What is claimed is:

CLAIMS

1. A system comprising:

a self-cleaning electrochemical cell comprising:

a plurality of electrodes disposed in a housing, the plurality of electrodes comprising concentric electrodes disposed about a central axis of the housing and consecutive electrodes disposed along a length of the housing;

a fluid channel defined between concentric electrodes and extending substantially parallel to the central axis; and

a plurality of concentric separators, each concentric separator positioned between consecutive electrodes and configured to mate with at least one of the consecutive electrodes, the plurality of concentric separators configured to maintain concentricity of the consecutive electrodes; and

a source of the electrolyte solution having an outlet fluidly connectable to an inlet of the housing and configured to deliver the electrolyte solution at an average flow velocity through the fluid channel of about 2 m/s or greater,

the self-cleaning electrochemical cell configured to produce a product compound from the electrolyte solution and to output a product solution comprising the product compound, and

the self-cleaning electrochemical cell being fluidly connectable to a point of use through an outlet of the housing, wherein the source of the electrolyte solution comprises at least one of seawater, brackish water, and brine.