



Continuous extraction

Process characteristics at a glance:

Counter current extraction
Temperature: Ambient
Pressure: 1 bar A
Phases: aqueous/organic

Coflore™ is a multipurpose flow platform for use in the laboratory and small scale manufacturing. It can be used for chemical reactions or extraction under flow conditions.



Fig 1. The Coflore flow platform

Light phase fluid is pumped into cell 2 and heavy phase fluid into cell 9. The two fluids flow in counter current fashion allowing dissolved components to be transferred between the phases. Cells 1 and 10 are used for separation.

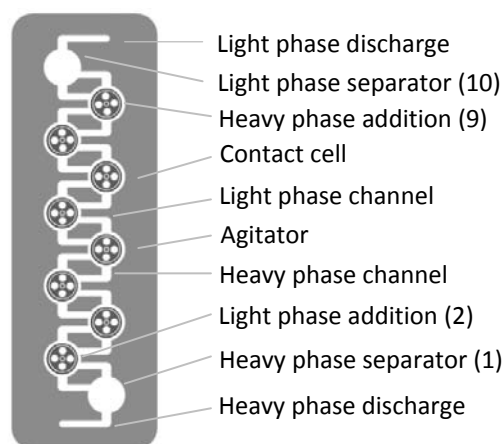


Fig 3. ACX set up

The ACX module operates on a standard Coflore platform and is designed for counter current extraction or reaction. It consists of multiple close coupled mixing cells linked in series and cut within a monolithic block.

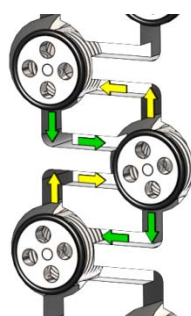


Fig 2. Extractor

Dynamic mixing is generated by loose agitator elements which oscillate when the extractor/reactor block is shaken. Each mixing cell of the ACX has separate inlets and discharges for the light and heavy phases respectively. The yellow arrows in figure 2

show the flow path of the light phase and the green arrows, the heavy phase. To operate the extractor/reactor, the 10 cell ACX block is mounted in the Coflore platform in the vertical position as shown in figure 3. Cells 2 to 9 have equal sized agitator elements.

Results and discussion

Extractor performance is dependent on efficient mixing of immiscible fluids and good phase disengagement. A study with 1 molar sodium hydroxide and 2ethylhexylformate on a single Coflore cell gave comparable mixing efficiency to a ½ litre stirred vessel with agitator speeds of 350 – 410 RPM. A mixture of toluene and water passed through the ACX in counter current fashion delivered a continuous flow of clean organic fluid in cell 10 and clean aqueous fluid in Cell 1.

Continuous counter current extractors are quicker and simpler to use than batch extraction methods. They also give higher extraction efficiency with lower solvent usage. The Coflore ACX is a simple robust corrosion resistant counter current module suitable for extraction or reactions.