Claims

1. Extraction cell for a centrifugal partition chromatograph, which extraction cell contains an extraction chamber delimited by a cell wall and accommodates a liquid stationary phase, and it has a liquid inlet opening and a liquid outlet opening serving to let in and out the liquid mobile phase to be made to flow through the extraction cell, it contains an extraction chamber established as a tubular body, and a liquid inlet plug that includes a liquid inlet opening and a liquid outlet plug that includes a liquid outlet opening, that can be attached to the extraction chamber, **characterised by** that an insert through which liquids may pass is positioned in the extraction chamber between the liquid inlet opening and the liquid outlet opening, which has internal passages, and the average diameter of the passages is 1–30 times, preferably 1–20 times, even more preferably 4–10 times the average diameter of the mobile phase droplets created when the mobile phase is made to flow in the stationary phase, where the average diameter of the mobile phase droplets is calculated using the following formula:

$$d = \frac{9 * \mathrm{v} * \eta}{2 * \Delta\rho * \omega * \omega * R}$$

where v is the velocity of the mobile phase penetrating the stationary phase as compared to the stationary phase, η is the viscosity of the stationary phase, Δρ is the absolute value of the difference in density between the stationary phase and the mobile phase, ω is the angular velocity of the rotation of the extraction cell, and R is the distance of the extraction cell from the axis of rotation; and where the liquid inlet

plug and/or the liquid outlet plug are fixed to the cell wall of the extraction chamber with a releasable connection, preferably with a screw thread.

2. The extraction cell according to claim 1, **characterised by** that it is made using waste-free production technology, such as 3D printing or extruding or drawing or welding or injection moulding or metal casting.

3. The extraction cell according to claim 1 or 2, **characterised by** that the insert has an irregular structure, or a regular structure, or is created as a bulk insert.

4. The extraction cell according to any of claims 1 to 3, **characterised by** that the insert contains one or more components that liquid may pass through chosen from the following group: wound up net made from metal wire, fibrous woven textile, glass wool, steel wool.

5. The extraction cell according to any of claims 1 to 4, **characterised by** that the porosity of the insert is selected to reduce the effect of the Coriolis force occurring in the extraction cell as a result of the rotational movement of the extraction cell when it is in the centrifugal partition chromatograph in operation.

6. The extraction cell according to any of claims 1 to 5, **characterised by** that the material of the cell wall delimiting the extraction chamber is selected from one or

more elements of the following group: stainless steel, titanium alloy, aluminium, PEEK, Teflon.

7. The extraction cell according to any of claims 1 to 6, **characterised by** that one or more pits are formed on the external surface of the cell wall of the extraction chamber to ensure the fixing of the extraction cell to an external supporting structure.

8. The extraction cell according to any of claims 1 to 7, **characterised by** that the liquid inlet plug contains more than one bore that divide the liquid made to flow through it into several liquid jets.

9. The extraction cell according to any of claims 1 to 8, **characterised by** that the liquid inlet plug and/or the liquid outlet plug are constructed from several parts that may be separated from each other.

10. The extraction cell according to any of claims 1 to 9, **characterised by** that the material of the liquid inlet plug and the liquid outlet plug is selected from one

or more of the following elements: stainless steel, titanium alloy, aluminium, PEEK, Teflon.

11. Centrifugal partition chromatograph, **characterised by** that it contains at least one extraction cell according to any of claims 1 to 10.

12. Centrifugal partition chromatograph according to claim 11, **characterised by** that it contains several extraction cells that are connected in series with connection tubes that ensure a liquid connection.

13. Centrifugal partition chromatograph according to claim 12, **characterised by** that several series-connected extraction cells together form one removable module.

14. Centrifugal partition chromatograph according to claim 13, **characterised by** that it has a modular structure made up of substantially identical modules, where each of the modules contains one or more extraction cells connected with connection

tubes ensuring a liquid connection between them, furthermore, the individual modules are connected to each other in series via connection tubes.

15. Method for producing extraction cell according to any of claims 1 to 10 that may be used in a centrifugal partition chromatograph, during which:

- serially connected extraction cells are provided that are connected to each other by connection tubes,
- the extraction cells are filled with liquid stationary phase,
- liquid mobile phase is made to flow through the stationary phase,

characterised by that:

- the average diameter of the droplets of the mobile phase breaking up into droplets and penetrating the stationary phase is determined using the following formula:

$$d = \frac{9 * \mathrm{v} * \eta}{2 * \Delta\rho * \omega * \omega * R}$$

where v is the velocity of the mobile phase penetrating the stationary phase as compared to the stationary phase, η is the viscosity of the stationary phase, $\Delta\rho$ is the absolute value of the difference in density between the stationary phase and the mobile phase, ω is the angular velocity of the rotation of the extraction cell, and R is the distance of the extraction cell from the axis of rotation,

- an insert through which liquid may pass through is arranged in the extraction cell that has internal passages and the average diameter of the passages is 1–30 times, preferably 1–20 times, even more preferably 4–10 times the average diameter of the droplets.