

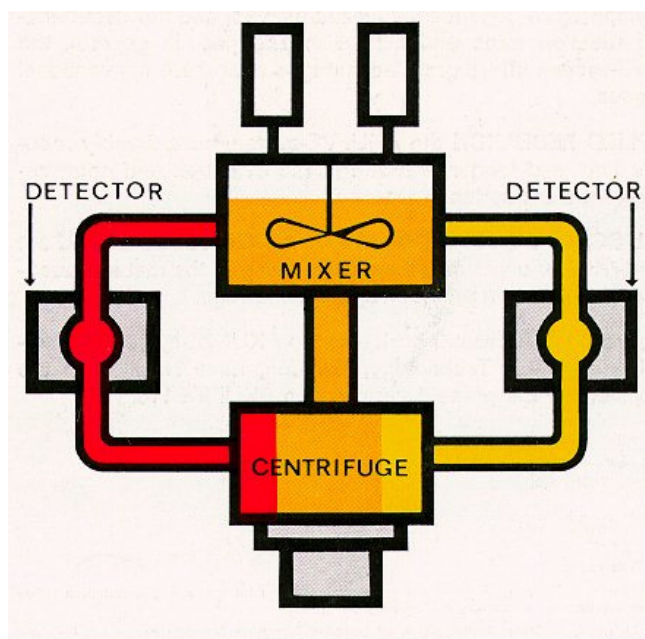
The AKUFVE System and the H-centrifuges

AKUFVE is a worldwide-recognised system for rapid and accurate measurement of partition factors in solvent extraction. The system is characterised as an idealised, one-stage mixer-(centrifugal)settler unit. It was developed about 40 years ago (some hundred units are on the market) to improve accuracy and rapidity in the measuring technique of solvent extraction distribution data.

In applied research the AKUFVE instrument considerably reduces the time and labour in the evaluation and optimisation of solvent extraction processes. Its application to basic research have included the determination of distribution and stability constants for various metal complexes, together with enthalpy and entropy values, obtained from temperature dependency measurements and the determination of reaction rates and activation energies. In general, the AKUFVE system offers great advantages over more conventional techniques.

Based on the same mixer-(centrifugal)settler concept, some instruments are available. The **AKUFVE-120** instrument is the main equipment for hydrometallurgical research. The **ADMCS** instrument is a smaller version of the AKUFVE-120 instrument and the **SMCS** unit is the single-stage mixer-(centrifugal)-settler unit, included in the **SI-SAK** system, a small-scale multi-stage processing unit for e.g. production of antibi-

otics and chemical separation of short-lived radioisotopes.



The heart of all these units is the continuous flow H-centrifuge. It is a unique centrifugal separator, developed to cover the requirement for rapid and absolute phase separation of a liquid mixture of two immiscible solvents (e.g. water and kerosene). The centrifuge, described in detail in the enclosed reprint, is characterised by a comparatively high speed of rotation (10-35.000 rpm), short hold-up time (0,05-2.5 sec), high liquid flow throughput (30-300 l/h) and extremely high phase separation efficiency, better than 99,9% in both phases.

The H-Centrifuges

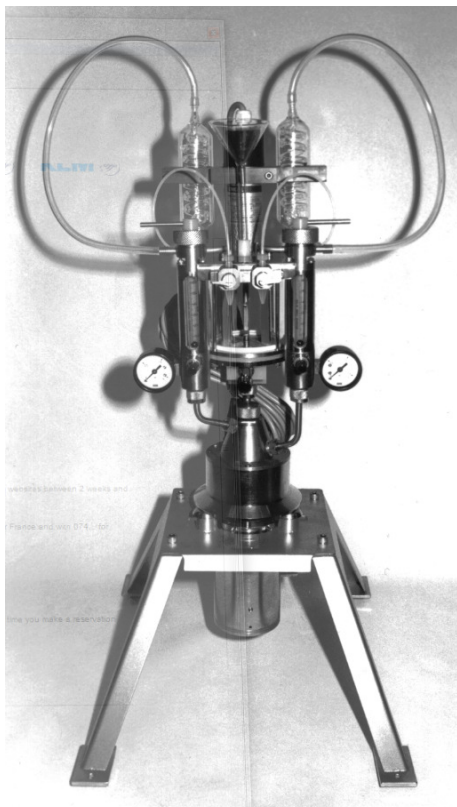
The H-centrifuge for absolute phase separation of two-liquid mixtures is available in two sizes;

- the H-33 tr (pneumatic motor drive) with a total flow capacity of 300 l/h (hold-up time 1.5 sec) is the standard version
- the H-10 efr (electric AC-motor drive, controlled by a frequency inverter) or the H-10 tr (pneumatic motor drive), both of smaller size for about 100 l/h total flow (hold-up time 0.4 sec).

The H-33 centrifuge is used in the AKUFVE-120 instrument. The H-10 centrifuge can be equipped with a dynamic mixing head to form the ADMCS unit (a mini-AKUFVE) or with a static mixing heads to form SMCS units, used in the SISAK system. All H-centrifuge units are available with necessary flow regulating systems to form ready-to-use Centrifugal-Separator (CS) units. The auxiliary system contains valves, flow meters and pressure gages, one for each liquid phase.

The ADMCS-10 instrument – the mini-AKUFVE

Dynamic-Mixer/Centrifugal-Separator (mini-AKUFVE) unit; Dynamic mixer (about 150 cc) with variable speed stirrer; H-centrifuge (H-10, about 15 cc) with electric AC-motor drive and variable frequency inverter; Flow system with regulating, directing and sampling valves, heat exchangers, flow meters and pressure gauges mounted on top of the centrifuge and supported by a tripod.



The SMCS-10 and SISAK units

Static-Mixer/Centrifugal-Separator unit; Static mixer (about 3 cc); H-centrifuge (H-10, about 15 cc) with electric AC-motor drive and variable frequency inverter; Flow system with regulating valves, flow meters and pressure gauges mounted on top of the centrifuge and supported by a tripod.

The SISAK system is a small-scale, multistage mixer-(centrifugal)settler processing unit. So far it has been used in chemical separation of short-lived radioisotopes and in small-scale production of antibiotics. Normally, the SISAK processing unit contains two or more SMCS-10 units.

