CLAIMS

What is claimed is:

1. A method for predicting etch rate uniformity for qualifying health status of a processing chamber during substrate processing of a set of substrates, comprising:

executing a recipe on a first substrate of said set of substrates;

receiving processing data from a first set of sensors during said executing of said recipe;

analyzing said processing data utilizing a subsystem health check predictive model to determine calculated data, said calculated data including at least one of etch rate data and uniformity data, wherein said subsystem health check predictive model is constructed by correlating a first set of data and a second set of data, said first set of data includes measurement data from a set of film substrates and said second set of data includes processing data collected during analogous processing of a set of non-film substrates;

performing a comparison of said calculated data of said first substrate against a set of control limits as defined by said subsystem health check predictive model; and

generating a warning if said calculated data is outside of said set of control limits.

2. The method of claim 1 further including performing a pre-emptive assessment to determine the readiness state of said processing chamber.

3. The method of claim 2 wherein if said pre-emptive assessment is outside a pre-defined threshold, determining source of problem.

4. The method of claim 1 further including pulling data from a library to support said subsystem health check predictive model.

5. The method of claim 1 wherein said set of control limits is user-configurable.

6. The method of claim 1 further including if said calculated data is within said set of control limits, validating a verification degree to determine if a predefined number of substrates have passed said comparison between said calculated data and said set of control limits.

7. The method of claim 1 wherein said subsystem health check predictive model is constructed from data collected from a time period, wherein said time period being one of at the beginning of a wet cycle, during said wet cycle, and at the end of said wet cycle.

8. The method of claim 7 wherein said subsystem health check predictive model is constructed from data collected from one time period.

9. The method of claim 7 wherein said subsystem health check predictive model is constructed from data collected from at least two time periods.

10. A processing chamber health check arrangement for qualifying a processing chamber of a plasma processing system, comprising:

a pre-assessment module for determining the readiness of said processing chamber;

a library for storing at least one of recipes and recipe parameters; and

a subsystem health check predictive model configured for

receiving processing data from a first set of sensors during substrate processing;

analyzing said processing data to determine a set of calculated data, wherein said set of calculated data includes at least one of etch rate data and uniformity data;

comparing said set of calculated data to a set of predefined control limits; and

generating warning when said set of calculated data is outside of said set of predefined control limits;

wherein said subsystem health check predictive model is constructed by

obtaining a first set of data from a first set of substrates, said first set of substrates being a set of film substrates, wherein said first set of data includes pre-processing measurement data and post-processing measurement data, said post-processing measurement data being collected after executing a recipe on said first set of substrates,

collecting a second set of data from a second set of substrates, wherein said second set of data is collected by a set of sensors during execution of an analogous execution of said recipe on a set of non-film substrates, and

correlating said first set of data with said second set of data to construct said subsystem health check predictive model.

11. The processing chamber health check arrangement of claim 10 wherein said subsystem health check predictive model further including if said calculated data is within said set of control limits, validating a verification degree to determine if a

predefined number of substrates have passed said comparison between said calculated data and said set of control limits.

~~12. The processing chamber health check arrangement of claim 10 wherein said subsystem health check predictive model is constructed by~~

~~obtaining a first set of data from a first set of substrates, said first set of substrates being a set of film substrates, wherein said first set of data includes pre-processing measurement data and post-processing measurement data, said post-processing measurement data being collected after executing a recipe on said first set of substrates,~~

~~collecting a second set of data from a second set of substrates, wherein said second set of data is collected by a set of sensors during execution of an analogous execution of said recipe, and~~

~~correlating said first set of data with said second set of data to construct said subsystem health check predictive model.~~

~~13~~12. The processing chamber health check arrangement of claim 10 wherein said subsystem health check predictive model is constructed from data collected from a time period, wherein said time period being one of at the beginning of a wet cycle, during said wet cycle, and at the end of said wet cycle.

~~14~~13. The processing chamber health check arrangement of claim ~~13~~ 12 wherein said subsystem health check predictive model is constructed from data collected from one time period.

~~15~~14. The processing chamber health check arrangement of claim ~~13~~ 12 wherein said subsystem health check predictive model is constructed from data collected from at least two time periods.

~~16~~15. An article of manufacture comprising a non-transitory program storage medium having computer readable code embodied therein, said computer readable code being configured for predicting etch rate uniformity for qualifying health status of a processing chamber during substrate processing of a set of substrates, comprising:

code for executing a recipe on a first substrate of said set of substrates;

code for receiving processing data from a first set of sensors during said executing of said recipe;

code for analyzing said processing data utilizing a subsystem health check predictive model to determine calculated data, said calculated data including at least one

of etch rate data and uniformity data, wherein said subsystem health check predictive model is constructed by correlating a first set of data and a second set of data, said first set of data includes measurement data from a set of film substrates and said second set of data includes processing data collected during analogous processing of a set of non-film substrates;

code for comparing said calculated data of said first substrate against a set of control limits as defined by said subsystem health check predictive model; and

code for generating a warning if said calculated data is outside of said set of control limits.

~~17~~16. The article of manufacture of claim ~~16~~ 15 further including code for performing a pre-emptive assessment to determine the readiness state of said processing chamber.

~~18~~17. The article of manufacture of claim ~~16~~ 15 further including code for pulling data from a library to support said subsystem health check predictive model.

~~19~~18. The article of manufacture of claim ~~16~~ 15 further including if said calculated data is within said set of control limits, code for validating a verification degree to determine if a predefined number of substrates have passed said comparison between said calculated data and said set of control limits.

~~20~~19. The article of manufacture of claim ~~16~~ 15 wherein said subsystem health check predictive model is constructed from data collected from a time period, wherein said time period being one of at the beginning of a wet cycle, during said wet cycle, and at the end of said wet cycle.