CLAIMS

1. A method of removing photoresist from a work piece surface in a reaction chamber, the method comprising:

exposing the work piece to a first plasma generated from forming gas or pure nitrogen, wherein photoresist is on the work piece surface during the exposure to the first plasma;

after exposing the work piece to the forming gas plasma, allowing the wafer to sit in a non-plasma environment for a time period of at least 30 seconds;

and after allowing the wafer to sit, exposing the wafer to an oxygen- or hydrogen-based plasma to remove the photoresist.

2. The method of claim 1, wherein the work piece is allowed to sit for at least 100 seconds.

3. The method of claim 1, wherein the work piece is allowed to sit for at least 150 seconds.

4. The method of claim 1, wherein the work piece is allowed to sit for at least 200 seconds.

5. The method of claim 1, wherein the work piece is allowed to sit for at least 220 seconds.

6. The method of any of claims 1-5 wherein the oxygen- or hydrogen-based plasma comprises fluorine species.

7. The method of any of claims 1-6, wherein the photoresist removed from the work piece surface comprises a high-dose implanted resist.

8. The method of any of claims 1-7, wherein the forming gas or pure nitrogen plasma is remotely generated.

9. The method of any of claims 1-8, wherein a protective film forms on exposed silicon portions of the workpiece after exposure to the forming gas or pure nitrogen plasma.

10. The method of claim 9 wherein the protective film is a Si_xN_y film.

11. The method of claim 1 wherein exposing the work piece is performed after a lithography operation.

12. An apparatus for removing material from a work piece surface comprising:

a reaction chamber comprising:

a plasma source,

a showerhead positioned downstream of the plasma source, and

a work piece support downstream of the showerhead, said work piece support comprising a pedestal and temperature-controlling mechanism to control a temperature of a work piece supported on the work piece support; and

a controller for executing a set of instructions, said set of instruction comprising instructions for exposing the work piece to a first plasma generated from forming gas or pure nitrogen, after exposing the work piece to the forming gas or pure nitrogen plasma, allowing the work piece to sit in a non-plasma environment for a time period of at least 30 seconds; and after allowing the work piece to sit, exposing the wafer to an oxygen- or hydrogen-based plasma to remove the material.

13. The apparatus of claim 12 wherein the controller instructions comprises instructions for allowing the work piece to sit for at least 100 seconds.

~~14. The apparatus of claim 12 wherein the controller instructions comprises instructions for allowing the work piece to sit for at least 100 seconds.~~

~~15~~14. The apparatus of claim 12 wherein the controller instructions comprises instructions for allowing the work piece to sit for at least 150 seconds.

~~16~~15. The apparatus of claim 12 wherein the controller instructions comprises instructions for allowing the work piece to sit for at least 200 seconds.

~~17~~16. The apparatus of claim 12 wherein the controller instructions comprises instructions for allowing the work piece to sit for at least 220 seconds.

17. The method of claim 1, wherein the first plasma and the oxygen- or hydrogen-based plasmas have different chemistries.

18. The apparatus of claim 12, wherein the first plasma and oxygen- or hydrogen-based plasma have different chemistries.