What is claimed is:

1. An optical system, comprising:

a light source;

a detector positioned to receive light from the light source and determine intensity of received light at selected wavelengths;

an optical assembly positioned to establish an optical path from the light source to the detector; and

a pair of apertures conjugate to one another and positioned in the optical path;

wherein the optical system is configured to operate in a calibration mode and an imaging mode, the imaging mode having at least one of the pair of apertures removed from the optical path.

2. The optical system of claim 1, where the calibration mode allows the detector to simultaneously determine topography of an upper surface of a substrate and a thickness of the substrate.

3. The optical system of claim 1 wherein the imaging mode allows the detector to capture an image of an upper surface of a substrate and an image of a bottom surface of the substrate simultaneously.

4. The optical system of claim 1 wherein the imaging mode includes both apertures removed from the optical path.

5. The optical system of claim 1, wherein the light source generates light with at least one wavelength in the visible spectrum and at least one wavelength that is near infrared.

6. The optical system of claim 1, wherein the detector is sensitive to visible light and to near infrared light.

7. A wafer inspection system operable in a calibration mode and an imaging mode, comprising:

a light source configured to generate light having a plurality of wavelengths;

an optical assembly positioned to direct light from the light source onto the wafer, the optical assembly including an objective lens with chromatic aberration sufficient

to focus light from the light source onto a first surface and a second surface of the wafer;

a detector positioned to receive light from the optical assembly;

wherein in the calibration mode, the detector determines a first wavelength of light that substantially corresponds to the first surface and a second wavelength of light that substantially corresponds to the second surface, and

further wherein in the imaging mode, the detector forms an image of the first surface and an image of the second surface.

8. A method, comprising:

establishing an optical path from a light source to a detector;

determining a first wavelength that substantially corresponds to a first region of a substrate positioned along the optical path;

determining a second wavelength that substantially corresponds to a second region of the substrate;

based at least in part on a characterization of the chromatic aberration of a lens that directs light onto the substrate, determining a distance between the first and second surfaces.

9. The method of claim 8 wherein the distance is one of a wafer thickness and a remaining silicon thickness.

10. The method of claim 8 further comprising:

removing an aperture from the optical path;

capturing simultaneously an image at the first wavelength and an image at the second wavelength.

CLAIMS

1. An optical system, comprising:

a light source;

a detector positioned to receive light from the light source and determine intensity of received light at selected wavelengths;

an optical assembly positioned to establish an optical path from the light source to the detector;

a pair of apertures conjugate to one another and positioned in the optical path; and

an actuator coupled to at least one of the pair of apertures, the actuator configured to move the at least one of the pair of apertures into and out of the optical path;

wherein the optical system is configured to operate in a calibration mode and an imaging mode, the imaging mode having at least one of the pair of apertures removed from the optical path;

wherein detector includes a first module for performing the calibration mode and a second module apart from the first module for performing the imaging mode.

2. The optical system of claim 1, where the calibration mode allows the detector to simultaneously determine topography of an upper surface of a substrate and a thickness of the substrate.

3. The optical system of claim 1 wherein the imaging mode allows the detector to capture an image of an upper surface of a substrate and an image of a bottom surface of the substrate simultaneously.

4. The optical system of claim 1 wherein the imaging mode includes both apertures removed from the optical path.

5. The optical system of claim 1, wherein the light source generates light with at least one wavelength in the visible spectrum and at least one wavelength that is near infrared.

6. The optical system of claim 1, wherein the detector is sensitive to visible light and to near infrared light.

7. A wafer inspection system operable in a calibration mode and an imaging mode, comprising:

a light source configured to generate light having a plurality of wavelengths;

an optical assembly positioned to direct light from the light source onto the wafer, the optical assembly including an objective lens with chromatic aberration sufficient to focus light from the light source onto a first surface and a second surface of the wafer;

a detector positioned to receive light from the optical assembly;

wherein in the calibration mode, the detector determines a first wavelength of light in the visible light spectrum that substantially corresponds to the first surface and a second wavelength of light in the near infrared light spectrum that substantially corresponds to the second surface, and

further wherein in the imaging mode, the detector forms an image of the first surface and an image of the second surface.

8. A method, comprising:

establishing an optical path from a light source to a detector;

determining a first wavelength that substantially corresponds to a first region of a substrate positioned along the optical path;

determining a second wavelength that substantially corresponds to a second region of the substrate;

based at least in part on a characterization of the chromatic aberration of a lens that directs light onto the substrate, determining a distance between the first and second surfaces.

9. The method of claim 8 wherein the distance is one of a wafer thickness and a remaining silicon thickness.

10. The method of claim 8 further comprising:

removing an aperture from the optical path;

capturing simultaneously an image at the first wavelength and an image at the second wavelength.

11. The optical system of claim 1, wherein the first module includes a monochrome camera and the second module includes a spectrometer.

12. The optical system of claim 1, wherein the optical assembly includes an objective lens with chromatic aberration sufficient to focus light from the light source onto a first surface and a second surface of a wafer.

13. The wafer inspection system of claim 7, wherein the detector includes a first module for performing the calibration mode and a second module apart from the first module for performing the imaging mode.

14. The method of claim 8, wherein the first wavelength is in the visible light spectrum and the second wavelength is in the near infrared light spectrum.

15. The method of claim 8, wherein the substrate is a wafer having opposing, first and second major outer surfaces, and further wherein the step of determining determines the distance between the first and second major outer surfaces.

16. The method of claim 10, wherein the aperture is movable into and out of the optical path, and further wherein the steps of determining a first wavelength and determining a second wavelength include the aperture inserted into the optical path, and even further wherein the step of capturing includes the aperture removed from the optical path.