

CLAIMS

1. A method comprising:
 - identifying a substrate to be processed at a manufacturing system according to a first process recipe;
 - generating an instruction to transfer the substrate to a substrate measurement subsystem to obtain a first set of measurements for the substrate;
 - receiving, from the substrate measurement subsystem, the first set of measurements for the substrate;
 - generating an instruction to transfer the substrate from the substrate measurement subsystem to a processing chamber;
 - receiving, from one or more sensors of the processing chamber, a second set of measurements for the substrate;
 - generating a first mapping between the first set of measurements and the second set of measurements for the substrate; and
 - determining, based on the first set of measurements mapped to the second set of measurements for the substrate, whether to modify the first process recipe or a second process recipe for the substrate.
2. The method of claim 1, wherein the first set of measurements for the substrate comprises at least one of spectral data, positional data, or property data and wherein the second set of measurements for the substrate comprises at least one of spectral data, temperature data, pressure data, or power data.
3. The method of claim 1, further comprising:
 - storing the first set of measurements mapped to the second set of measurements for the substrate to a data store for the manufacturing system, wherein the data store is inaccessible to an operator of the manufacturing system.
4. The method of claim 1, wherein determining, based on the first set of measurements mapped to the second set of measurements for the substrate, whether to modify the first process recipe or the second process recipe for the substrate comprises:
 - calculating a difference between a first measurement of the first set of measurements and a second measurement of the second set of measurements; and

determining whether the difference between the first measurement and the second measurement exceeds a difference threshold.

5. The method of claim 1, wherein determining, based on the first set of measurements mapped to the second set of measurements for the substrate, whether to modify the first process recipe or the second process recipe for the substrate comprises:

determining a target value associated with a first measurement of the first set of measurement;

calculating a difference between the target value and the first measurement; and

determining whether the difference between the target value and the first measurement exceeds a difference threshold.

6. The method of claim 1, further comprising:

responsive to determining to modify the first process recipe or the second process recipe for the substrate, transmitting, to a client device connected to the manufacturing system, a request to modify the first process recipe or the second process recipe for the substrate;

receiving, from the client device, an instruction to modify the first process recipe or the second process recipe for the substrate; and

modifying the first process recipe or the second process recipe for the substrate in accordance with the received instruction.

7. The method of claim 6, wherein modifying the first process recipe or the second process recipe comprises at least one of modifying an operation of the first process recipe or the second process recipe.

8. The method of claim 1, further comprising:

generating an instruction to transfer the substrate from the processing chamber to the substrate measurement subsystem to obtain a third set of measurements for the substrate;

receiving, from the substrate measurement subsystem, the third set of measurements for the substrate;

generating at least one of a second mapping between the first set of measurements and the third set of measurements for the substrate or a third mapping between the second set of measurements and the third set of measurements for the substrate; and

determining, based on at least one of the second mapping between the first set of measurements and the third set of measurements for the substrate or the third mapping between the second set of measurements and the third set of measurements for the substrate, whether to modify the first process recipe or the second process recipe for the substrate.

9. The method of claim 1, wherein the instruction to transfer the substrate from the substrate measurement subsystem to the processing chamber is generated, and the second set of measurements for the substrate is received, prior to generating the instruction to transfer the substrate to the substrate measurement subsystem to obtain the first set of measurements and receiving the first set of measurements for the substrate.

10. A manufacturing system comprising:

- a substrate measurement subsystem configured to generate data associated with a substrate processed at the manufacturing system;

- a processing chamber configured to process a substrate at the manufacturing system, wherein the processing chamber comprises one or more sensors;

- one or more transfer robots configured to transfer a substrate between the substrate measurement subsystem and the processing chamber; and

- a controller operatively coupled to the substrate measurement subsystem, the processing chamber, and the one or more transfer robots, wherein the controller is to:

- identify a substrate to be processed at the manufacturing system according to a first process recipe;

- generate an instruction to cause the one or more transfer robots to transfer the substrate to the substrate measurement subsystem to obtain a first set of measurements for the substrate;

- receive, from the substrate measurement subsystem, the first set of measurements for the substrate;

- generate an instruction to cause the one or more transfer robots to transfer the substrate from the substrate measurement subsystem to the processing chamber;

- receive, from the one or more sensors of the processing chamber, a second set of measurements for the substrate;

- generate a first mapping between the first set of measurements and the second set of measurements for the substrate; and

determine, based on the first set of measurements mapped to the second set of measurements for the substrate, whether to modify the first process recipe or a second process recipe for the substrate.

11. The manufacturing system of claim 10, wherein the first set of measurements for the substrate comprises at least one of spectral data, positional data, or property data, and wherein the second set of measurements for the substrate comprises at least one of spectral data, temperature data, pressure data, or power data.

12. The manufacturing system of claim 10, further comprising a data store that is inaccessible to an operator of the manufacturing system, and wherein the controller is further to:

store the first set of measurements mapped to the second set of measurements for the substrate to the data store.

13. The manufacturing system of claim 10, wherein to determine, based on the first set of measurements mapped to the second set of measurements for the substrate, whether to modify the first process recipe or the second process recipe for the substrate, the controller is to:

calculate a difference between a first measurement of the first set of measurements and a second measurement of the second set of measurements; and

determine whether the difference between the first measurement and the second measurement exceeds a difference threshold.

14. The manufacturing system of claim 10, wherein to determine, based on the first set of measurements mapped to the second set of measurements for the substrate, whether to modify the first process recipe or the second process recipe for the substrate, the controller is to:

determine a target value associated with a first measurement of the first set of measurement;

calculate a difference between the target value and the first measurement; and

determine whether the difference between the target value and the first measurement exceeds a difference threshold.

15. The manufacturing system of claim 10, wherein the controller is further to:
responsive to determining to modify the first process recipe or the second process recipe for the substrate, transmit, to a client device connected to the manufacturing system, a request to modify the first process recipe or the second process recipe for the substrate;
receive, from the client device, an instruction to modify the first process recipe or the second process recipe for the substrate; and
modify the first process recipe or the second process recipe for the substrate in accordance with the received instruction.
16. The manufacturing system of claim 15, wherein modifying the first process recipe or the second process recipe comprises at least one of modifying an operation of the first process recipe or the second process recipe or generating an instruction to termination execution of the first process recipe for the substrate.
17. A non-transitory computer readable storage medium comprising instructions that, when executed by a processing device, cause the processing device to:
identify a substrate to be processed at a manufacturing system according to a first process recipe;
generate an instruction to transfer the substrate to a substrate measurement subsystem to obtain a first set of measurements for the substrate;
receive, from the substrate measurement subsystem, the first set of measurements for the substrate;
generate an instruction to transfer the substrate from the substrate measurement subsystem to a processing chamber;
receive, from one or more sensors of the processing chamber, a second set of measurements for the substrate;
generate a first mapping between the first set of measurements and the second set of measurements for the substrate; and
determine, based on the first set of measurements mapped to the second set of measurements for the substrate, whether to modify the first process recipe or a second process recipe for the substrate.
18. The non-transitory computer readable storage medium of claim 17, wherein the first set of measurements for the substrate comprises at least one of spectral data, positional data,

or property data, and wherein the second set of measurements for the substrate comprises at least one of spectral data, temperature data, pressure data or power data..

19. The non-transitory computer readable storage medium of claim 17, wherein the processing device is further to:

store the first set of measurements mapped to the second set of measurements for the substrate to a data store for the manufacturing system, wherein the data store is inaccessible to an operator of the manufacturing system.

20. The non-transitory computer readable storage medium of claim 17, wherein to determine, based on the first set of measurements mapped to the second set of measurements for the substrate, whether to modify the first process recipe or the second process recipe for the substrate, the processing device is to:

calculate a difference between a first measurement of the first set of measurements and a second measurement of the second set of measurements; and

determine whether the difference between the first measurement and the second measurement exceeds a difference threshold.