

WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor device, comprising:
modifying a first surface of a substrate by supplying a modifying gas containing an inorganic ligand to the substrate including the first surface and a second surface different from the first surface; and
selectively growing a film on the second surface by supplying a deposition gas to the substrate.
2. The method according to Claim 1, wherein the modifying gas is a first halide.
3. The method according to Claim 2, wherein the first halide is a fluorine-containing gas.
4. The method according to Claim 1, wherein the deposition gas includes a precursor gas and a reaction gas reacting with the precursor gas, and
wherein, in the act of selectively growing the film on the second surface, the precursor gas and the reaction gas are alternately supplied so that the precursor gas and the reaction gas are not mixed with each other.
5. The method according to Claim 2, wherein the deposition gas includes a precursor gas and a reaction gas reacting with the precursor gas, and
wherein, in the act of selectively growing the film on the second surface, the precursor gas and the reaction gas are alternately supplied so that the precursor gas and the reaction gas are not mixed with each other.
6. The method according to Claim 3, wherein the deposition gas includes a precursor gas and a reaction gas reacting with the precursor gas, and

wherein, in the act of selectively growing the film on the second surface, the precursor gas and the reaction gas are alternately supplied so that the precursor gas and the reaction gas are not mixed with each other.

7. The method according to Claim 4, wherein the precursor gas is a second halide.
8. The method according to Claim 5, wherein the precursor gas is a second halide.
9. The method according to Claim 6, wherein the precursor gas is a second halide.
10. The method according to Claim 7, wherein the second halide is a chlorine-containing gas.
11. The method according to Claim 4, wherein the modifying gas and the precursor gas each have a ligand which is electrically negative.
12. The method according to Claim 1, wherein the act of selectively growing the film on the second surface is performed while heating the substrate at 500 degrees C or higher.
13. The method according to Claim 1, wherein the act of modifying the first surface is performed while heating the substrate at 300 degrees C or lower.
14. The method according to Claim 12, wherein the act of modifying the first surface is performed while heating the substrate at 300 degrees C or lower.
15. The method according to Claim 1, wherein the first surface is a silicon oxide layer.

16. A substrate processing apparatus, comprising:

- a first process chamber configured to accommodate a substrate including a first surface and a second surface different from the first surface;
- a first gas supply system configured to supply a modifying gas containing an inorganic ligand to the first process chamber;
- a second process chamber configured to accommodate the substrate;
- a second gas supply system configured to supply a deposition gas to the second process chamber;
- a transfer system configured to load and unload the substrate into and from the first process chamber and the second process chamber; and
- a controller configured to control the first gas supply system, the second gas supply system, and the transfer system to perform a process, the process comprising:
 - loading the substrate into the first process chamber;
 - modifying the first surface by supplying the modifying gas to the first process chamber;
 - unloading the substrate from the first process chamber;
 - loading the substrate into the second process chamber;
 - selectively growing a film on the second surface by supplying the deposition gas to the second process chamber; and
 - unloading the substrate from the second process chamber.

17. A substrate processing apparatus, comprising:

- a process chamber configured to accommodate a substrate;
- a first gas supply system configured to supply a modifying gas containing an inorganic ligand to the process chamber;
- a second gas supply system configured to supply a deposition gas to the process chamber; and

a controller configured to be capable of controlling the first gas supply system and the second gas supply system to perform a process comprising:

modifying a first surface of the substrate by supplying the modifying gas to the process chamber accommodating the substrate including the first surface and a second surface different from the first surface; and

selectively growing a film on the second surface by supplying the deposition gas to the process chamber.

18. A computer-readable recording medium recording a program that causes, by a computer, a substrate processing apparatus to perform a process comprising:

loading a substrate including a first surface and a second surface different from the first surface into a first process chamber of the substrate processing apparatus;

modifying the first surface by supplying a modifying gas containing an inorganic ligand to the substrate;

unloading the substrate from the first process chamber;

loading the substrate into a second process chamber of the substrate processing apparatus; and

selectively growing a film on the second surface by supplying a deposition gas to the substrate.

19. A computer-readable recording medium recording a program that causes, by a computer, a substrate processing apparatus to perform a process, the process comprising:

modifying a first surface of a substrate by supplying a modifying gas containing an inorganic ligand to the substrate accommodated in a process chamber of the substrate processing apparatus, the substrate including the first surface and a second surface different from the first surface; and

selectively growing a film on the second surface by supplying a deposition gas to the

substrate.

CLAIMS:

1. A method of manufacturing a semiconductor device, comprising:
modifying a first surface of a substrate by supplying a modifying gas, which is a
fluorine-containing gas, to the substrate including the first surface and a second surface
different from the first surface; and
selectively growing a film on the second surface by supplying a deposition gas to the
substrate.
2. The method according to Claim 1, wherein the deposition gas includes a precursor
gas and a reaction gas reacting with the precursor gas, and
wherein, in the act of selectively growing the film on the second surface, the
precursor gas and the reaction gas are alternately supplied so that the precursor gas and the
reaction gas are not mixed with each other.
3. The method according to Claim 2, wherein the precursor gas is a second halide.
4. The method according to Claim 3, wherein the second halide is a chlorine-containing
gas.
5. The method according to Claim 1, wherein the deposition gas includes a precursor
gas, and
wherein the modifying gas and the precursor gas each contain a ligand which is
electrically negative.
6. The method according to Claim 1, wherein the act of selectively growing the film on
the second surface is performed while heating the substrate at 500 degrees C or higher.

7. The method according to Claim 1 or 6, wherein the act of modifying the first surface is performed while heating the substrate at 300 degrees C or lower.

8. The method according to Claim 1, wherein the first surface is a silicon oxide layer.

9. The method according to Claim 1, wherein in the act of modifying the first surface, the supplying the modifying gas is performed a predetermined number of times.

10. A substrate processing apparatus, comprising:

a first process chamber configured to accommodate a substrate including a first surface and a second surface different from the first surface;

a first gas supply system configured to supply a modifying gas, which is a fluorine-containing gas, to the first process chamber;

a second process chamber configured to accommodate the substrate;

a second gas supply system configured to supply a deposition gas to the second process chamber;

a transfer system configured to load and unload the substrate into and from the first process chamber and the second process chamber; and

a controller configured to control the first gas supply system, the second gas supply system, and the transfer system to perform a process, the process comprising:

loading the substrate into the first process chamber;

modifying the first surface by supplying the modifying gas to the first process chamber;

unloading the substrate from the first process chamber;

loading the substrate into the second process chamber;

selectively growing a film on the second surface by supplying the deposition

gas to the second process chamber; and

unloading the substrate from the second process chamber.

11. A substrate processing apparatus, comprising:

a process chamber configured to accommodate a substrate;

a first gas supply system configured to supply a modifying gas, which is a fluorine-containing gas, to the process chamber;

a second gas supply system configured to supply a deposition gas to the process chamber; and

a controller configured to control the first gas supply system and the second gas supply system to perform a process comprising:

modifying a first surface of the substrate by supplying the modifying gas to the process chamber accommodating the substrate including the first surface and a second surface different from the first surface; and

selectively growing a film on the second surface by supplying the deposition gas to the process chamber.

12. A program that causes, by a computer, a substrate processing apparatus to perform a process comprising:

loading a substrate including a first surface and a second surface different from the first surface into a first process chamber of the substrate processing apparatus;

modifying the first surface by supplying a modifying gas, which is a fluorine-containing gas, to the substrate;

unloading the substrate from the first process chamber;

loading the substrate into a second process chamber of the substrate processing apparatus; and

selectively growing a film on the second surface by supplying a deposition gas to the

substrate.

13. A program that causes, by a computer, a substrate processing apparatus to perform a process, the process comprising:

modifying a first surface of a substrate by supplying a modifying gas, which is a fluorine-containing gas, to the substrate accommodated in a process chamber of the substrate processing apparatus, the substrate including the first surface and a second surface different from the first surface; and

selectively growing a film on the second surface by supplying a deposition gas to the substrate.

14. A method of processing a substrate, comprising:

modifying a first surface of the substrate by supplying a modifying gas, which is a fluorine-containing gas, to the substrate including the first surface and a second surface different from the first surface; and

selectively growing a film on the second surface by supplying a deposition gas to the substrate.