What is claimed is:

1. A method of filtering a liquid feed, comprising:

a) passing a liquid feed through a single pass tangential flow filtration (SPTFF) system that comprises:

a plurality of stacked filtration modules that are fluidly connected, each filtration module comprising:

a single manifold segment comprising a first manifold for receiving and carrying the feed into the filtration module, a second manifold for receiving and carrying retentate out of the filtration module, and a third manifold for receiving and carrying permeate through the filtration module; and

one or more TFF capsules that are positioned on one or both faces of, and are fluidly connected to, the manifold segment, wherein the manifold segments are stacked and the manifolds in the manifold segments are coupled to create a centralized serial flow path through the system for feed and retentate;

a feed inlet on the first filtration module in the system; and

a retentate outlet on the last filtration module in the system,

the SPTFF system having a liquid flow path that is parallel into the capsules in each filtration module and serial through the manifold segments in adjacent filtration modules by coupling the first manifold in each manifold segment to the second manifold of an adjacent manifold segment, such that the retentate of one module serves as the feed for the manifold segment of the next filtration module, except that the first manifold in the manifold segment of the first filtration module in the system is connected to the feed inlet and the second manifold in the manifold segment of the last filtration module in the system is connected to the retentate outlet; and

b) recovering the retentate and permeate from the system in separate containers without recirculation through the SPTFF system,

thereby filtering the liquid feed.

2. The method of Claim 1, wherein the first and second manifolds in the manifold segment contain a seal or a valve.

3. The method of Claim 1, wherein the filtration area for each filtration module is about 20 m^2 or less.

4. The method of Claim 1, further comprising a diafiltration step, wherein the diafiltration step includes concentration and dilution steps.

5. The method of Claim 1, wherein the SPTFF system further comprises a diafiltration solution reservoir for diafiltration solution and a conduit for delivering diafiltration solution to a feed reservoir.

6. The method of Claim 1, wherein the SPTFF system further comprises one or more of: sampling port, a T-line for in-line buffer addition, a pressure sensor, and a diaphragm for a pressure sensor.

7. The method of Claim 1, wherein the SPTFF system lacks diverter plates.

8. A method of filtering a liquid feed, comprising:
   a) passing a liquid feed through a tangential flow filtration (TFF) system that comprises:
      a plurality of stacked filtration modules that are fluidly connected, each filtration module comprising:
         a single manifold segment comprising a first manifold for receiving and carrying the feed into the filtration module, a second manifold for receiving and carrying retentate out of the filtration module, and a third manifold for receiving and carrying permeate through the filtration module; and
         one or more TFF capsules that are positioned on one or both faces of, and are fluidly connected to, the manifold segment,

wherein the manifold segments are stacked and the manifolds in the manifold segments are coupled to create a centralized serial flow path through the system for feed and retentate;

a feed inlet on the first filtration module in the system;

a retentate outlet on the last filtration module in the system;

a recirculation loop for recirculating retentate through all or part of the system; and

at least one conduit for recirculating retentate;

the TFF system having a liquid flow path that is parallel into the capsules in each filtration module and serial through the manifold segments in adjacent filtration modules by coupling the first manifold in each manifold segment to the second manifold of an adjacent manifold segment, such that the retentate of one module serves as the feed for the manifold segment of the next filtration module, except that the first manifold in the manifold segment of the first filtration module in the system is connected to the feed inlet and the second manifold in the manifold segment of the last filtration module in the system is connected to the retentate outlet; and

b) recovering permeate in a permeate container and a portion of the retentate from the system in a retentate container without recirculation through the TFF system; and

c) recirculating the remainder of the retentate through all or part of the TFF system at least once, thereby filtering the liquid feed.

9. The method of Claim 8, wherein about 10% or less of the retentate is recirculated after the first pass through the TFF system.

10. The method of Claim 8, wherein the TFF system includes a valve or flow meter that is positioned on the retentate outlet or conduit carrying retentate from the system to the retentate container to control the amount of retentate that is recirculated.

11. The method of Claim 8, wherein retentate is recirculated back to a feed container in the TFF system or back to a feed line after a feed pump in the TFF system.

12. The method of Claim 8, wherein the first and second manifolds in the manifold segment contain a seal or a valve.

13. The method of Claim 8, wherein the filtration area for each filtration module is about 20 m^2 or less.

14. The method of Claim 8, further comprising adding a diafiltration step, wherein the diafiltration step includes concentration and dilution steps.

15. The method of Claim 8, wherein the TFF system further comprises one or more of: sampling port, a T-line for in-line buffer addition, a pressure sensor, a diaphragm for a pressure sensor, a reservoir for diafiltration solution, and a conduit for delivering diafiltration to a feed reservoir.

16. The method of Claim 8, wherein the TFF system lacks diverter plates.

17. The method of Claim 8, wherein the filtration modules can have the same or different filtration areas from each other.

18. The method of Claim 1, wherein the last filtration module in the SPTFF system includes at least two TFF capsules having a diverter plate between adjacent TFF capsules to create a liquid flow path that is serial through the at least two TFF capsules.

19. The method of Claim 1, wherein SPTFF system includes a diafiltrate solution pump having multiple pump heads, each containing diafiltrate solution addition and permeate removal flow lines.

20. The method of Claim 4, wherein the filtration area for each filtration module is about 10 m^2, about 1 m^2 or about 0.1 m^2.

21. The method of Claim 13, wherein the filtration area for each filtration module is about 10 m^2, about 1 m^2 or about 0.1 m^2.

22. The method of Claim 1, wherein the manifolds in the single manifold segment have the same diameter throughout the filtration system or the manifolds in the single manifold segment have progressively smaller diameters from single manifold segment to single manifold segment.