

CLAIMS

1. A module, comprising:
 - a cell stack comprising a plurality of alternating ion depleting compartments and ion
 - 5 concentrating compartments; and
 - a housing enclosing the cell stack, the housing comprising:
 - an inlet manifold configured to facilitate a flow of fluid into the cell stack, the inlet
 - manifold comprising a first flow distribution system integral to the inlet manifold and
 - configured to promote uniform flow velocity across the cell stack, the first flow distribution
 - 10 system comprising a first ramp and a plurality of radially spaced baffles; and
 - an outlet manifold configured to facilitate a flow of fluid out of the cell stack, the
 - outlet manifold comprising a second flow distribution system integral to the outlet manifold,
 - the second flow distribution system comprising a second ramp, the first and the second ramps
 - having different radii of curvature.
- 15 2. The module of claim 1, wherein the plurality of radially spaced baffles comprises at least one of ribs and teeth.
3. The module of claim 1, wherein the first ramp is positioned on at least one of a
- 20 bottom and a top of the first flow distribution system.
4. The module of claim 1, wherein the first flow distribution system is configured to promote uniform fluid distribution to the cell stack.
- 25 5. The module of claim 1, wherein the first flow distribution system comprises a plurality of first ramps.
6. The module of claim 5, wherein the plurality of first ramps are spaced to define a
- plurality of first grooves.
- 30 7. The module of claim 1, wherein the second ramp is positioned on at least one of a bottom and a top of the second flow distribution system.

8. The module of claim 1, wherein the second flow distribution comprises a plurality of second ramps.
9. The module of claim 8, wherein the plurality of second ramps are spaced to define a plurality of second grooves.
10. The module of claim 1, wherein the flow velocity of fluid in the cell stack has a variance of less than about $\pm 20\%$.
11. The module of claim 10, wherein the flow velocity of fluid in the cell stack has a variance of less than about $\pm 10\%$.