What is claimed is:

1. A polishing method comprising:

generating spectra of reflected lights from measurement points on a substrate while polishing the substrate;

classifying the spectra based on a shape of each spectrum into primary spectra belonging to a first group and a secondary spectrum belonging to a second group;

determining, from the primary spectra, film thicknesses at a plurality of measurement points on the substrate corresponding to the primary spectra; and

determining a film thickness at a measurement point corresponding to the secondary spectrum using the primary spectra or the film thicknesses.

2. The polishing method according to claim 1, wherein determining the film thickness at the measurement point corresponding to the secondary spectrum comprises:

generating an estimated spectrum that corresponds to the secondary spectrum and belongs to the first group; and

determining the film thickness of the substrate from the estimated spectrum.

3. The polishing method according to claim 2, wherein generating the estimated spectrum comprises generating the estimated spectrum by interpolation or extrapolation using the primary spectra.

4. The polishing method according to claim 2, wherein generating the estimated spectrum comprises inputting the primary spectra into a spectrum generating model and outputting the estimated spectrum from the spectrum generating model.

5. The polishing method according to claim 1, wherein determining the film thickness at the measurement point corresponding to the secondary spectrum comprises

determining the film thickness at the measurement point corresponding to the secondary spectrum by interpolation or extrapolation using the film thicknesses.

6. The polishing method according to any one of claims 1 to 5, wherein classifying the spectra into the primary spectra belonging to the first group and the secondary spectrum belonging to the second group comprises:

inputting each of the spectra generated during polishing of the substrate into a classification model; and

classifying the spectra into the primary spectra belonging to the first group and the secondary spectrum belonging to the second group according to classification results output from the classification model.

7. The polishing method according to claim 6, further comprising:

generating multiple training spectra of reflected lights from a sample substrate while polishing the sample substrate;

classifying the multiple training spectra into the first group and the second group; and

determining parameters of the classification model by machine learning using classification training data including the multiple training spectra and classification results of the multiple training spectra.

8. A polishing method comprising:

generating spectra of reflected lights from measurement points on a reference substrate while polishing the reference substrate;

classifying the spectra based on a shape of each spectrum into primary spectra belonging to a first group and a secondary spectrum belonging to a second group;

generating an estimated spectrum that corresponds to the secondary spectrum and belongs to the first group using the primary spectra;

associating the primary spectra and the estimated spectra with film thicknesses;

adding the primary spectra and the estimated spectrum as reference spectra to a database, the database having reference spectra including the primary spectra and the estimated spectrum;

generating a primary spectrum of reflected light from a substrate, while polishing the substrate, the primary spectrum of the reflected light belonging to the first group;

determining a reference spectrum having the closest shape to the shape of the primary spectrum of the reflected light from the substrate; and

determining a film thickness associated with the determined reference spectrum.

9. A polishing apparatus comprising:

a polishing table for supporting polishing pad;

a polishing head configured to press a substrate against the polishing pad to polish the substrate;

an optical sensor head configured to emit light to measurement points on the substrate and receive reflected lights from the measurement points; and

a processing system configured to generate spectra of the reflected lights, the processing system being configured to:

classify the spectra based on a shape of each spectrum into primary spectra belonging to a first group and a secondary spectrum belonging to a second group;

determine, from the primary spectra, film thicknesses at a plurality of measurement points on the substrate corresponding to the primary spectra; and

determine a film thickness at a measurement point corresponding to the secondary spectrum using the primary spectra or the film thicknesses.

10. The polishing apparatus according to claim 9, wherein the processing system is configured to:

generate an estimated spectrum that corresponds to the secondary spectrum and

belongs to the first group; and

determine the film thickness of the substrate from the estimated spectrum.

11. The polishing apparatus according to claim 10, wherein the processing system is configured to generate the estimated spectrum by interpolation or extrapolation using the primary spectra.

12. The polishing apparatus according to claim 10, wherein the processing system has a spectrum generating model, and the processing system is configured to input the primary spectra into the spectrum generating model and output the estimated spectrum from the spectrum generating model.

13. The polishing apparatus according to claim 9, wherein the processing system is configured to determine the film thickness at the measurement point corresponding to the secondary spectrum by interpolation or extrapolation using the film thicknesses.

14. The polishing apparatus according to any one of claims 9 to 13, wherein the processing system has a classification model, and the processing system is configured to:

input each of the spectra generated during polishing of the substrate into the classification model; and

classify the spectra into the primary spectra belonging to the first group and the secondary spectrum belonging to the second group according to classification results output from the classification model.

15. The polishing apparatus according to claim 14, wherein the processing system has a memory storing multiple training spectra of reflected lights from a sample substrate, and the processing system is configured to:

classify the multiple training spectra into the first group and the second group;

and

determine parameters of the classification model by machine learning using classification training data including the multiple training spectra and classification results of the multiple training spectra.

16. A polishing apparatus comprising:

a polishing table for supporting polishing pad;

a polishing head configured to press a substrate against the polishing pad to polish the substrate;

an optical sensor head configured to emit light to measurement points on the substrate and receive reflected lights from the measurement points; and

a processing system having a memory storing a database and spectra of reflected lights from measurement points on a reference substrate, the database containing reference spectra, the processing system being configured to:

classify the spectra of the reflected lights based on a shape of each spectrum into primary spectra belonging to a first group and a secondary spectrum belonging to a second group;

generate an estimated spectrum that corresponds to the secondary spectrum and belongs to the first group using the primary spectra;

associate the primary spectra and the estimated spectra with film thicknesses; and

add the primary spectra and the estimated spectrum as reference spectra to the database.

17. A computer-readable storage medium storing a program, the program being configured to cause a computer to:

generate spectra of reflected lights from measurement points on a substrate during polishing of the substrate;

classify the spectra based on a shape of each spectrum into primary spectra belonging to a first group and a secondary spectrum belonging to a second group;

determine, from the primary spectra, film thicknesses at a plurality of measurement points on the substrate corresponding to the primary spectra; and

determine a film thickness at a measurement point corresponding to the secondary spectrum using the primary spectra or the film thicknesses.

18. The computer-readable storage medium according to claim 17, wherein determining the film thickness at the measurement point corresponding to the secondary spectrum comprises:

generating an estimated spectrum that corresponds to the secondary spectrum and belongs to the first group; and

determining the film thickness of the substrate from the estimated spectrum.

19. The computer-readable storage medium according to claim 18, wherein generating the estimated spectrum comprises generating the estimated spectrum by interpolation or extrapolation using the primary spectra.

20. The computer-readable storage medium according to claim 18, wherein generating the estimated spectrum comprises inputting the primary spectra into a spectrum generating model and outputting the estimated spectrum from the spectrum generating model.

21. The computer-readable storage medium according to claim 17, wherein determining the film thickness at the measurement point corresponding to the secondary spectrum comprises determining the film thickness at the measurement point corresponding to the secondary spectrum by interpolation or extrapolation using the film thicknesses.

22. The computer-readable storage medium according to any one of claims 17 to 21, wherein classifying the spectra into the primary spectra belonging to the first group and the secondary spectrum belonging to the second group comprises:

inputting each of the spectra generated during polishing of the substrate into a classification model; and

classifying the spectra into the primary spectra belonging to the first group and the secondary spectrum belonging to the second group according to classification results output from the classification model.

23. The computer-readable storage medium according to claim 22, wherein the program is further configured to cause the computer to:

generate multiple training spectra of reflected lights from a sample substrate during polishing of the sample substrate;

classify the multiple training spectra into the first group and the second group; and

determine parameters of the classification model by machine learning using classification training data including the multiple training spectra and classification results of the multiple training spectra.

24. A computer-readable storage medium storing a program, the program being configured to cause a computer to:

generate spectra of reflected lights from measurement points on a reference substrate during polishing of the reference substrate;

classify the spectra based on a shape of each spectrum into primary spectra belonging to a first group and a secondary spectrum belonging to a second group;

generate an estimated spectrum that corresponds to the secondary spectrum and belongs to the first group using the primary spectra;

associate the primary spectra and the estimated spectra with film thicknesses;

add the primary spectra and the estimated spectrum as reference spectra to a

database, the database having reference spectra including the primary spectra and the estimated spectrum;

generate a primary spectrum of reflected light from a substrate during polishing of the substrate, the primary spectrum of the reflected light belonging to the first group;

determine a reference spectrum having the closest shape to the shape of the primary spectrum of the reflected light from the substrate; and

determine a film thickness associated with the determined reference spectrum.