Claims

1. A method comprising: acquiring a region of a wafer on a chuck with an overlay target on a surface of the wafer in the region using an imaging optical system thereby forming an acquired image, wherein the overlay target includes gratings in an imaging-based overlay target design and gratings in a scatterometry-based overlay target design, wherein the gratings in the imaging-based overlay target design are in a side-by-side configuration, and wherein the gratings in the scatterometry-based overlay target design are in a grating-over-grating configuration; measuring the overlay target with a first illumination beam from the imaging optical system using the acquired image; and measuring the overlay target with a second illumination beam from the scatterometry system, wherein the imaging-based overlay target design and the scatterometry-based overlay target design are in a same field of view during the measuring with the first illumination beam and the second illumination beam.

2. The method of claim 1, wherein the measuring with the scatterometry system is prior to the measuring with the imaging optical system.

3. The method of claim 1, wherein the scatterometry-based overlay target design has a different critical dimension compared to the imaging-based overlay target design.

4. The method of claim 1, wherein the imaging-based overlay target design and the scatterometry-based overlay target design are each disposed on two adjacent layers of the overlay target.

5. The method of claim 4, wherein a pattern for the imaging-based overlay target design on one of the two adjacent layers is different from the imaging-based overlay target design on another of the two adjacent layers.

6. The method of claim 1, wherein the imaging-based overlay target design and the scatterometry-based overlay target design are in a cell of the overlay target and are oriented along a common axis of orientation, wherein there are a plurality of the cells on the overlay target, and wherein at two of the sections have axes of orientation that are perpendicular to each other.

7. The method of claim 1, wherein the measuring with the imaging optical system and the measuring with the scatterometry system occur at least partially simultaneously.

8. A system comprising: a chuck configured to hold a wafer having an overlay target on a surface of the wafer, wherein the overlay target includes gratings in an imaging-based overlay target design and gratings in a scatterometry-based overlay target design, wherein the gratings in the imaging-based overlay target design are in a side-by-side configuration, and wherein the gratings in the scatterometry-based overlay target design are in a grating-over-grating configuration; an imaging optical system with a first illumination source configured to measure the overlay target on the chuck; a scatterometry system with a second illumination source configured to measure the overlay target on the chuck; and a processor in electronic communication with the imaging optical system and the scatterometry system, wherein the imaging optical system and the scatterometry system are configured to measure the same overlay target, wherein the imaging-based overlay target design and the scatterometry-based overlay target design are in a same field of view of the imaging optical system and the scatterometry system.

9. The system of claim 8, further comprising an imaging optical system acquisition module configured to acquire the overlay target on the chuck with the imaging optical system thereby forming an acquired image, and wherein the imaging optical system uses the acquired image.

10. The system of claim 8, wherein the imaging optical system and the scatterometry system are configured to measure the overlay target at least partially simultaneously.