CLAIMS

1. A cluster architecture for processing a substrate, comprising:

(a) at a first location, a lab-ambient controlled transfer module for accepting substrates into and out of the cluster architecture,

the lab-ambient controlled transfer module being coupled to one or more wet substrate processing modules, the lab-ambient controlled transfer module and the one or more wet substrate processing modules configured to manage a first ambient environment, and an interface between the lab-ambient controlled transfer module and one or more wet substrate processing module is defined, such that an end effector handles the substrate in a dry-in state into one of the wet substrate processing modules and a dry-out state out of one of the wet substrate processing modules, wherein at least one of the wet substrate processing modules is a proximity head system, the proximity head system produces a meniscus between a surface of the proximity head and a surface of the substrate, the substrate is configured to be held by a carrier in the proximity head system and the carrier is movable along a track of the proximity head system;

wherein the track of the proximity head system is parallel to a track of the end effector of the lab-ambient controlled transfer module;

(b) at a second location, a vacuum transfer module being directly coupled to a first load lock, with the lab-ambient controlled transfer module being directly coupled to the same first load lock, the first load lock configured for dry transfer;

the vacuum transfer module being coupled to one or more plasma processing modules, the vacuum transfer module and the one or more plasma processing modules configured to manage a second ambient environment; and

(c) at a third location, a controlled ambient transfer module being directly coupled to a second load lock, with the vacuum transfer module being directly coupled to the same second load lock, the second load lock configured for dry transfer;

the controlled ambient transfer module being coupled to one or more ambient processing modules, the controlled ambient transfer module and the one or more ambient processing modules configured to manage a third ambient environment;

wherein the second location is between the first and third locations;

wherein the cluster architecture defines a controlled processing of the substrate in each of the first, second and third ambient environments and wherein the first, second and third environments are isolated from an uncontrolled clean room environment outside of the cluster architecture;

wherein the one or more ambient processing modules include a metallic plating system.

2. The cluster architecture as recited in claim 1, wherein the third ambient environment is an inert ambient that is substantially free of oxygen.

3. The cluster architecture as recited in claim 1, wherein the first ambient environment is an inert ambient that is substantially free of oxygen.

4. The cluster architecture as recited in claim 1, wherein the second ambient environment is capable of being set in vacuum.

5. The cluster architecture as recited in claim 1, wherein the metallic plating systems include electroplating and electroless plating systems.

6. The cluster architecture as recited in claim 1, wherein a non-Newtonian fluid is used in one of the wet substrate processing modules.

7. The cluster architecture as recited in claim 1, wherein a brush system is used in a wet substrate processing module.

8. The cluster architecture as recited in claim 1, wherein the lab-ambient controlled transfer module is defined by a stretch module having a track and an end effector for moving substrates into and out of the one or more wet substrate processing modules.

9. A cluster architecture for processing a substrate, comprising:

(a) at a first location, configured to receive substrates into and out of the cluster architecture, a lab-ambient controlled transfer module being coupled to one or more wet

substrate processing modules, the lab-ambient controlled transfer module and the one or more wet substrate processing modules configured to manage a first ambient environment, wherein at least one of the wet substrate processing modules is a proximity head system, the proximity head system produces a meniscus between a surface of the proximity head and a surface of the substrate, the substrate is configured to be held by a carrier in the proximity head system and the carrier movable along a track of the proximity head system;

wherein the track of the proximity head system is parallel to a track of an end effector of the lab-ambient controlled transfer module;

(b) at a second location, a first load lock directly coupled to the lab-ambient controlled transfer module on a first side of the first load lock and directly coupled to a vacuum transfer module on a side opposite the first side of the first load lock, the first load lock configured for dry transfer, the vacuum transfer module coupled to one or more plasma processing modules, the vacuum transfer module and the one or more plasma processing modules configured to manage a second ambient environment; and

(c) at a third location, a second load lock directly coupled to the vacuum transfer module on a first side of the second load lock and directly coupled to a controlled ambient transfer module on a side opposite the first side of the second load lock, the second load lock configured for dry transfer, the controlled ambient transfer module being coupled to one or more ambient processing modules, and wherein one or more of the ambient processing modules include a metallic plating system, the controlled ambient transfer module and the one or more ambient processing modules configured to manage a third ambient environment;

wherein the second location is between the first and third locations;

wherein the cluster architecture enables controlled processing of the substrate in either the first, second or third ambient environments, wherein the first, second and third ambient environments are isolated by slot valves and the load locks, the slot valves define isolation between the ambient environments when transitions of the substrate are provided through the load locks, where dry plasma processing and wet processing is enabled within the cluster architecture without exposure of the substrate to an oxygen environment that is outside of the cluster architecture.

10. A cluster architecture for processing a substrate, comprising:

a lab-ambient controlled transfer module configured to receive substrates into and out of the cluster architecture, the lab-ambient controlled transfer module being coupled to one or more wet substrate processing modules, the lab-ambient controlled transfer module and the one or more wet substrate processing modules configured to manage a first ambient environment, wherein at least one of the wet substrate processing modules is a proximity head system, the proximity head system produces a meniscus between a surface of the proximity head and a surface of the substrate, the substrate is configured to be held by a carrier in the proximity head system and the carrier movable along a track of the proximity head system;

an end effector in the lab-ambient controlled transfer module, the end effector movable along a linear track, the end effector moving wafers in and out of the one or more wet substrate processing modules in a dry state;

wherein the track of the proximity head system is parallel to the linear track of the end effector of the lab-ambient controlled transfer module;

a vacuum transfer module being directly coupled to a first load lock that directly couples to the lab-ambient controlled transfer module, the first load lock configured for dry transfer, the vacuum transfer module being coupled to one or more plasma processing modules, the vacuum transfer module and the one or more plasma processing modules configured to manage a second ambient environment, the end effector communicating dry substrates from the lab-ambient controlled module to the vacuum transfer module through the first load lock; and

a controlled ambient transfer module being directly coupled to a second load lock that directly couples to the vacuum transfer module, the second load lock configured for dry transfer, the controlled ambient transfer module being coupled to one or more ambient processing modules, and wherein one or more of the ambient processing modules include a metallic plating system, the controlled ambient transfer module and the one or more ambient processing modules configured to manage a third ambient environment that is configurable as an inert ambient that is substantially free of oxygen;

wherein the vacuum transfer module is between the lab-ambient controlled transfer module and the controlled ambient transfer module;

wherein the cluster architecture enables controlled processing of the substrate in either the first, second or third ambient environments, and during operation, the first, second and

third environments are configured to be isolated from an uncontrolled clean room environment outside of the cluster architecture.

11. The cluster architecture as recited in claim 10, wherein the first ambient environment is an inert ambient that is substantially free of oxygen.

12. The cluster architecture as recited in claim 10, wherein the metallic plating systems include electroplating and electroless plating systems.

13. The cluster architecture as recited in claim 10, further comprising,

a computer for controlling movement of the substrate between the first, second and third ambient environments and into and out of processing modules connected to respective ones of the ambient environments.