicon layer, a metal layer, a metal ~~oxide~~ suboxide layer, or combinations thereof.
- ~~45.~~ The method of claim 1, wherein the plurality of substrate features comprise a trench.
- ~~56.~~ The method of claim 1, wherein the depositing a conformal layer on the plurality of substrate features comprises chemical vapor deposition.

67. The method of claim 56, wherein the depositing the conformal layer comprises flowing a precursor into the process chamber, wherein the precursor comprises silicon and hydrogen.

78. The method of claim 1, wherein the volume of the conformal layer expands during the high pressure anneal.

89. A method of processing a substrate, comprising:
———positioning the substrate in a process chamber, the substrate having a plurality of substrate features;
———depositing a conformal layer on the substrate features, such that a seam is formed between neighboring substrate features, wherein the conformal layer is crystalline in structure; and
———treating the substrate with a high pressure anneal in the presence of an oxidizer, such that a volume of the seams within the conformal layer are reduced.

910. The method of claim 89, wherein the treating the substrate causes the conformal layer disposed on the substrate feature to chemically react with the conformal layer disposed on the neighboring substrate feature.

10.——

11. The method of claim 89, wherein the high pressure anneal is performed at a pressure of about 1 bar to about 70 bar.

12. The method of claim 9, wherein the high pressure anneal is performed at a temperature of about 200 degrees Celsius to about 500 degrees Celsius.

13. The method of claim 9, wherein the high pressure anneal is performed for a time of about 5 minutes to about 120 minutes, and wherein the high pressure anneal is performed at a pressure of about 1 bar to about 70 bar.

~~41.~~

14. The method of claim 89, wherein the conformal layer comprises a silicon layer, a metal layer, a metal suboxide layer, or combinations thereof.

~~42~~15. The method of claim 89, wherein the plurality of substrate features comprise a trench.

~~43~~16. The method of claim 89, wherein the depositing a conformal layer on the plurality of substrate features comprises chemical vapor deposition.

~~44~~17. The method of claim ~~43~~16, wherein the depositing the conformal layer comprises flowing a precursor into the process chamber, wherein the precursor comprises silicon and hydrogen.

~~45~~18. A method of processing a substrate, comprising:

———positioning the substrate in a process chamber, the substrate having a plurality of substrate features;

———depositing a conformal layer on the substrate features, such that a seam is formed between neighboring substrate features, ~~wherein the conformal layer is crystalline in structure~~; and

———treating the substrate with a high pressure anneal ~~performed~~ at a pressure of about 1 bar to about 70 bar in the presence of an oxidizer, such that ~~a~~the volume of the seams within the conformal layer are reduced.

19. The method of claim 18, wherein the ~~volume of the conformal layer expands during~~ is crystalline in structure.

20. The method of claim 18, wherein the ~~high pressure anneal~~ oxidizer comprises steam.