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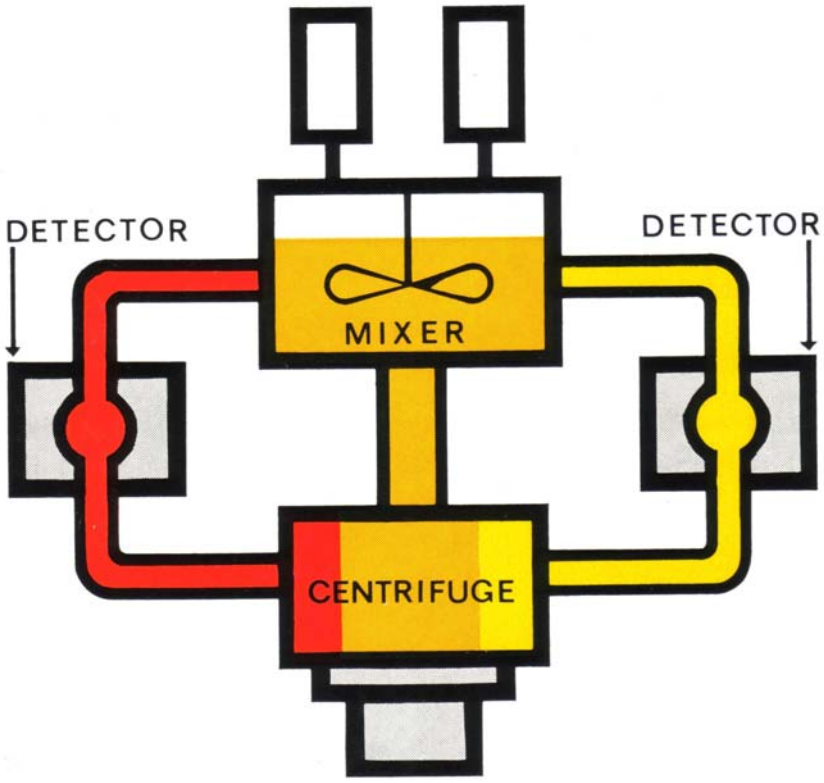
AKUFVE - A SYSTEM FOR RAPID AND ACCURATE MEASUREMENT OF THE CHEMICAL CONDITIONS IN SOLVENT EXTRACTION



AKUFVE consists of

- A mixer that rapidly provides efficient contact between two immiscible liquids
- A unique separator ensuring rapid and absolute separation of the two liquids
- Connections permitting sampling or on-stream measurements of the concentrations of dissolved species in both solvent phases

AKUFVE is suited to

- Basic and applied research connected with solvent extraction processes
- Small scale liquid-liquid extraction

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The AKUFVE system

The application of solvent extraction as a selective separation procedure in theoretical, analytical and industrial chemistry requires profound understanding of complicated chemical and physical processes. AKUFVE, a Swedish abbreviation for "Apparatus for Continuous Measurement of Partition Factors in Solvent Extraction", is a system that facilitates continuous, rapid and accurate measurement of the distribution of a soluble component in a two-phase liquid system as a function of variations in simultaneously measured physical and chemical conditions.

In APPLIED RESEARCH the AKUFVE instrument considerably reduces the time and labor required in the evolution and optimization of solvent extraction processes. Its applications to BASIC RESEARCH has 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.

The AKUFVE instrument, best described as a one-stage mixer-(centrifugal)settler, was developed about 40 years ago. Today, more than some hundred units are on the market, serving as important tools in basic and applied research.

Applications

The **AKUFVE-110** instrument was developed for the rapid and accurate measurement of the conditions in solvent extraction systems. The instrument is used for determination of distribution and complex constants, together with thermodynamical values obtained by the temperature dependensy. It has also been found most efficient in the study of reaction kinetics, yielding a complete set of data points every 30 seconds.

The **ADMCS-10** instrument is a small version of an AKUFVE instrument for continuous measurement of partition factors in solvent extraction

The **SMCS-10** unit is a single-stage (static)mixer-(centrifugal)settler unit included in the SISAK system.

The **SISAK** system is a small-scale, multistage mixer-(centrifugal)settler processing system, used for small-scale production (antibiotics) and fast chemical separation procedures (short-lived radioisotopes).