

Liquid-liquid extraction at the touch of a button



Extraktion schematisch dargestellt (v.l.n.r.):
Gemisch, Gemisch nach Trennzeit, gesammelte organische Phase, restliche wässrige Phase.

Liquid-liquid extraction is resource-intensive and repetitive. The time has come for this work to be automated!

Liquid-liquid extractions continue to play an important role in analysis and research laboratories, where they are still widely used to separate components from each other. But the process is time-consuming, and the hazardous solvents that are often used present risks for employees. Fortunately, the work can now be carried out automatically using Metrohm's OMNIS extraction robot.

Not shaken, but stirred

With OMNIS, the sample is no longer shaken, but stirred. The phase boundary is determined with extremely high precision and the extract is collected in a new beaker. In a next step, the extract can be washed out using aqueous solution. Throughout the entire process, it does not matter whether the organic phase is lighter or heavier than the aqueous phase. Using different techniques, a mixture can be separated cleanly even in the case of an emulsion, unclear phase separation or strong foam formation. If the separation is incomplete, OMNIS reacts by automatically adding a supple-

mentary solvent such as saline solution. In practice, the samples to be processed are placed on the device's sample rack and the solvents and cleaning agents are connected. Using the control software, the samples' details are entered into a user-friendly table. Various parameters can be individually defined – for example, the volume being processed, the amount of organic solvent, the stirring and separation times, the desired pH value, and the addition of dilution solvent.

To avoid cross-contamination, the system can be cleaned before each step and also primed with a specific reagent.

Mixtures of up to 230 ml can be processed in one pass, but larger volumes can be handled by processing sequentially. The extraction is automatically recorded in real time, with the timing and other details of each step documented.

Reduced exposure to chemicals

The benefits of a fully automated system are clear: contact with chemicals is reduced to a minimum; work safety in-



OMNIS extraction robot for automated liquid-liquid extraction

creases; washing of pipettes and separating funnels is no longer necessary; repeatability is ensured; getting reagents mixed up is avoided; and the time saved is considerable.

The possibilities with this device are almost limitless, as the Metrohm team responds to customer-specific requirements and works to develop optimal solutions. „Liquid-liquid extraction at the push of a button is a great innovation that modern laboratories have been waiting a long time for,“ says Gerhard Schönenberger, CEO of Metrohm Schweiz AG.



OMNIS detects the phase boundary with great precision and separates the organic phase from the aqueous phase.

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