Claims

1. A metrology system comprising: a controller communicatively coupled to a scanning metrology tool, the scanning metrology tool configured to image a sample in motion along a scan direction, the controller including one or more processors configured to execute program instructions causing the one or more processors to: receive one or more images of a metrology target on the sample from the scanning metrology tool, wherein the metrology target comprises: a first measurement group including a first set of two or more cells linearly distributed along a transverse direction on the sample, wherein the transverse direction on the sample is orthogonal to the scan direction, wherein time-varying imaging errors of the first measurement group are common to the first set of two or more cells; and a second measurement group including a second set of two or more cells linearly distributed along the transverse direction on the sample, the second measurement group separated from the first measurement group along the scan direction, wherein time-varying imaging errors of the second measurement group are common to the second set of two or more cells; generate at least a first metrology measurement based on at least two cells of the first set of two or more cells in the first metrology group; and generate at least a second metrology measurement based on at least two cells of the second set of two or more cells in the second metrology group.

2. The metrology system of claim 1, wherein the first metrology measurement comprises: an overlay metrology measurement along a first direction on the sample, wherein the second metrology measurement comprises; and an overlay metrology measurement along a second direction on the sample different than the first direction.

3. The metrology system of claim 2, wherein the second direction is orthogonal to the first direction.

4. The metrology system of claim 2, wherein the overlay measurement along the first direction on the sample is based on relative positions of two or more sets of printed elements in the first set of two or more cells of the first measurement group, wherein the overlay measurement along the second direction on the sample is based on relative positions of two or more sets of printed elements in the second set of two or more cells of the second measurement group.

5. The metrology system of claim 2, wherein the overlay measurement along the first direction on the sample is based on relative positions of centers of rotational symmetry of two or more sets of printed elements distributed across the first set of two or more cells in the first measurement group, wherein the overlay measurement along the second direction on the sample is based on relative positions of centers of rotational symmetry of two or more sets of printed elements distributed across the second set of two or more cells in the second measurement group.

6. The metrology system of claim 2, wherein the overlay measurement along the first direction on the sample is based on relative positions of axes of reflection symmetry of two or more sets of printed elements distributed across the first set of two or more cells in the first measurement group, wherein the overlay measurement along the second direction on the sample is based on relative positions of axes of reflection symmetry of two or more sets of printed elements distributed across the second set of two or more cells in the second measurement group.

7. The metrology system of claim 1, wherein at least one of the first measurement group or the second measurement group includes a cell having a set of periodic printed elements.

8. The metrology system of claim 7, wherein the set of periodic printed elements comprises: at least three printed elements separated by a common spacing.

9. The metrology system of claim 8, wherein the at least three printed elements have a common size.

10. The metrology system of claim 1, wherein at least one of the first measurement group or the second measurement group includes two or more identical cells.

11. The metrology system of claim 1, wherein at least one of the first metrology measurement or the second metrology measurement comprises: a process parameter of a lithography tool when fabricating one or more layers of the sample.

12. The metrology system of claim 11, wherein the process parameter comprises: at least one of a focal position of the sample or an illumination dose on the sample when exposing any of the one or more layers of the sample in the lithography tool.

13. The metrology system of claim 1, wherein at least one of the first metrology measurement or the second metrology measurement comprises: an overlay metrology measurement, a critical dimension metrology measurement, or a sidewall angle measurement.

14. The metrology system of claim 1, wherein at least one of the first metrology measurement or the second metrology measurement comprises: at least one of a size, location, or orientation of one or more printed elements on the sample.

15. The metrology system of claim 10, wherein the one or more processors are further configured to execute program instructions causing the one or more processors to: generate one or more statistics associated with the metrology data along at least one of the first direction or the second direction.

16. The metrology system of claim 15, wherein the one or more statistics comprise: at least one of an average, a deviation, or a variance.

17. A metrology system comprising: a scanning metrology tool configured to image a sample in motion along a scan direction; and a controller communicatively coupled to the scanning metrology tool, the controller including one or more processors configured to execute program instructions causing the one or more processors to: receive one or more images of a metrology target on the sample from the scanning metrology tool, wherein the metrology target comprises: a first measurement group including a first set of two or more cells linearly distributed along a transverse direction on the sample, wherein the transverse direction on the sample is orthogonal to the scan direction, wherein time-varying imaging errors of the first measurement group are common to the first set of two or more cells; and a second measurement group including a second set of two or more cells linearly distributed along the transverse direction on the sample, the second measurement group separated from the first measurement group along the scan direction, wherein time-varying imaging errors of the second measurement group are common to the second set of two or more cells; generate at least a first metrology measurement based on at least two cells of the first set of two or more cells in the first metrology group; and generate at

least a second metrology measurement based on at least two cells of the second set of two or more cells in the second metrology group.

18. The metrology system of claim 17, wherein the scanning metrology tool comprises: an illumination source; a translation stage configured to scan the sample along the scan direction; a scanning detector configured to receive radiation emanating from the sample in response to illumination from the illumination source, wherein a scanning velocity of the sample on the translation stage is synchronized with the scanning detector.

19. The metrology system of claim 18, wherein the scanning detector comprises: at least one of a line scan detector or a time delay integration detector.

20. The metrology system of claim 17, wherein the first metrology measurement comprises: an overlay metrology measurement along a first direction on the sample, wherein the second metrology measurement comprises: an overlay metrology measurement along a second direction on the sample different than the first direction.

21. The metrology system of claim 17, wherein at least one of the first measurement group or the second measurement group includes a cell having a set of periodic printed elements.