CLAIMS

1. A proximity lithography method comprising
(i) providing a first mask having an exposure pattern for forming a three dimensional structure;
(ii) directly exposing the first mask to radiation to form the exposure pattern on a radiation-sensitive resist; the exposure pattern defined by irradiated areas and non-irradiated areas of the resist;
(iii) providing a second mask; and
(iv) during exposure, changing relative positions between the first mask and the second mask to shield selected portions of the irradiated areas from the radiation to produce exposure dose grey levels in areas of the radiation-sensitive resist exposed to the radiation to enable features with varying depth profiles, which include a plurality of surfaces arranged substantially parallel to a surface of the resist exposed to radiation, to be created in the three dimensional structure.

2. A proximity lithography method according to claim 1, wherein the first mask is in contact with the resist.

3. A proximity lithography method according to claim 1, further comprising changing the relative positions at intervals while maintaining positions during exposure.

4. A proximity lithography method according to claim 1, wherein changing the relative positions include maintaining the position of the second mask and moving together both the first mask and the resist.

5. A proximity lithography method according to claim 4, further comprising moving both the first mask and the resist along a first movement axis and subsequently, along a second movement axis which is orthogonal to the first movement axis.

6. A proximity lithography method according to claim 1, wherein changing the relative positions include maintaining the positions of the first mask and the resist, and moving the position of the second mask.

7. A proximity lithography method according to claim 6, further comprising moving the second mask along a first movement axis and subsequently, along a second movement axis which is orthogonal to the first movement axis.

8. A proximity lithography method according to claim 1, further comprising rotating the second mask about a central point.

9. A proximity lithography method according to claim 8, wherein the second mask includes two opposing apertures.

10. A proximity lithography method according to claim 9, wherein each of the opposing apertures is lozenge-shaped.

11. A proximity lithography method according to claim 1, further comprising providing a third mask.

12. A proximity lithography method according to claim 11, further comprising moving the second mask along a first movement axis and moving the third mask along a second movement axis which is orthogonal to the first movement axis, while maintaining the positions of the first mask and the resist.

13. A proximity lithography method according to claim 1, wherein the exposure pattern includes a lamellar structure.

14. A proximity lithography method according to claim 1, further comprising, after exposure, developing the resist in a developer solution to etch away parts of the irradiated areas to form the three dimensional structure having varying depth profiles.

15. A proximity lithography method according to claim 1, wherein the radiation is X-ray.

16. A proximity lithography method according to claim 1, wherein the resist is polymer.

17. A proximity lithography method according to claim 1, wherein the resist is Poly Methyl MethAcrylate (PMMA).

18. A method of producing a micro or nano structure from a three dimensional structure obtained from the lithography method of claim 1.

19. A method according to claim 18, further comprising forming a mould from the three dimensional structure.

20. A method according to claim 19, further comprising producing the micro or nanostructure based on the mould.