Claims

1. Apparatus for processing a liquid comprising a target substance, said apparatus comprising at least a first and a second means for carrying out a unit operation, each means for carrying out a unit operation comprising:

(i) a feed for a liquid in fluid connection with the inlet of a flow-controller comprising a variable flow inlet valve and an outlet, wherein at least one of the means for carrying out a unit operation comprises feeds for at least two liquids, the feeds being in fluid connection with the inlets of a multiple inlet flow-controller comprising two or more variable flow inlet valves for dosing the at least two liquids, the flow- controller also comprising an outlet;

(ii) a feed for a liquid feedstock comprising the target substance in fluid connection with the outlet from the flow-controller thereby to enable combination of the feed for a liquid comprising the target substance with the liquids fed in part (i) to produce a device feed;

(iii) a device for achieving a processing operation comprising a device inlet and a device outlet, the device inlet being in fluid connection with the device feed; and

(iv) a single pump, located downstream of the fluid connection between the feedstock and the outlet from the flow-controller, for imparting flow through the flow controller and from the feed for the liquid feedstock through the processing device via the device inlet;

wherein the feed for a liquid feedstock comprising the target substance for the second means for carrying out a unit operation comprises the outlet from the first means for carrying out a unit operation.

2. Apparatus according to claim 1, wherein the unit operations are selected from chromatography, viral inactivation, filtration, ultrafiltration, diafiltration, microfiltration, in-line conditioning and refolding, in each case where the target substance comprises a recombinant polypeptide.

3. Apparatus according to either preceding claim, wherein the pump is located upstream of the device for achieving a bioprocessing operation.

4. Apparatus according to any preceding claim, wherein the means for carrying out a unit operation are connected in series, with the feed for a liquid feedstock comprising the target substance for a subsequent means for carrying out a unit operation comprising the outlet from the preceding means for carrying out a unit operation.

5. Apparatus according to any preceding claim, wherein each unit operation differs from the other unit operations.

6. Apparatus according to any preceding claim, wherein each means for carrying out a unit operation comprises substantially the same flow path.

7. Apparatus according to claim 1, comprising:

(i) feeds for at least two liquids;

(ii) a multiple inlet flow-controller comprising two or more variable flow inlet valves for mixing at least two liquids, the flow-controller also comprising a single outlet;

(iii) a feed for a liquid feedstock comprising the target substance in fluid connection with the outlet from the flow-controller;

(iv) a means for imparting flow, typically by use of a pump, through the flow controller and from the feed for the liquid feedstock through the bioprocessing apparatus via the feed inlets;

(v) a device for ensuring homogeneous mixing of the at least two liquids;

(vii) a device for trapping air bubbles from the process liquids

(vii) a common flowpath for achieving a bioprocessing operation comprising a device inlet and a device outlet, the device inlet being in fluid connection with the feed inlets;

(viii) the device inlet and outlet being in fluid connection with modules used for chromatography, filtration (including viral filtration), tangential flow filtration, single pass tangential flow filtration, refold and viral inactivation;

(ix) a means to bypass the device inlet and outlet;

(x) a means downstream of the device outlet to regulate the pressure;

(xi) a number of sensors appropriate for monitoring the bioprocessing operation upstream and downstream of the device inlet and device outlet; and

(xii) at least one outlet in fluid connection with the feed inlets.

8. A process for preparing a biomolecule, comprising processing the biomolecule using apparatus according to any preceding claim.

9. A process according to claim 8, wherein the biomolecule is a recombinant polypeptide.