CLAIMS

1. A tangential flow filtration (TFF) system, comprising:

a flexible isolation plate;

at least one of a gasket and a filter plate; and

a TFF cassette disposed between the flexible isolation plate and the gasket or filter plate, the TFF cassette including a plurality of interleaved layers defining at least one feed channel and at least one filtrate channel, the plurality of interleaved layers comprising:

a filtrate channel spacer defining an open interior volume bounded by an inner perimeter and including one or more fluid ports;

a feed channel spacer defining an open interior volume bounded by an inner perimeter and including one or more fluid ports;

a membrane disposed between the filtrate channel spacer and the feed channel spacers; and

wherein the flexible isolation plate comprises a flexible rubber or elastomer and is bonded to a first surface of the plurality of interleaved layers to ensure sealing therebetween, the flexible isolation plate arranged and configured to flex to accommodate any irregularities in the first surface to septically seal and isolate the TFF cassette thereby preventing contamination of the TFF cassette; and

wherein the flexible isolation plate is bonded to the first surface via one of a pressure-sensitive adhesive (PSA) material, a thermosetting adhesive, and a multi-part adhesive formulation.

2. The TFF system of claim 1, wherein the at least one of the gasket and the filter plate comprises the gasket, wherein the gasket is bonded to a second surface of the plurality of

interleaved layers and comprises fluid ports in fluid communication with the at least one feed channel and the at least one filtrate channel.

3. The TFF system of claim 2, wherein the at least one of the gasket and the filter plate further comprises the filter plate, wherein the filter plate is bonded to the gasket, the filter plate comprising a fluid manifold wherein a feed port of the filter plate is aligned with a feed port of the gasket, and a filtrate port of the filter plate is aligned with a filtrate port of the gasket.

4. The TFF system of any of the foregoing claims, further comprising a tab or an engraving on a sidewall of the TFF cassette to identify the TFF cassette by an identifier selected from the group consisting of a stock keeping unit (SKU) number, a lot number, a serial number, a capacity, a number of feed and/or filtrate channels, and a number of membranes.

5. The TFF system of claim 4, wherein the tab or engraving comprises a barcode.

6. The TFF system of any of the foregoing claims, wherein the TFF cassette is disposable after use.

7. The TFF system of any of the foregoing claims, wherein the TFF cassette comprises a sealed edge to isolate the TFF cassette from the environment.

8. The TFF system of any of the foregoing claims, wherein the at least one feed channel comprises a feed screen disposed within a space defined by the feed channel spacer.

9. The TFF system of claim 8, wherein the feed screen comprises a woven or extruded polymer mesh.

10. The TFF system of any of the foregoing claims, wherein the at least one filtrate channel comprises a filtrate screen disposed within a space defined by the filtrate channel spacer.

11. The TFF system of claim 10, wherein the filtrate screen comprises a woven or extruded polymer mesh.

12. The TFF system of claim 1, further comprising a pressure sensitive adhesive binding together the membrane and one of the filtrate channel spacer and the feed channel spacer, the thin film of pressure sensitive adhesive having a thickness of less than 50% of height of an adjacent channel.