CLAIMS

1. A grating for use in metrology comprising a periodic structure, the periodic structure comprising a plurality of units having a pitch P, each unit comprising:

at least a first periodic sub-structure having a first plurality of first parallel rectangular segments, each first parallel rectangular segment having a first width of a first sub-pitch P1 and a first length longer than said first sub-pitch P1, wherein said first sub-pitch P1 is smaller than said pitch P, and

at least a second periodic sub-structure having a second plurality of second parallel rectangular segments, each second parallel rectangular segment having a second width of a second sub-pitch P2 and a second length longer than said second sub-pitch P2, wherein said second sub-pitch P2 is smaller than said pitch P and different from said first sub-pitch P1, P1 and P2 being selected to yield at least one Moiré pitch $P_m = P1 \cdot P2/(P2 – P1)$, said pitch P being an integer multiple of said first sub-pitch P1 and of said second sub-pitch P2,

wherein said first periodic sub-structure and said second periodic sub-structure of the unit are arranged:

separately;

sequentially, in a side-by-side configuration along a common central axis of the unit to combinedly extend along the unit, the common central axis of the unit being perpendicular to said first length and said second length; and

in a mutually separated, non-interlaced, and non-overlapping configuration.

2. The grating according to claim 1, wherein P/ P_m is substantially equal to 1.

3. The grating according to claim 1, wherein P/ P_m is substantially equal to 2.

4. The grating according to claim 1, wherein $P \geq 200$ nm.

5. The grating according to claim 4, wherein P1 and P2 < 200 nm.

6. A metrology target for measurement of misregistration between layers of a semiconductor device, said target comprising at least two gratings, at least one of said at least two gratings comprising the grating of claim 1, said at least two gratings being arranged in a mutually layered configuration.

7. The metrology target according to claim 6, wherein said at least two gratings have the same Moiré pitch.

8. The metrology target according to claim 6, wherein said at least two gratings have mutually different Moiré pitches.

9. A method for forming a grating for use in metrology, the method comprising providing a periodic structure comprising a plurality of units having a pitch P, each unit comprising:

at least a first periodic sub-structure having a first plurality of first parallel rectangular segments, each first parallel rectangular segment having a first width of a first sub-pitch P1 and a first length longer than said first sub-pitch P1, wherein said first sub-pitch P1 is smaller than said pitch P, and

at least a second periodic sub-structure having a second plurality of second parallel rectangular segments, each second parallel rectangular segment having a second width of a second sub-pitch P2 and a second length longer than said second sub-pitch P2, wherein said second sub-pitch P2 is smaller than said pitch P and different from said first sub-pitch P1, P1 and P2 being selected to yield at least one Moiré pitch $P_m = P1 \cdot P2/(P2 – P1)$, said pitch P being an integer multiple of said first sub-pitch P1 and of said second sub-pitch P2,

wherein said first periodic sub-structure and said second periodic sub-structure of the unit are arranged:

separately;

sequentially, in a side-by-side configuration along a common central axis of the unit to combinedly extend along the unit, the common central axis of the unit being perpendicular to said first length and said second length; and

in a mutually separated, non-interlaced, and non-overlapping configuration.

10. The method according to claim 9, wherein P/ P_m is substantially equal to 1.

11. The method according to claim 9, wherein P/ P_m is substantially equal to 2.

12. The method according to claim 9, wherein $P \geq 200$ nm.

13. The method according to claim 12, wherein P1 and P2 < 200 nm.