Claims

1. A substrate flattening system, comprising:

a first process chamber having a first substrate support and a first showerhead, wherein the first substrate support does not include a chucking mechanism;

a first heater disposed in the first substrate support to heat a substrate placed on a first support surface of the first substrate support;

a second heater configured to heat a process gas flowing through the first showerhead into a first processing volume of the first process chamber; and

a second process chamber having a second substrate support, wherein the second substrate support is not heated, and wherein the first process chamber and the second process chamber are both non-vacuum chambers.

2. The substrate flattening system of claim 1, wherein the first process chamber further comprises:

a first power supply electrically coupled to the first heater;

a first temperature controller coupled to the first power supply to control the first power supply;

a second power supply electrically coupled to the second heater; and

a second temperature controller coupled to the second power supply to control the second power supply.

3. The substrate flattening system of claim 2, wherein the first process chamber further comprises:

a thermocouple disposed through a first shaft of the first substrate support and proximate a first support surface of the first substrate support to measure a temperature of the first support surface, wherein the thermocouple is operatively coupled to the first and second temperature controllers.

4. The substrate flattening system of claim 1, wherein the first process chamber further comprises:

a first gas panel fluidly coupled to the first showerhead to supply the first showerhead with the process gas.

5. The substrate flattening system of claim 1, wherein the second heater is disposed in the first showerhead.

6. The substrate flattening system of claim 1, wherein the second substrate support includes a first plurality of coolant channels configured to flow a coolant.

7. The substrate flattening system of claim 6, wherein the second process chamber further comprises:

a second showerhead, wherein the second showerhead includes a second plurality of coolant channels configured to flow a coolant.

8. The substrate flattening system of claim 2, wherein the first process chamber further comprises:

a system controller operatively coupled to the first chamber, the first temperature controller, and the second temperature controller.

9. The substrate flattening system of claim 3, wherein the thermocouple has a tip positioned below the first heater in the first substrate support.

10. The substrate flattening system of claim 3, wherein the thermocouple has a tip positioned above the first heater in the first substrate support.

11. The substrate flattening system of claim 6, wherein the second process chamber further comprises:

a first coolant supply; and

a first temperature controller coupled to the first coolant supply which is fluidly coupled to the first plurality of coolant channels in the second substrate support.

12. The substrate flattening system of claim 11, wherein the second process chamber further comprises:

a system controller operatively couple to the second chamber and the first temperature controller.

13. The substrate flattening system of claim 7, wherein the second process chamber further comprises:

a second coolant supply; and

a second temperature controller coupled to the second coolant supply which is fluidly coupled to the second plurality of coolant channels in the second showerhead.

14. The substrate flattening system of claim 1, wherein the second substrate support of the second process chamber includes a substrate chuck.

15. The substrate flattening system of claim 1, wherein the first substrate support has a substrate lift that is configured to be positionable to maximize temperature uniformity across a warped substrate.