CLAIMS

1. An electrochemical separation system, comprising:

a first electrode;

a second electrode;

a first electrochemical separation modular unit having a first cell stack defining a plurality of alternating depleting compartments and concentrating compartments supported by a first frame, the first electrochemical separation modular unit positioned between the first electrode and the second electrode; and

a second electrochemical separation modular unit, adjacent to and in cooperation with the first electrochemical separation modular unit, having a second cell stack defining a plurality of alternating depleting compartments and concentrating compartments supported by a second frame, the second electrochemical separation modular unit positioned between the first electrochemical separation modular unit and the second electrode.

2. The system of claim 1, wherein the first cell stack is surrounded by the first frame, and wherein the second cell stack is surrounded by the second frame.

3. The system of claim 1, wherein the first and second electrochemical separation modular units are arranged in parallel.

4. The system of claim 1, wherein the first and second electrochemical separation modular units are each of unitary construction.

5. The system of claim 1, wherein the first and second electrochemical separation modular units are removable.

6. The system of claim 1, further comprising a blocking spacer positioned between the first and second electrochemical separation modular units.

7. The system of claim 1, wherein the first and second frames each includes a manifold system.

8. The system of claim 7, wherein the first and second frames each includes a flow distribution system.

9. The system of claim 1, wherein the first and second electrochemical separation modular units are mounted in a vessel.

10. The system of claim 9, wherein the first and second electrochemical separation modular units are mounted with a bracket assembly in the vessel.

11. The system of claim 9, further comprising a source of water to be treated fluidly connected to an inlet of the vessel.

12. The system of claim 11, wherein the depleting compartments and concentrating compartments each has an inlet in fluid communication with the inlet of the vessel.

13. The system of claim 1, wherein at least one of the depleting compartments and concentrating compartments comprises a flow redistributor.

14. The system of claim 1, wherein the system is configured such that a direction of flow through the depleting compartments is different than a direction of flow through the concentrating compartments.

15. The system of claim 14, wherein the system is configured such that the direction of flow through the depleting compartment is substantially perpendicular to the direction of flow through the concentrating compartments.

16. The system of claim 1, wherein the first and second electrochemical separation modular units are configured to facilitate multi-pass flow within the system.

17. A method of assembling a separation system, comprising:

mounting a first electrochemical separation modular unit having a first cell stack surrounded by a first frame in a vessel between a first electrode and a second electrode; and

mounting a second electrochemical separation modular unit having a second cell stack surrounded by a second frame in the vessel between the first electrochemical separation modular unit and the second electrode.

18. The method of claim 17, further comprising disposing a blocking spacer between the first and second electrochemical separation modular units.

19. The method of claim 17, further comprising testing performance of each of the first and second electrochemical separation modular units prior to mounting in the vessel.

20. The method of claim 17, further comprising fluidly connecting a source of water to be treated to an inlet of the vessel.

CLAIMS

1. A method of assembling a separation system, comprising:

mounting a first electrochemical separation modular unit having a first cell stack surrounded by a first frame in a vessel between a first electrode and a second electrode;

mounting a second electrochemical separation modular unit having a second cell stack surrounded by a second frame in the vessel between the first electrochemical separation modular unit and the second electrode; and

testing performance of each of the first and second electrochemical separation modular units prior to mounting in the vessel.