CLAIMS

What is claimed is:

1. A method for measuring parameters of interest for a target on a sample, comprising:

obtaining metrology data for the target with a metrology device, the metrology data is a mixture of target signals from the target and non-target signals from a non-target area;

fitting the metrology data to a mixed model containing a model for the target and a term based on a measured signals from at least two different locations that include the non-target area; and

determining the parameters of interest for the target based on the fit of the metrology data by the mixed model.

2. The method of claim 1, wherein the metrology device uses radiation that is incident on the sample over a measurement area, wherein the measurement area is larger than the target in at least one dimension, and the metrology data for the target is obtained with the metrology device from a location at which the measurement area includes both the target and the non-target area.

3. The method of claim 1, wherein the term based on measured signals from at least two different locations is a local gradient of measured signals.

4. The method of claim 1, further comprising:

obtaining a metrology data set by acquiring a plurality of measured signals from different locations, where the measured signals from each different location is a different mixture of target signals and non-target signals; and

determining the term based on measured from at least two different locations that include the non-target area based on a difference in measured signals from different locations in the metrology data set.

5. The method of claim 4, wherein the metrology data set is acquired from the target or a reference target.

6. The method of claim 1, wherein fitting the metrology data to the mixed model containing the model for the target and the term based on measured signals from at least two

different locations that include the non-target area comprises floating the parameters of interest in the model for the target and floating at least one coefficient for the term.

7. The method of claim 1, wherein the mixed model contains one or more based on measured signals from at least two different locations that include the non-target area.

8. The method of claim 1, wherein the term based on measured signals from at least two different locations that include the non-target area is constant or is wavelength dependent.

9. A metrology device configured for measuring parameters of interest for a target on a sample, comprising:

a source configured to generate radiation to be incident on the target on the sample;

at least one detector configured to detect radiation from the target produced in response to the radiation that is incident on the target; and

at least one processor coupled to the at least one detector, wherein the at least one processor is configured to:

obtain metrology data for the target with at least one detector, the metrology data is a mixture of target signals from the target and non-target signals from a non-target area;

fit the metrology data to a mixed model containing a model for the target and a term based on measured signals from at least two different location that include the non-target area; and

determine the parameters of interest for the target based on the fit of the metrology data by the mixed model.

10. The metrology device of claim 9, wherein the radiation is incident on the device on the sample over a measurement area wherein the measurement is larger than the target in at least one dimension, and the target metrology data for the target is obtained from a location at which the measurement area includes both the target and the non-target area.

11. The metrology device of claim 9, wherein the term based on measured signals from at least two different locations is a local gradient of measured signals.

12. The metrology device of claim 9, wherein the at least one processor is further configured to:

obtain a metrology data set by acquiring a plurality of measured signals from different locations, where the measured signals from each different location is a different mixture of target signals and non-target signals; and

determine the term based on measured signals from at least two different locations that include the non-target area based on a difference in measured signals from the different locations in the metrology data set.

13. The metrology device of claim 12, wherein the metrology data set is acquired from the target or a reference target.

14. The metrology device of claim 9, wherein the at least one processor is further configured to fit the target metrology data to the mixed model containing the model for the target and the term based on measured signals from at least two different locations that include the non-target area by being configured to float the parameters of interest in the model for the target and float at least one coefficient for the term.

15. The metrology device of claim 9, wherein the mixed model contains one or more terms based on measured signals from at least two different locations that include the non-target area, and the one or more terms are constant or wavelength dependent.