CLAIMS

1. A substrate holder for supporting a substrate, the substrate holder comprising:

a main body having a surface;

a plurality of supporting pins connected to the surface of the main body at proximal ends of the plurality of supporting pins, wherein distal ends of the plurality of supporting pins form a support surface for a substrate; and

a plate comprising a plurality of openings, the plate being positioned between the surface of the main body and the support surface,

wherein all of the plurality of supporting pins connected to the surface of the main body have a corresponding opening in the plate, and

wherein the plate is actuatable in a direction along the plurality of supporting pins between the surface of the main body and the support surface.

2. The substrate holder of claim 1, wherein the substrate holder is configured to extract fluid from between the substrate supported on the support surface and the plate.

3. The substrate holder of claim 1 or 2, wherein the main body comprises at least one extraction opening through which the fluid is extracted, and the plate comprises at least one extractor portion through which the fluid is extracted, the extractor portion corresponding to the extraction opening.

4. The substrate holder of claim 1, 2 or 3, wherein the plate is substantially flat and is substantially parallel to the support surface.

5. The substrate holder of any of the preceding claims, wherein the plate is actuatable to a preferred position depending on data relating to one or more of:

a shape of the substrate on the support surface;

a pressure between the substrate and the surface of the main body; and

a flow rate of fluid extracted from between the substrate and the surface of the main body.

6. The substrate holder of any of the preceding claims, wherein the substrate holder comprises a plurality of actuators configured to actuate the plate, and/or wherein the substrate holder further comprises a movable member surrounding the plurality of supporting pins and protruding from the surface of the main body, wherein the substrate holder is configured to move the movable member in the direction along the plurality of supporting pins.

7. The substrate holder of claim 6, wherein the substrate holder comprises a plurality of member actuators configured to move the movable member, and/or wherein the substrate holder is configured to move the movable member to a preferred position depending on data relating to one or more of:

(i) a shape of the substrate on the support surface;

(ii) a pressure between the substrate and the surface of the main body; and

(iii) a flow rate of fluid extracted from between the substrate and the surface of the main body.

8. The substrate holder of claim 6, further comprising a fixed member protruding from the surface of the main body and having a height;

wherein the movable member is flexible and defines an enclosed cavity therein, the movable member having a height and being configured to form a seal with an underside of the substrate in a first state; and

wherein in a second state, the substrate holder is configured to reduce a pressure in the enclosed cavity of the flexible member such that the substrate is supported on the substrate holder.

9. The substrate holder of claim 8, wherein the substrate holder is configured to reduce the pressure in the enclosed cavity to reduce the height of the movable member in the second state, and to form a seal between the fixed member and the underside of the substrate.

10. The substrate holder of claim 8 or 9, where the first state is prior to clamping the substrate on the substrate holder and the second state is during clamping the substrate on the substrate holder.

11. The substrate holder of any of claims 6 to 10, wherein the movable member is positioned adjacent to, and radially outwards of, an edge of the plate.

12. The substrate holder of any of claims 6 to 11, further comprising a fixed sealing member surrounding the plurality of supporting pins and protruding from the surface of the main body, wherein the fixed sealing member is positioned adjacent to, and radially outwards of, an edge of the plate, and adjacent to, and radially inwards of, the movable member.

13. A method of supporting a substrate on the substrate holder of any of the preceding claims, the method comprising:

providing a substrate on the support surface of the substrate holder;

obtaining data relating to one or more of a shape of the substrate on the support surface, a pressure between the substrate and the surface of the main body, and/or a flow rate of fluid extracted from between the substrate and the surface of the main body;

determining a preferred position of the plate between the surface of the main body and the support surface based on the obtained data;

moving the plate in the direction along the plurality of supporting pins to the preferred position; and

extracting fluid from a space between the plate and the substrate.

14. A lithographic apparatus comprising the substrate holder of any of claims 1 to 12.