centrifugal-liquid-liquid-chromatography

5/14/2024

608-238-6001 [TEL]

greg@cruisingreview.com [Email]

Cruising Review

Centrifugal Liquid-Liquid Chromatography

This webpage QR code

Structured Data

<script type= "application/ld+json">
{"@context":"http://schema.org",
"@graph":[
{
"@type" : "Organization",
"@id" : "https://cruisingreview.com/#organization",
"name" : "Cruising Review",
"url" : "https://cruisingreview.com",
"sameAs":
["https://www.youtube.com/channel/UC7gOvLwcxt8MtYt3ExzAZJQ",
"https://www.instagram.com/pepe.g6"],
"telephone" : "608-238-6001",
"email" : "greg@cruisingreview.com",
"logo" : "https://cruisingreview.com/logo.png"
},
{
"@type":"WebSite",
"@id":"https://cruisingreview.com",
"url":"https://cruisingreview.com",
"name":"**Centrifugal Liquid-Liquid Chromatography**",
"description":"This article compares the current state of technology relating to the many forms of chromatography as it relates to aqueous two-phase solvents (ATPS)."
}
,{
"@type":"NewsArticle",
"mainEntityOfPage":{
"@type":"WebPage",
"@id":"https://cruisingreview.com/smx/centrifugal-liquid-liquid-chromatography.html"},
"headline":"**Centrifugal Liquid-Liquid Chromatography**",
"image":"https://cruisingreview.com/images/",
"datePublished":"2024-05-14T08:00:00+08:00",
"dateModified":"2024-05-14T09:20:00+08:00",
"author":{
"@type":"Organization",
"name":"Cruising Review",
"url":"https://cruisingreview.com"
},
"publisher":{
"@type":"Organization",
"name":"Cruising Review",
"logo":{
"@type":"ImageObject",
"url":"https://cruisingreview.com/logo.png"
}}}

]}</script>

This article compares the current state of technology relating to the many forms of chromatography as it relates to aqueous two-phase solvents (ATPS).

PDF Version of the webpage (first pages)

Review of Centrifugal Liquid-Liquid Chromatography using Aqueous Two-Phase Solvent (ATPS) System

1. This article compares the current state of technology relating to the many forms of chromatography as it relates to aqueous two-phase solvents (ATPS).
2. The need for ever more efficient means of separation and purification in the medical industry is the primary driver leading to the continuous improvement of liquid-liquid chromatography.
3. Although many chromatographic system designs have been developed, few have been tested at an industrial scale.
4. The author discuses three organizations who are currently operating industrial scale centrifuges, the largest being Partus Technology's 25-liter Centrifugal partition Chromatography (CPC) system. Unfortunately, little testing data relating to the industrial scale systems has been released to the public.
5. Quote – at CCC2004 in Tokyo – unquote, Partus Technology successfully demonstrated a 5-liter CPC and offered some details regarding their ongoing 25-liter system testing. Quote – when they scaled up to their 25-liter centrifuge ... efficiency only dropped to 610 theoretical plates – unquote, with a calculated 1.2 cells required per theoretical plate, a number two to four times better than conventional CPC systems.
6. A theoretical plate refers to an isolated area of equilibrium; typically, higher theoretical plate count equates to more efficient purification. Decreasing the number of physical cells per theoretical plate allows smaller, less complicated systems to offer greater efficiency.
7. Liquid-liquid chromatography columns offer distinct advantages over their classical liquid-solid counterparts: quote – there is no non-specific adsorption to a solid support; there is no risk of fouling ...; there is much higher sample loading capacity ...; hence higher throughputs – unquote.
8. One disadvantage of liquid-liquid systems is the need to retain the stationary liquid phase, which is not typically an issue with stationary solid phases.
9. The author touches on the most common centrifugal system designs which are accepted as, quote – the ones that are leading to high resolution, high performance industrial scale – unquote, system development.
10. Liquid-liquid systems have two basic design possibilities: hydrodynamic or hydrostatic. Hydrostatic columns have individual chambers that are connected by small pathways allowing for mobile phase flow. Quote – hydrostatic centrifuges are often referred to as centrifugal partition chromatographs (CPC) – unquote. Hydrodynamic columns contain the stationary phase held in place inside of continuous tubing which the mobile phase flows through.
11. A toroidal coil centrifuge (TCC) is one of the more basic hydrostatic designs. It is comprised of a continuous tube wound around a cylinder.
12. High speed counter – current chromatography (HSCCC) is a more complex hydrostatic setup in which a toroidal tube winding is eccentrically located on a planetary disc.
13. Non-synchronous coil planet centrifuges incorporate a similar design as HSCCC, but the primary disc and planetary disc are operated at different speeds.
14. The author concludes that, quote – promising steps are being made on scale-up of centrifugal partition chromatography (CPC) to a level where it could be extremely valuable for high value-added product – unquote, separation and purification.