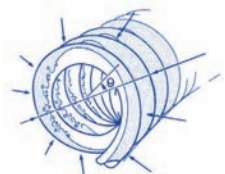




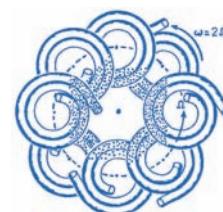
Countercurrent Chromatography (CCC) was originally developed through the work of Dr. Yoichiro Ito at NIH in the early 1970s.

In general, CCC is a **fully scalable** separation technique in which components are separated as a result of repeated partitioning between two liquid phases of a biphasic solvent system. CCC is therefore a *liquid-liquid* technique, meaning both the mobile and stationary phases are liquids. This feature allows CCC to avoid many of the problems associated with solid support chromatography, while providing **versatile selectivity** over a full range of polarities and compound classes.

One of the major developmental challenges of CCC was the retention of the liquid stationary phase within the system, while still being able to pump a mobile phase through it. The stationary phase in solid phase chromatography is held in place by simply packing it into an inert cylinder. If packed properly, a mobile phase can be pumped through without dislodging the stationary phase. CCC technology on the other hand, requires something fundamentally different to retain the stationary phase. The original machines relied heavily on gravity to achieve retention; however, modern CCCs use centrifugal forces, which provide much faster separations.



There are two basic types of CCC instruments commonly used today: *Type-J* and *CPC*. To mark new standards in **high speed** and throughput, manufacturers have recently coined terms such as HPCCC and FCPC, but all can essentially be classified into the two basic types. The difference between these two types has to do with their core mechanical design, and each has its own set of advantages. However, both provide means for liquid stationary phase retention as well as effectively create many zones of *mixing*, *settling* and *separation*, which progress along the internal liquid path of the systems. These three important steps can be thought of as exactly the same thing that happens with an analyte in a separatory funnel, but repeated up to 250,000 times per hour!



It should be noted that, unlike HPLC or other solid phase techniques, CCC users are not limited by the composition or cost of commercially available columns. Since CCC uses only liquids as the separation medium, the makeup and behavior of the column is completely under the user's control. Not only can a user essentially "install" a new liquid column quickly and easily, but a variety of operational techniques can be used to capitalize on the dynamic nature of that column. To put it quite simply, CCC can achieve separations that are just not possible using other techniques. Further, a liquid-only column allows for the **high loading** of crude and difficult to dissolve samples, and provides a **gentle** environment to prevent the degradation of delicate samples. Also, because of CCC's **full sample/product recovery**, even minor constituents can be completely isolated without the threat of irreversible loss from column adsorption. CCC also scales extremely well; methods developed on analytical instruments can be directly applied to larger machines to achieve (semi-)preparative or production scale throughput.

Mechanical problems associated with older CCC instruments have been solved, with the newest generation providing fast, **reliable** operation, at low noise levels, and long periods between maintenance. Further, the literature and knowledge base has been growing at an accelerated rate, and a once hard-to-find expertise is now becoming a standard tool among separation scientists.

For more information on CCC and its community of users, please visit our website at <http://cherryinstruments.com>.

OUR COMPANY



Cherry Instruments (CI) was created to provide North America with a local source for knowledge, and the best CCC equipment from around the world. To match our products, we are dedicated to supplying all users with the highest possible level of knowledge, service, and support. Our team of professionals is committed to increasing the number of CCC success stories, which so many users have already experienced.

Based in Chicago, Illinois, CI's conception can be traced back to its three founders. Their vision, coupled with the realization of the true potential of CCC, was, and continues to be, the driving force behind this company. CI's efforts ultimately aim to stimulate, and further drive development of this fiscally and environmentally friendly technology which has already demonstrated utility in: drug discovery, combinatorial libraries, natural products, nutraceuticals and dietary supplements, biotechnology, agricultural research, trace element analysis, petrochemicals, inorganics and metal complexes, impurity analysis, production of antibiotics, and synthetic APIs and intermediates.



We have carefully selected and partnered with the world's best CCC instrument manufacturers, allowing us to provide a full range of price and throughput options. Each manufacturer below offers a range of instruments to suit your particular application and fiscal requirements.

Type-J (Planetary)



Tauto Biotech - Robust and economical are the trademarks of Tauto's excellent range of CCCs. These instruments allow low cost entry into the rapidly growing world of CCC, without sacrificing reliability or results. 20mL to 5L instruments available.

CPC (Centrifugal Partition Chromatography)



Armen - These best-in-class "SCPC" instruments provide exceptionally low operational noise levels and unequaled aqueous system separations, meaning these machines can tackle jobs type-J instruments simply cannot. 100mL to +50L instruments available.

Please give us a call at 800-852-0955.

We will put you in touch with an applications chemist who can discuss your specific separation needs, and help you pair these instruments with ancillary equipment to create a customized system to get the job done.

SERVICES



Cherry Instruments is devoted to ensuring that our customers have access to the best knowledge, and most comprehensive service and support on the market. **We support all CCC equipment**, even dated machines, and those not manufactured by our partners. All new instruments include unlimited access to our full suite of services for the first year of use.

Installation

Complete CCC system installation, calibration, and testing.

Training

Comprehensive user training and application guidance.

Contract

Feasibility studies, separations, and method development.

Maintenance

On-site preventive and routine maintenance.

Repair

Warranted repair, refurbishing, and parts service.

Support

On-site, phone, video, and email equipment and application support.