WHAT IS CLAIMED IS:

1. A method of processing a substrate~~manufacturing a semiconductor device~~, comprising:

(a) supplying a gas containing an organic ligand to the~~a~~ substrate;

(b) supplying a metal-containing gas to the substrate; ~~and~~

(c) supplying a first reducing gas to the substrate; and~~,~~

(d) supplying a second reducing gas to the substrate before (a), after (a), or before (a) and after (a),

wherein after (a), a metal-containing film is formed on the substrate by performing (b) and (c) one or more times, respectively, and

wherein a purge gas is not supplied between (a) and (d).

2. The method of Claim 1, wherein the organic ligand contains a hydrocarbon group.

3. The method of Claim 1, wherein the organic ligand contains an alkyl group.

4. The method of Claim 3, wherein the alkyl group includes at least one selected from the group of an ethyl group, a propyl group, a butyl group, an isopropyl group, and an isobutyl group.

5. The method of Claim 1, wherein the organic ligand contains an amine group.

6. The method of Claim 1, wherein the gas containing the organic ligand contains a metal element.

7. The method of Claim 6, wherein the metal element contained in the gas containing the organic ligand is different from a metal element contained in the metal-containing gas.

8. The method of Claim 6, wherein the metal element contained in the gas containing the organic ligand is a non-transition metal element.

9. The method of Claim 1, wherein the~~a~~ purge gas is not supplied between (a) and (b).

10. The method of Claim 1, wherein in (d)~~further comprising: (d) before (a)~~, the~~supplying a~~ second reducing gas is supplied to the substrate before (a).

11. The method of Claim 1, wherein in (d)~~further comprising: (e) after (a)~~, the~~supplying a~~ second reducing gas is supplied to the substrate after (a).

12. The method of Claim 1,~~ further comprising:~~

wherein in (d)~~(f) before (a)~~, the~~supplying a~~ second reducing gas is supplied to the substrate before (a),~~; and~~

wherein the method further comprises (g) after (a), supplying the second reducing gas to the substrate, and

wherein (a) and (g) are performed multiple times.

13. The method of Claim 1~~0~~, wherein the second reducing gas is a gas different from the first reducing gas.

14. The method of Claim 1~~0~~, wherein the second reducing gas is the same gas as the first reducing gas.

15. The method of Claim 1, wherein in (a), the gas containing the organic ligand is supplied to the substrate in a time-division manner.

16. The method of Claim 1, wherein in (b), the metal-containing gas is supplied to the substrate on which the organic ligand is exposed.

17. A substrate processing apparatus comprising:

~~a process container in which a substrate is accommodated;~~

a gas supply system configured to supply a metal-containing gas, a first reducing gas, and a gas containing an organic ligand into~~–~~ a substrate~~the process container~~; and

a controller configured to be capable of controlling the gas supply system so as to perform a process including:

(a) supplying the gas containing the organic ligand to the substrate;

(b) supplying the metal-containing gas to the substrate;~~ and~~

(c) supplying the first reducing gas to the substrate; and~~,~~

(d) supplying a second reducing gas to the substrate before (a), after (a), or before (a) and after (a),

wherein after (a), a metal-containing film is formed on the substrate by performing (b) and (c) one or more times, respectively, and

wherein a purge gas is not supplied between (a) and (d).

18. A method of manufacturing a semiconductor device~~processing a substrate~~, comprising:

(a) supplying a gas containing an organic ligand to a ~~the~~ substrate;

(b) supplying a metal-containing gas to the substrate;~~ and~~

(c) supplying a first reducing gas to the substrate; and~~,~~

(d) supplying a second reducing gas to the substrate before (a), after (a), or before (a) and after (a),

wherein after (a), a metal-containing film is formed on the substrate by performing (b) and (c) one or more times, respectively, and

wherein a purge gas is not supplied between (a) and (d).

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

(a) supplying a gas containing an organic ligand to a substrate;

(b) supplying a metal-containing gas to the substrate; and

(c) supplying a first reducing gas to the substrate; and,

(d) supplying a second reducing gas to the substrate before (a), after (a), or before (a) and after (a),

wherein after (a), a metal-containing film is formed on the substrate by performing (b) and (c) one or more times, respectively, and

wherein a purge gas is not supplied between (a) and (d).