CLAIMS

[Claim 1]

A substrate processing device comprising:

a chamber with inside capable of being evacuated;

a substrate holder provided inside the chamber and including a substrate mounting surface capable of cooling a substrate;

a shield provided inside the chamber and including a side wall portion provided to surround a lateral side of the substrate mounting surface; and

shield cooling unit configured to cool the shield before the substrate is mounted on the substrate mounting surface.

[Claim 2]

The substrate processing device according to claim 1, wherein the shield further comprises an upper wall portion opposed to the substrate mounting surface.

[Claim 3]

The substrate processing device according to claim 1, wherein the side wall portion is provided such that, when a gas molecule trapped on the side wall portion is released, a probability of the gas molecule desorbed from the side wall portion and to be directed to a direction to recede from the substrate mounting surface becomes highest.

[Claim 4]

The substrate processing device according to claim 1, wherein the shield further comprises a skirt wall portion to surround a lateral part of the substrate holder.

[Claim 5]

The substrate processing device according to claim 1, further comprising:

a heater located on the substrate holder side of the shield.

[Claim 6]

A method of cooling the substrate by using the substrate processing device according to claim 1, comprising the steps of:

mounting the substrate on the substrate mounting surface; and

cooling the substrate in a state where the substrate holder and the shield are cooled.

[Claim 7]

A method of performing maintenance of the substrate processing device according to claim 5, comprising the step of:

operating the heater in a state where the substrate is not located in the chamber.

[Claim 8]

The method according to claim 7, wherein the step of operating the heater is performed between the step of cooling a first substrate by using the substrate processing device according to claim 1 and the step of cooling a second substrate by using the substrate processing device according to claim 1.

[Claim 9]

The substrate processing device according to claim 1, further comprising:

a shield drive mechanism configured to elevate and lower the shield along a normal direction of the substrate mounting surface.

[Claim 10]

A method of cooling the substrate by using the

substrate processing device according to claim 9, comprising the steps of:

moving the substrate to a position located above the substrate mounting surface but not in contact with the substrate mounting surface in a state where the shield is elevated by using the shield drive mechanism;

lowering the shield by using the shield drive mechanism;

mounting the substrate on the substrate mounting surface; and

cooling the substrate in a state where the substrate holder and the shield are cooled.

[Claim 11]

The substrate processing device according to claim 1, wherein the side wall portion is provided such that a probability that, when a gas molecule trapped on the side wall portion is released, the gas molecule desorbed from the side wall portion is directed to a direction away from the substrate mounting surface is higher than a probability that the gas molecule is directed to a direction toward the substrate mounting surface.