WHAT IS CLAIMED IS:

1. A spring for use in a check valve, wherein the spring is formed from a single piece of a polymeric material and wherein the spring comprises:

a proximal end;

a distal end positioned opposite to the proximal end; and

a body positioned between the proximal end and the distal end, wherein the body comprises a wall, wherein the body comprises a proximal opening on a portion of the wall adjacent to the proximal end and a distal opening on a portion of the wall adjacent to the distal end, and wherein the body further comprises a bellows between the proximal opening and the distal opening.

2. A check valve comprising:

a housing; and

a spring contained within the housing, wherein the spring is formed from a single piece of a polymeric material, wherein the spring comprises a proximal end; a distal end positioned opposite to the proximal end; and a body positioned between the proximal end and the distal end, wherein the body comprises a wall, wherein the body comprises a proximal opening on a portion of the wall adjacent to the proximal end and a distal opening on a portion of the wall adjacent to the distal end, and wherein the body further comprises a bellows between the proximal opening and the distal opening.

3. A process for forming a spring for use in a check valve, comprising:

providing a polymeric material; and

forming the polymeric material into the spring, wherein the spring comprises a proximal end, a distal end positioned opposite to the proximal end, and a body positioned between the proximal end and the distal end, wherein the body comprises a wall, wherein the body comprises a proximal opening on a portion of the wall adjacent to the proximal end and a distal opening on a portion of the wall adjacent to the distal end, and wherein the body further comprises a bellows between the proximal opening and the distal opening.

4. The spring, check valve, or process of any one of claims 1, 2, and 3, wherein the polymeric material is a fluoropolymer.

5. The spring, check valve, or process of claim 4, wherein the polymeric material is polytetrafluoroethylene (PTFE).

6. The spring, check valve, or process of any one of claims 1, 2, and 3, wherein the spring further comprises a lumen within the body and wherein the proximal opening and the distal opening provide fluid communication to the lumen.

7. The spring, check valve, or process of any one of claims 1, 2, and 3, wherein the check valve has a size of about 1 inch to about 5 inches, such as a size of about 2 inches to about 4

inches, or such as a size of about 2.5 inches to about 3.5 inches, or such as a size of about 2 inches.

8. The spring, check valve, or process of any one of claims 1, 2, and 3, wherein the check valve is used in a chemical delivery application.

9. The spring, check valve, or process of claim 8, wherein the chemical delivery application includes a semiconductor fabrication process.

10. The spring, check valve, or process of any one of claims 1, 2, and 3, wherein the check valve comprises a flow coefficient value of at least 35, such as at least 36, at least 37, or at least 38.

11. The spring, check valve, or process of claim 10, wherein the check valve comprises a flow coefficient value of at least 40, such as at least 42, or at least 45.

12. The spring, check valve, or process of any one of claims 1, 2, and 3, wherein the check valve comprises a cracking pressure range between about 0.5 psig and about 1.0 psig, such as between about 0.5 psig and about 0.9 psig, or between about 0.5 psig and about 0.75 psig, or between about 0.6 psig and about 1.0 psig, or between about 0.75 psig and 1.0 psig.

13. The spring, check valve, or process of any one of claims 1, 2, and 3, wherein the wall has an average thickness of between about 0.01 inches and about 0.02 inches, such as between about 0.011 and about 0.019 inches, such as between about 0.012 and about 0.018 inches, or such as between about 0.013 and 0.017 inches.

14. The spring, check valve, or process of claim 13, wherein the wall has an average thickness of between about 0.015 inches and about 0.018 inches.

15. The spring or process of any one of claims 1 and 3, wherein the spring comprises a sealing lip configured to engage and disengage with a housing of the check valve.

16. The spring or process of claim 15, wherein the sealing lip disengages with the housing when the bellows are compressed to allow a fluid to flow through the check valve and through the proximal opening and the distal opening.

17. The spring or process of claim 15, wherein the sealing lip engages with the housing when the bellows expand to prevent a fluid from flowing through the check valve.

18. The check valve of claim 2, wherein the spring comprises a sealing lip configured to engage and disengage with the housing.

19. The check valve of claim 18, wherein the sealing lip disengages with the housing when the bellows are compressed to allow a fluid to flow through the check valve and through the proximal opening and the distal opening.

20. The check valve of claim 19, wherein the sealing lip engages with the housing when the bellows expand to prevent a fluid from flowing through the check valve.

21. The spring or process of any one of claims 1 and 3, wherein the spring comprises a guide to stabilize the spring in a housing of the check valve.

22. The check valve of claim 2, wherein the spring comprises a guide to stabilize the spring in the housing.

23. The process of claim 3, wherein forming the polymeric material includes machining the polymeric material.

24. The process of claim 3, wherein forming the polymeric material includes any forming options.

WHAT IS CLAIMED IS:

1. A spring for use in a check valve, wherein the spring is formed from a single piece of a polymeric material and wherein the spring comprises:

a proximal end;

a distal end positioned opposite to the proximal end; and

a body positioned between the proximal end and the distal end, wherein the body comprises a wall, wherein the body comprises a proximal opening on a portion of the wall adjacent to the proximal end and a distal opening on a portion of the wall adjacent to the distal end, and wherein the body further comprises a bellows between the proximal opening and the distal opening.

2. The spring of claim 1, wherein the polymeric material is a fluoropolymer.

3. The spring of claim 2, wherein the polymeric material is polytetrafluoroethylene (PTFE).

4. The spring of claim 1, wherein the spring further comprises a lumen within the body and wherein the proximal opening and the distal opening provide fluid communication to the lumen.

5. The spring of claim 1, wherein the check valve has a size of about 1 inch to about 5 inches, such as a size of about 2 inches to about 4 inches, or such as a size of about 2.5 inches to about 3.5 inches, or such as a size of about 2 inches.

6. The spring of claim 1, wherein the check valve comprises a flow coefficient value of at least 35, such as at least 36, at least 37, or at least 38.

7. The spring of claim 1, wherein the check valve comprises a cracking pressure range between about 0.5 psig and about 1.0 psig, such as between about 0.5 psig and about 0.9 psig, or between about 0.5 psig and about 0.75 psig, or between about 0.6 psig and about 1.0 psig, or between about 0.75 psig and 1.0 psig.

8. The spring of claim 1, wherein the wall has an average thickness of between about 0.01 inches and about 0.02 inches, such as between about 0.011 and about 0.019 inches, such as between about 0.012 and about 0.018 inches, or such as between about 0.013 and 0.017 inches.

9. The spring of claim 1, wherein the spring comprises a sealing lip configured to engage and disengage with a housing of the check valve.

10. The spring of claim 1, wherein the spring comprises a guide to stabilize the spring in a housing of the check valve.

11. A check valve comprising:

a housing; and

a spring contained within the housing, wherein the spring is formed from a single piece of a polymeric material, wherein the spring comprises a proximal end; a distal end positioned opposite to the proximal end; and a body positioned between the proximal end and the distal end, wherein the

body comprises a wall, wherein the body comprises a proximal opening on a portion of the wall adjacent to the proximal end and a distal opening on a portion of the wall adjacent to the distal end, and wherein the body further comprises a bellows between the proximal opening and the distal opening.

12. The spring of claim 11, wherein the polymeric material is a fluoropolymer.

13. A process for forming a spring for use in a check valve, comprising:

providing a polymeric material; and

forming the polymeric material into the spring, wherein the spring comprises a proximal end, a distal end positioned opposite to the proximal end, and a body positioned between the proximal end and the distal end, wherein the body comprises a wall, wherein the body comprises a proximal opening on a portion of the wall adjacent to the proximal end and a distal opening on a portion of the wall adjacent to the distal end, and wherein the body further comprises a bellows between the proximal opening and the distal opening.

14. The process of claim 13, wherein forming the polymeric material includes machining the polymeric material.

15. The process of claim 13, wherein forming the polymeric material includes any forming options.