CLAIMS

1. A detection apparatus, comprising a carrying platform, a light source device, a first detection device, a second detection device, an objective lens switching device and a measuring device, wherein:

the carrying platform is configured to carry a sample to be detected;

the light source device is configured to emit detection light;

the first detection device is configured to receive the detection light and form first measurement light and first reference light, wherein the first measurement light, after being reflected by the sample to be detected, interferes with the first reference light;

the second detection device is configured to converge the detection light on a surface of the sample to be detected to form second measurement light;

the objective lens switching device is configured to switch between the first detection device and the second detection device to control the first detection device or the second detection device to be in an optical path; and

the measuring device is configured to obtain height information of the sample to be detected based on the first measurement light reflected by the sample to be detected and the first reference light, and obtain structure information of the sample to be detected based on the second measurement light,

wherein the measuring device comprises a first measuring device configured to obtain imaging information of the sample to be detected.

2. The detection apparatus according to claim 1, wherein the first measuring device is further configured to obtain the height information, and the first measuring device is configured to obtain the imaging information of the sample to be detected based on second measurement light reflected by the sample to be detected.

3. The detection apparatus according to claim 2, wherein the first measuring device comprises an image sensor.

4. The detection apparatus according to claim 2 or 3, wherein the measuring device further comprises a second measuring device configured to obtain film thickness information of the sample to be detected based on the second measurement light reflected by the sample to be detected.

5. The detection apparatus according to claim 4, wherein the second measuring device comprises a spectrometer.

6. The detection apparatus according to claim 4, further comprising a stop, wherein the stop is configured to limit light entering the second measuring device.

7. The detection apparatus according to claim 4, further comprising a first light splitter device, wherein the first light splitter device is configured to split signal light, to project part of the signal light to the first measuring device and project part of the signal light to the second measuring device.

8. The detection apparatus according to claim 1, further comprising a third converging lens, wherein the third converging lens is configured to converge the first measurement light reflected by the sample to be detected, the first reference light and the second measurement light to the measuring device.

9. The detection apparatus according to claim 1, further comprising a second light splitter device, wherein the second light splitter device is configured to reflect the detection light to the sample to be detected and transmit the first measurement light reflected by the sample to be detected, the first reference light and the second measurement light.

10. The detection apparatus according to claim 1, wherein the first detection device comprises a first converging lens, a support surface, a compensation surface and a first beam splitter plate, wherein

the first converging lens and the support surface are arranged opposite to each other, the first converging lens is configured to converge the detection light to form converged light and transmit the converged light to the support surface;

the support surface and the compensation surface are arranged opposite to each other, the

compensation surface is arranged at a side of the support surface away from the first converging lens, a reference surface is arranged at a side of the support surface facing the compensation surface;

the first beam splitter plate is arranged at a side of the compensation surface away from the support surface;

the converged light is transmitted through the support surface and the compensation surface sequentially and is incident on a surface of the first beam splitter plate, light reflected by the first beam splitter plate forms the first reference light, light transmitted by the first beam splitter plate forms the first measurement light;

the first reference light is reflected by the reference surface and the first beam splitter plate sequentially after being transmitted through the compensation surface and interferes with the first measurement light reflected by the sample to be detected;

the compensation surface is configured to perform phase compensation on the first reference light and the first measurement light to cause the first reference light and the first measurement light to meet an interference condition.

11. The detection apparatus according to claim 1, wherein

the objective lens switching device or the carrying platform is further configured to move along a direction perpendicular to the surface of the sample to be detected; and

the carrying platform is further configured to move along a direction parallel to the surface of the sample to be detected.

12. The detection apparatus according to claim 11, further comprising a piezoelectric actuator, wherein

the piezoelectric actuator is arranged at a side of the objective lens switching device facing the carrying platform; and

the piezoelectric actuator is configured to drive the objective lens switching device to move along the direction perpendicular to the surface of the sample to be detected.

13. A detection method, performed by the detection apparatus according to any one of claims 1 to 12, the detection method comprising:

arranging the sample to be detected on the carrying platform;

performing measurement processing on the sample to be detected, wherein the measurement processing comprises at least one of first measurement processing and second measurement processing, wherein

the first measurement processing performed on the sample to be detected comprises: switching, by the objective lens switching device, the second detection device into the optical path, and obtaining, by the measuring device, structure information of the sample to be detected based on the second measurement light reflected by the sample to be detected; and

the second measurement processing performed on the sample to be detected comprises: switching, by the objective lens switching device, the first detection device into the optical path, and obtaining, by the measuring device, height information of the sample to be detected based on the first measurement light reflected by the sample to be detected and the first reference light,

wherein the measuring device comprises a first measuring device, the first measuring device is configured to obtain imaging information of the sample to be detected;

the measurement processing comprises the first measurement processing, the structure information comprises the imaging information of the sample to be detected.

14. The method according to claim 13, wherein

the step of obtaining the structure information comprises: obtaining, by the first measuring device, the imaging information based on the second measurement light reflected by the sample to be detected; and

the measurement processing further comprises: determining an area to be measured of the sample to be detected based on the imaging information.

15. The method according to claim 14, wherein

the area to be measured comprises an area for height measurement;

the measurement processing comprises performing the second measurement processing on the sample to be detected;

the step of obtaining the height information comprises: obtaining interference information of the area for height measurement based on the first measurement light and the first reference light, and obtaining the height information of the area for height measurement based on the interference information.

16. The method according to claim 14, wherein the measuring device further comprises a second measuring device:

the area to be measured comprises an area for film thickness measurement;

the structure information obtained in the first measurement processing further comprises film thickness information; and

the step of obtaining the structure information further comprises: obtaining, by the second measuring device, film thickness information of the sample to be detected based on the second measurement light reflected by the sample to be detected.

17. The method according to claim 14, wherein the measurement processing further comprises: obtaining a transverse dimension of the sample to be detected based on the imaging information.

18. The method according to claim 14, wherein

in a case that the area to be measured comprises a plurality of areas for height measurement, the measurement processing further comprises: moving the sample to be detected by the carrying platform, and performing the second measurement processing on each of the plurality of areas for height measurement; and

in a case that the area to be measured comprises a plurality of areas for film thickness measurement, the first measurement processing further comprises: moving the sample to be detected by the carrying platform, and obtaining film thickness information of each of the

plurality of areas for film thickness measurement based on the second measurement light.