ROUSSELET ROBATEL
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manufacturing centrifuges and centrifugal extraction equipment

KROMATON

KROMATON MODEL FCPC FAST CENTRIFUGAL PARTITIONING CHROMATOGRAPH OPERATING PRINCIPLE

The Kromaton centrifugal partitioning chromatograph functions based on the principles of liquid / liquid partitioning chromatography, in which two immiscible liquid phases are mixed together and then separated multiple times. The individual solutes are isolated based on the different partitioning coefficients of each compound in the solvent phase versus the diluent phase.

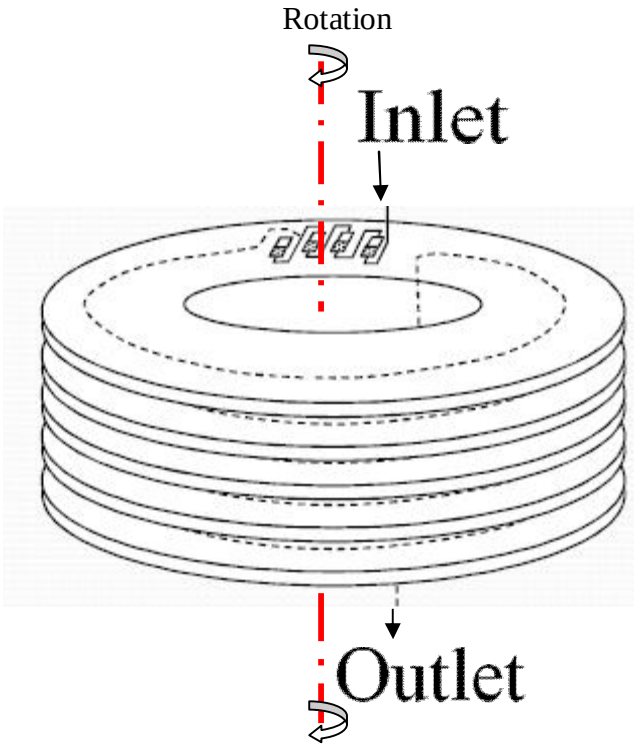


Figure 1: Rotor diagram of FCPC centrifugal chromatograph

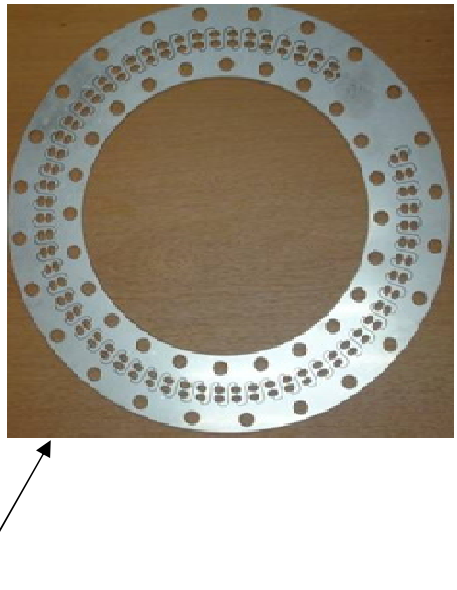


Figure 2: Individual disc from a Kromaton FCPC rotor, showing individual extraction cells.

The chromatograph's rotor, shown in Figure 1, consists of several individual discs. An example of an individual disc is shown in Figure 2. There are seals between adjacent discs to isolate the cells from one disc to the other. The discs are aligned such that all of the cells are in series to create several hundred extraction stages. Each cell corresponds to a discrete extraction stage.

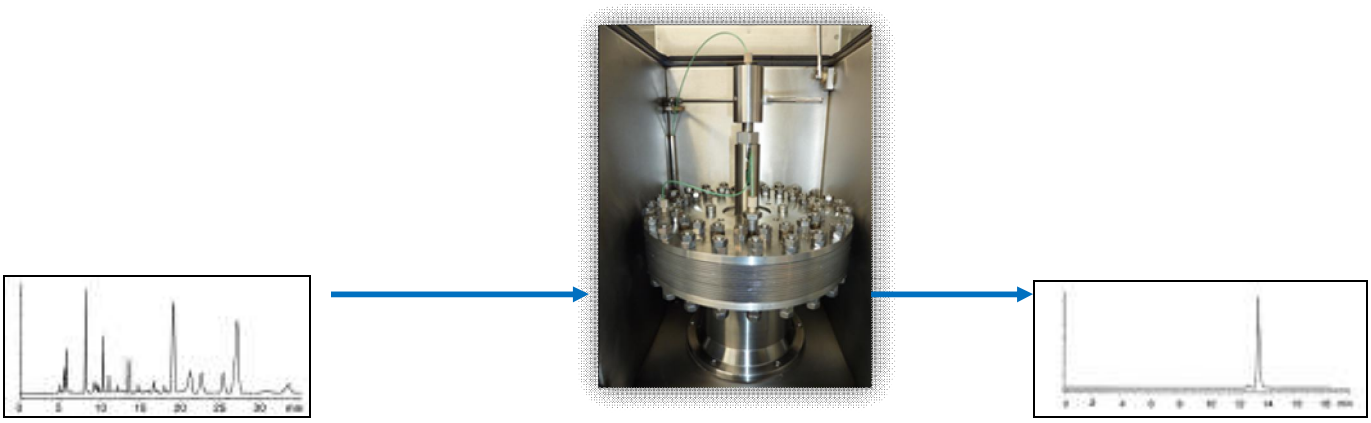
OPERATION OF THE CENTRIFUGAL CHROMATOGRAPH:

A stationary liquid phase is fed to the rotor while it is spinning at moderate rotational speed. The stationary phase is retained inside the rotor by the centrifugal force generated.

The mobile phase, containing the solutes to be extracted, is fed, under pressure, to the rotor and is pumped through the stationary phase.

The separation of the solutes is achieved as a function of the specific partitioning coefficient of each solute between the mobile and stationary phases.

The eluted fractions of the mobile and stationary phases are collected over a period of several minutes to several hours. These fractions, or eluates, will contain the individual purified solutes:



Crude sample Kromaton FCPC Purified fractions

The fractions can be collected using automatic sample recovery systems.

Depending on the solvent system chosen, the Kromaton FCPC can operate in two modes; descending mode, and ascending mode, as shown in Figure 3 below:

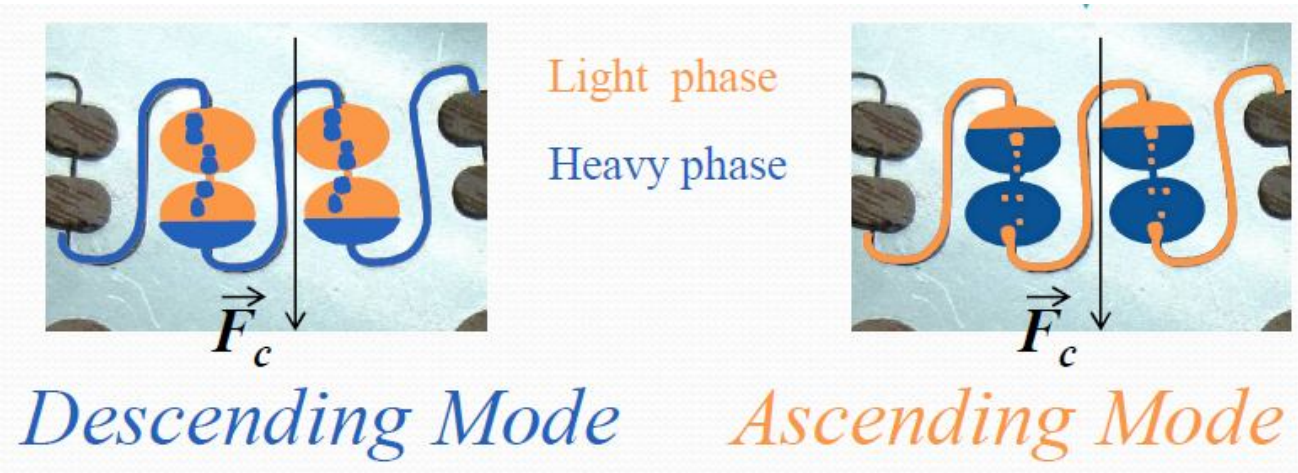


Figure 3: Flow diagram of the two operating modes of the centrifugal chromatograph

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When operating in the descending mode, the heavier liquid phase is the mobile phase and migrates through the stationary light phase. This is also known as a light phase continuous extraction system.

When operating in ascending mode, the lighter liquid phase is the mobile phase and migrates through the stationary heavy phase. This is also known as a heavy phase continuous extraction system.

The Kromaton FCPC centrifugal chromatograph is well adapted to non-polar and polar solvent systems. Typical systems include those of the Arizona range, ternary systems, and biphasic aqueous systems.

The Kromaton FCPC centrifugal chromatograph is available in capacities ranging from analytical scale; preparatory scale, up to pilot scale.

This technology offers advantages versus traditional methods such as HPLC and TLC in that there is no solid phase medium required, complete sample recovery, low solvent consumption, and low holdup volumes.