CLAIMS

1. A substrate holder for use in a lithographic apparatus and configured to support a substrate, the substrate holder comprising:

a main body having a main body surface;

a plurality of first burls projecting from the main body surface, each burl having a distal end surface configured to support the substrate;

a first seal member projecting from the main body surface at an edge region of the main body and having an upper surface, the first seal member surrounding the plurality of first burls;

a plurality of second burls arranged radially outwards of the first seal member, each second burl having a distal end surface configured to support the substrate;

a second seal member projecting from the main body surface at the edge region of the main body and having an upper surface, the second seal member surrounding the first seal member and the plurality of second burls;

a plurality of extraction openings formed in the main body for the extraction of fluid into the main body from between the main body and the substrate; and

the plurality of extraction openings and at least one of the plurality of second burls are arranged alternately in a line surrounding the first seal member and the plurality of first burls.

2. The substrate holder of claim 1, further comprising at least one third burl arranged radially outwards of the second seal member, the at least one third burl having a distal end surface configured to support the substrate and/or wherein the plurality of extraction openings are arranged between the first seal member and the second seal member.

3. The substrate holder of claim 1, wherein the plurality of extraction openings are arranged in the upper surface of the second seal member.

4. The substrate holder of claim 3, wherein each extraction opening is formed at a bottom surface of an extraction groove formed in the second seal member and/or wherein each extraction opening is formed at a bottom surface of a corresponding recess formed in the upper surface of the second seal member.

5. The substrate holder of any of claims 1- 4, further comprising a plurality of inlet openings formed in the main body radially inward of the plurality of extraction openings, the plurality of inlet openings open to the atmosphere or connected to a gas source.

6. The substrate holder of claim 5, wherein the plurality of inlet openings are formed in the main body surface radially outward of the first seal member or wherein the plurality of inlet openings are in the upper surface of the first seal member.

7. The substrate holder of claim 5, wherein the plurality of inlet openings are provided at the bottom of individual recesses formed in the upper surface of the first seal member.

8. The substrate holder of any of claims 1- 7, further comprising a plurality of minor burls, wherein at least one of the minor burls projects from the upper surface of the first seal member, and each minor burl has a distal end surface configured to support the substrate.

9. The substrate holder of claim 8, wherein at least one of the minor burls projects from the upper surface of the second seal member.

10. The substrate holder of claim 9, wherein at least one of the minor burls of the first seal member and at least one of the minor burls of the second seal member are lined up in a radial direction or staggered relative to one another in the radial direction, respectively.

11. The substrate holder of claim 8, 9 or 10, wherein the minor burls are arranged alternately with the inlet openings.

12. The substrate holder of any of claims 8 - 11, wherein the minor burls are positioned radially inwardly and/or radially outwardly of the inlet openings 280.

13. The substrate holder of any of claims 1- 12, further comprising a groove formed in the upper surface of the first seal member, wherein the groove provides a tortuous path for gas from a radially outward side of the first seal member to a radially inward side of the first seal member.

14. The substrate holder of any of claims 7 - 13, wherein the first seal member has an overall shape, in plan, such that a radially outer most part of the first seal member varies in distance from the center of the substrate holder around its circumference and wherein the plurality of minor burls project from parts of the first seal member which extend further from the center of the substrate holder than other parts of the first seal member.

15. The substrate holder of any of claims 1-14, wherein the second seal member is configured to follow a meandering path around the circumference of the substrate holder.

16. The substrate holder of claim 14 or 15, wherein the minor burls positioned on the first seal member are positioned on a circumferential line which has an equal area of the groove between the first seal member and second seal member radially inwards of it as radially outward of it.

17. The substrate holder of claim 14, 15 or 16, wherein the first seal member is formed by a plurality of concave curved portions joined together.

18. The substrate holder of any of claims 14 - 17, wherein the second seal member has an overall shape, in plan, which is defined by a plurality of curved portions having a smaller radius than the overall shape, which are joined together thereby to form the overall shape.

19. A substrate holder for use in a lithographic apparatus and configured to support a substrate, the substrate holder comprising:

a main body having a main body surface;

a plurality of burls projecting from the main body surface, wherein each main burl has a distal end surface configured to support the substrate;

a first seal member projecting from the main body surface at an edge region of the main body and having an upper surface, the first seal member surrounding the plurality of burls;

a plurality of minor burls projecting from the upper surface of the first seal member, wherein each minor burl has a distal end surface configured to support the substrate;

a second seal member projecting from the main body surface at the edge region of the main body and having an upper surface, the second seal member surrounding the first seal member;

a third seal member projecting from the main body surface, the third seal member surrounding the first seal member and the second seal member;

a plurality of inlet openings formed in the main body between the first seal member and the second seal member; and

a plurality of extraction openings formed in the main body between the second seal member and the third seal member for the extraction of fluid into the main body from between the main body and the substrate.

20. A lithographic apparatus comprising the substrate holder of any of claims 1- 19.