CLAIMS

[Claim 1]

A semiconductor failure analysis device comprising:

an analysis part comprising a first optical detection part, a first optical system and a first drive part, wherein the first optical detection part receives first light from a semiconductor device via a first optical system, and the first optical system is moved relative to the semiconductor device by the first drive part;

a marking part comprising a second optical detection part, a second optical system and a second drive part, wherein the second optical detection part receives second light from the semiconductor device via the second optical system, the semiconductor device is irradiated with laser light via the second optical system, and the second optical system is moved relative to the semiconductor device by the second drive part;

a device arrangement part comprising a chuck and a third drive part, wherein the chuck is disposed between the analysis part and the marking part to hold the semiconductor device and provided with a target configured for aligning an optical axis of the first optical system with an optical axis of the second optical system, the chuck being moved relative to the analysis part and the marking part by the third drive part; and

a control part configured to output a command to the analysis part, the marking part, and the device arrangement part,

wherein the target is detectable by the first optical detection part from one side of the target and is detectable by the second optical detection part from the other side of the target, and

the control part is configured to output an alignment command that moves the chuck to a position at which the target is detectable by the first optical detection part and then to align the optical axis of the second optical system with the optical axis of the first optical system with the target as a reference to the marking part and the device arrangement part, and to output a marking command that irradiates a marking position set on the semiconductor device with the laser light in a state in which a positional relationship between the optical axis of the first optical system and the optical axis of the second optical system is maintained to the marking part and the device arrangement part.

[Claim 2]

The semiconductor failure analysis device according to claim 1, wherein the control part is configured to output an analysis command that analyzes a failure place in the semiconductor device with the analysis part to the analysis part before the alignment command is output.

[Claim 3]

The semiconductor failure analysis device according to claim 1 or 2, wherein the marking command causes the chuck to be moved to the marking position by the third drive part and then causes the semiconductor device to be irradiated with the laser light.

[Claim 4]

The semiconductor failure analysis device according to any one of claims 1 to 3, wherein the alignment command causes the first optical detection part to acquire a first image of the target from one side, causes the second optical detection part to acquire a second image of the target from the other side, and moves the second optical system so that the

optical axis of the second optical system is aligned with the optical axis of the first optical system based on the first image and the second image.

[Claim 5]

The semiconductor failure analysis device according to any one of claims 1 to 4, wherein the target is provided at a position different from a device holding part of the chuck in which the semiconductor device is held.

[Claim 6]

The semiconductor failure analysis device according to any one of claims 1 to 5, wherein the first optical detection part is configured to acquire a first image of the target seen from one side, and

the second optical detection part is configured to acquire a second image of the target seen from the other side.

[Claim 7]

The semiconductor failure analysis device according to any one of claims 1 to 6, wherein the target includes a light transmission part which is configured to transmit light that is detectable by the first optical detection part and the second optical detection part.

[Claim 8]

A semiconductor failure analysis method which analyzes a semiconductor device using a semiconductor failure analysis device,

wherein the semiconductor failure analysis device includes:

an analysis part in which a first optical detection part receives first light from the semiconductor device via a first optical system, and the first optical system is moved relative to the semiconductor device by a first drive part;

a marking part in which a second optical detection part receives second light from the semiconductor device via a second optical system, the semiconductor device is irradiated with laser light via the second optical system, and the second optical system is moved relative to the semiconductor device by a second drive part;

a device arrangement part having a chuck disposed between the analysis part and the marking part to hold the semiconductor device and provided with a target that aligns an optical axis of the first optical system with an optical axis of the second optical system, the chuck being moved relative to the analysis part and the marking part by a third drive part; and

a control part configured to output a command to the analysis part, the marking part, and the device arrangement part,

wherein the target is detectable by the first optical detection part from one side of the target and is detectable by the second optical detection part from the other side of the target, the method comprising:

an alignment step of moving the chuck to a position at which the target is detectable by the first optical detection part and then aligning the optical axis of the second optical system with the optical axis of the first optical system with the target as a reference; and

a marking step of irradiating a marking position set on the semiconductor device with the laser light in a state in which a positional relationship between the optical axis of the first optical system and the optical axis of the second optical system is maintained.

[Claim 9]

The semiconductor failure analysis method according to claim 8, further comprising an analysis step of analyzing a failure place in the semiconductor device with the analysis part before the alignment step.

[Claim 10]

The semiconductor failure analysis method according to claim 8 or 9, wherein the marking step causes the chuck to be moved to the marking position by the third drive part and then causes the semiconductor device to be irradiated with the laser light.

[Claim 11]

The semiconductor failure analysis method according to any one of claims 8 to 10, wherein the alignment step causes the first optical detection part to acquire a first image of the target from one side, causes the second optical detection part to acquire a second image of the target from the other side, and moves the second drive system so that the optical axis of the second optical system is aligned with the optical axis of the first optical system based on the first image and the second image.