CLAIMS

1. A substrate heat-treating apparatus comprising:

a process chamber in which a flat substrate to be heat treated is placed, the process chamber comprising a beam transmitting plate placed below the flat substrate and an infrared transmitting plate placed above the flat substrate;

a beam irradiating module for irradiating a VCSEL beam having a single wavelength to a lower surface of the flat substrate through the beam transmitting plate; and

a temperature measuring module for measuring the temperature of the lower surface of the flat substrate;

wherein the temperature measuring module measures the temperature of the lower surface of the flat substrate at the lower part of the beam irradiating module.

2. The substrate heat-treating apparatus of claim 1, wherein the process chamber comprises;

a side wall in which the flat substrate is seated,

an outer housing in which the infrared transmitting plate and an upper plate are placed above the flat substrate in the side wall, and

an inner housing placed below the flat substrate inside the outer housing and having an upper portion on which the beam transmitting plate is placed,

wherein the beam irradiating module is placed below the beam transmitting plate inside the inner housing.

3. The substrate heat-treating apparatus of claim 2, wherein the beam irradiating module

comprises a temperature measuring hole penetrating from an upper surface to a lower surface thereof, and

the temperature measuring module is placed below the temperature measuring hole.

4. The substrate heat-treating apparatus of claim 1, wherein the temperature measuring module comprises a pyrometer.

5. The substrate heat-treating apparatus of claim 4, wherein the pyrometer further comprises an iris and a filter unit located on the path of the incident beam.

6. The substrate heat-treating apparatus of claim 5, wherein the filter unit comprises a color filter that removes a beam in the visible ray region from an incident beam.

7. The substrate heat-treating apparatus of claim 1, wherein the beam irradiating module comprises a laser light-emitting device, and the laser light-emitting device comprises a surface light-emitting laser device or an edge light-emitting laser device.

8. The substrate heat-treating apparatus of claim 1, wherein the beam irradiating module comprises a laser light-emitting device, and the laser light-emitting device comprises a VCSEL device.

9. The substrate heat-treating apparatus of claim 2, wherein the process chamber further comprises a substrate support configured to support an outer side of the flat substrate, and

the substrate heat-treating apparatus further comprises a substrate rotating module configured to support and rotate the substrate support.

10. The substrate heat-treating apparatus of claim 9, wherein the substrate rotating module comprises;

an inner rotating means having a ring shape in which N poles and S poles are alternately formed in a circumferential direction and being coupled to a lower portion of the substrate support within the chamber lower space, and

an outer rotating means placed outside the outer housing to face the inner rotating means and configured to generate a magnetic force to rotate the inner rotating means.