WHAT IS CLAIMED IS:

1. A method of removing entrapped gas, pressure, or both gas and pressure from a pre-packed chromatography column that comprises a column tube having a column tube inlet and a column tube outlet and first and second flow distributors arranged within the column tube to form a chamber filled with a packing medium, the method comprising:

(a) obtaining a tubing and valve set comprising tubing and at least one valve configured to define at least two different fluid paths through the tubing;

(b) either:

(i) attaching tubing of the tubing and valve set to the column tube inlet and the column tube outlet and then sterilizing the connected pre-packed chromatography column and the tubing and valve set, or

(ii) sterilizing the pre-packed chromatography column and the tubing and valve set individually and then attaching the sterile tubing of the tubing and valve set to the sterile column tube inlet and the sterile column tube outlet in a manner that maintains sterility of both the column and the tubing and valve set;

(c) attaching the sterile tubing and valve set to a sterile or aseptic fluid source and to a fluid outlet; and

(d) pumping sterile or aseptic liquid from the sterile or aseptic fluid source along the tubing and valve set, wherein the at least one valve is in a first position, into the column tube inlet and out from the column tube outlet along a first flow path, thereby removing any entrapped gas, pressure, or both gas and pressure from the chamber, the tubing, and the at least one valve along the first flow path without breaching the sterility of the pre-packed chromatography column and the tubing and valve set.

2. The method of claim 1, comprising attaching tubing of the tubing and valve set to the column tube inlet and the column tube outlet and then sterilizing the connected pre-packed chromatography column and the tubing and valve set.

3. The method of claim 1, comprising sterilizing the pre-packed chromatography column and the tubing and valve set individually and then attaching the sterile tubing of the tubing and valve set to the sterile column tube inlet and the sterile column tube outlet.

4. The method of claim 3, wherein attaching the sterile tubing of the tubing and valve set to the sterile column tube inlet and the sterile column tube outlet in a sterile manner comprises using aseptic or sterile connectors or weldable tubing.

5. The method of any one of claims 1-4, wherein sterilizing comprises irradiation with gamma radiation.

6. The method of claim 5, wherein sterilizing comprises applying a gamma radiation dose of at least 8 kGy.

7. A system for aseptic purification of biomolecules, the system comprising:

a sterile pre-packed chromatography column comprising a column tube having a column tube inlet and a column tube outlet and first and second flow distributors arranged within the column tube to form a chamber filled with a packing medium;

a sterile tubing and valve set attached to the column tube inlet and the column tube outlet, wherein the tubing and valve set comprises tubing and at least one valve configured to define at least two different fluid paths fluidly connected to the column tube inlet and the column tube outlet; and

a pump configured to pump sterile or aseptic liquid from a sterile or aseptic fluid source along the sterile tubing and valve set, wherein the at least one valve comprises a first position that enables the sterile or aseptic liquid to flow into the column tube inlet and out of the column tube outlet along a first flow path to remove any entrapped gas, pressure, or both gas and pressure from the chamber, the tubing, and the at least one valve along the first flow path.

8. The system of claim 7, wherein the sterile column is pre-packed with resin and the column, resin, and tubing have a sterility assurance level (SAL) of 10^{-3} or better.

9. The system of claim 7 or claim 8, further comprising a controller configured and arranged to control the pump and the position of the at least one valve.

10. The system of claim 9, wherein the controller comprises a processor and a memory storing instructions for execution by the processor for opening and closing the at least one valve.