Claims

1. A metrology target comprising a plurality of periodic structures that have a long dimension and a short dimension, wherein at least a first of the periodic structures is oblique with respect to a second of the periodic structures, wherein one of the first of the periodic structures and the second of the periodic structures is disposed as an inner periodic structure of the metrology target and another of the first of the periodic structures and the second of the periodic structures is disposed as an outer periodic structure of the metrology target, and wherein a plurality of the first of the periodic structures and a plurality of the second of the periodic structures are arrayed around a center of the metrology target such that the inner periodic structure is closer to the center than the outer periodic structure and such that the plurality of periodic structures of the inner periodic structure are arrayed with the long dimension extending in two orthogonal directions relative to the center.

2. The metrology target of claim 1, wherein the metrology target is configured as an imaging target, wherein the imaging target includes at least one target layer having the plurality of periodic structures, wherein the plurality of periodic structures are configured to be non-parallel.

3. The metrology target of claim 2, further comprising at least three target layers, wherein the each of the periodic structures is disposed within one of the target layers.

4. The metrology target of claim 1, wherein the metrology target is configured as a Moire-effect-based target.

5.

4. The metrology target of claim 4, wherein3, having the Moire-effect-based target includesperiodic structures of at least one target layer having the plurality of periodic structures, wherein the plurality of periodic structures are configured to be oblique with respect to axes X and Y and at two non-parallel.

6. directions.

5. The metrology target of claim 1any one of claims 2-4, comprising at least three layers, wherein the oblique periodic structures are in one of the layers.

6. The metrology target hasof any one of claims 1-5, having one measurement direction oblique to the secondX axis of the periodic structureslithography tool, wherein the plurality ofoblique periodic structures are of two types differing in pitch and/or CD (critical dimension.

7. ).

7. The metrology target of claimany one of claims 1-6, wherein each of the oblique periodic structures is configuredare set to fill rectangles havingwith sides along the X and Y axes of the metrology target.

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8. The metrology target of claimany one of claims 1-7, wherein each of the oblique periodic structures is configuredare set to fill a specified space, wherein the specified space is designed according to an available space on a wafer.

9. real estate.

9. The metrology target of any one of claims 1-8, wherein the oblique periodic structures are set to fill convex quadrilateral designed according to available wafer real estate.

10. The metrology target of claim 1, wherein each of the periodic structures is configured to fill a convex quadrilateral, wherein the convex quadrilateral is designed according to an available space on a wafer.

10. The metrology target of claim 1, wherein the metrology target is a configured as a ~~configured as a SEM (~~scanning electron microscopy~~)~~ target, the scanning electron microscopy target having two partly overlapping, alternating periodic structures, wherein the two partially overlapping, alternating periodic structures ~~which~~ are ~~both~~ oblique with respect to the second of the periodic structures.

11. ~~X axis.~~

~~11.~~ The metrology target of claim~~any one of claims~~ 1~~-10~~, wherein each of the periodic structures includes one or more elements, wherein each of the elements has a segmentation.

12. ~~periodic structures are segmented.~~

~~12.~~ The metrology target of claim 11, wherein the segmentation of each of the elements is two-dimensional.

13.

~~13.~~ The metrology target of claim 11, wherein a pitch of the segmentation of each of the elements is one fifth or less of a pitch of its~~the~~ corresponding periodic structure.

14.

~~14.~~ The metrology target of claim 11, wherein the segmentation of each of the elements is ~~segments are~~ rectangular.

15.

~~15.~~ The metrology target of claim~~any one of claims~~ 1~~-14~~, wherein each of the first~~oblique~~ periodic structures form angles of between 20.degree.~~20~~° and 70.degree. with~~70~~° respect to the second of the periodic structures.

16. ~~corresponding axes X and Y.~~

~~16.~~ The metrology target of claim~~any one of claims~~ 1~~-14~~, wherein the metrology target further comprises at least one intermediate layer having assist features between two of the periodic structures.

17.

~~17.~~ The metrology target of claim 16, wherein the assist features are oblique with respect to the second of the periodic structures.

18. ~~axes X and Y.~~

~~18.~~ The metrology target of claim~~any one of claims~~ 1~~-17~~, wherein at least two of the periodic structures are placed side-by-side.

19.

~~19.~~ A target design file comprising~~of~~ the metrology targets of claim 1.

20. A target design method comprising configuring at least a first periodic structure of a metrology target to be oblique with respect to a second periodic structure of the metrology target, wherein the first periodic structure and the second periodic structure have a long dimension and a short dimension, wherein one of the first of the periodic structures and the second of the periodic structures is disposed as an inner periodic structure of the metrology target and another of the first of the periodic structures and the second of the periodic structures is disposed as an outer periodic structure of the metrology target, and wherein a plurality of the first of the periodic structures and a plurality of the second of the periodic structures are arrayed around a center of the metrology target such that the inner periodic structure is closer to the center than the outer

periodic structure and such that the plurality of periodic structures of the inner periodic structure are arrayed with the long dimension extending in two orthogonal directions relative to the center.

21. The target design method of claim 20, further comprising: identifying, in a device design, oblique structures that are oblique with respect to the second periodic structure; and configuring the first periodic structure to be disposed within a same layer and at a same angle to the X and Y axes as the identified oblique structures.

22. A method of measuring~~any one of claims 1-18.~~

~~20. Metrology measurements of the~~ metrology targets comprising: performing, using a processor and~~of any one of claims 1-18.~~

~~21. A metrology measurement method of the metrology targets of any one of claims 1-18, wherein a given metrology measurement algorithm is adjusted by~~ image processing and/or signal modelling, a metrology measurement of a metrology target to derive corresponding signals from ~~the~~ oblique periodic structures; wherein the ~~.~~

~~22. A target design method comprising configuring at least one periodic structure of a~~ metrology target comprises a plurality of periodic ~~, which is produced by a lithography tool having orthogonal production axes X and Y, to be oblique with respect to axes X and Y.~~

~~23.~~. ~~A target design method of claim 22, further comprising identifying, in a device design, oblique~~ structures that have a long dimension and a short dimension, wherein~~with respect to the axes X and Y and designing the~~ at least a first of the periodic structures is oblique with respect to a second periodic structure, wherein one of the first of the periodic structures and the second of the periodic structures is disposed as an inner periodic structure of the metrology target and another of the first of the periodic structures and the second of the periodic structures is disposed as an outer periodic structure of the metrology target, and wherein a plurality of the first of the periodic structures and a plurality of the second of the periodic structures are arrayed around a center of the metrology target such that the inner periodic structure is closer to the center than the outer periodic structure and such that the plurality of periodic structures of the inner periodic structure are arrayed with the long dimension extending in two orthogonal directions relative to the center.~~one oblique periodic structure of the metrology target at a same layer and at a same angle to the axes X and Y as the identified oblique structures.~~