CLAIMS

1. A scroll pump, comprising:

an inlet and an outlet;

a fixed scroll and an orbiting scroll intermeshed with each other, wherein the fixed scroll and orbiting scroll define a space therebetween for pumping fluid through the scroll pump from the inlet to the outlet,

a biasing apparatus configured to bias the orbiting scroll against the fixed scroll;

a fluid recirculation channel separate to the biasing apparatus, wherein the fluid recirculation channel extends from the space to the inlet through either the fixed scroll or the orbiting scroll; and

a fluid recirculation valve disposed in the fluid recirculation channel, wherein:

when in an open state, the fluid recirculation valve is configured to permit flow of fluid from the space to the inlet through the fluid recirculation channel,

when in a closed state, the fluid recirculation valve is configured to block flow of fluid through the fluid recirculation channel, and

the fluid recirculation valve is configured to switch from the closed state to the open state when a pressure differential across the fluid recirculation valve is equal to or exceeds a certain threshold value.

2. The scroll pump of claim 1, wherein:

the fixed scroll comprises a first base and a first spiral wall extending from the first base,

the orbiting scroll comprises a second base and a second spiral wall extending from the second base,

the scroll pump further comprises a first seal disposed between the first base and the second spiral wall,

the scroll pump further comprises a second seal disposed between the second base and the first spiral wall, and

wherein the biasing apparatus is configured to bias the orbiting scroll against the fixed scroll via the first seal and the second seal.

3. The scroll pump of claim 2 wherein the first seal and/or the second seal is formed at least partially from a polymer material, wherein the polymer material is preferably Polytetrafluoroethylene.

4. The scroll pump of any of claims 2 to 3, wherein the first seal and/or second seal is a channel seal.

5. The scroll pump of any preceding claim, wherein the biasing apparatus comprises one or more springs.

6. The scroll pump of any preceding claim, wherein the scroll pump comprises a drive shaft configured to drive rotation of the orbiting scroll, wherein the biasing apparatus is configured to exert a force on the orbiting scroll via the draft shaft.

7. The scroll pump of any of claims 1 to 5, wherein the scroll pump comprises a drive shaft configured to drive rotation of the orbiting scroll, wherein the biasing apparatus is configured to exert a force directly on a bearing coupling the orbiting scroll to the drive shaft.

8. The scroll pump of any preceding claim, wherein the fluid recirculation valve is a check valve.

9. The scroll pump of any preceding claim, further comprising a check valve located at the outlet of the scroll pump.

10. The scroll pump of any preceding claim, wherein the certain threshold value is between 100mbar and 400mbar.

11. The scroll pump of claim 10, wherein the certain threshold is between 200mbar and 300mbar.

12. The scroll pump of claim 11, wherein the certain threshold is 200mbar.

13. The scroll pump of any preceding claim, wherein the scroll pump comprises an actuator and a drive shaft, the drive shaft being coupled to the orbiting scroll, wherein the actuator is configured to actuate the drive shaft to rotate the drive shaft to drive the orbiting of the orbiting scroll, wherein the fixed scroll is located between the actuator and the orbiting scroll.

14. The scroll pump of any of claims 1 to 12, wherein the scroll pump comprises an actuator and a drive shaft, the drive shaft being coupled to the orbiting scroll, wherein the actuator is configured to actuate the drive shaft to rotate the drive shaft to drive the orbiting of the orbiting scroll, wherein the orbiting scroll is located between the actuator and the fixed scroll.

15. Use of the scroll pump of any of the preceding claims to pump fluid.