PRODUCT SHEET

AcouWash

Automated Cell Washing

Benefits

With the automated cell wash and sorting capabilities of the AcouWash, cell handling has never been easier. Plug in the tubes with cells and the desired washing media and press GO – removing the user variability experienced in manual centrifugations.

For small amounts of cells, the AcouWash is ideal compared to centrifugation, as changing the media can be difficult without being able to see the pellet, and it may be impossible to tell if it was lost until the next steps in the process.

When washing cells after labelling, the AcouWash can completely remove unbound labels in one wash as the cells are individually transferred from one medium to another by mild ultrasound exposure in a flow channel. The AcouWash saves time by replacing, in a single run, the repeated centrifugation and manual resuspension that is often required in manual labelling protocols.

AcouWash, Automated Cell Washing

Features:

- Automatically wash and concentrate cells with **high efficiency** - corresponds to at least 3x manual centrifugation
- **Separate cells** or particles by their size
- Handles **few to millions** of cells per ml
- **Label free** operation based on cell properties
- Fully automated, removing operator variability
- Recovers up to 100% of cells

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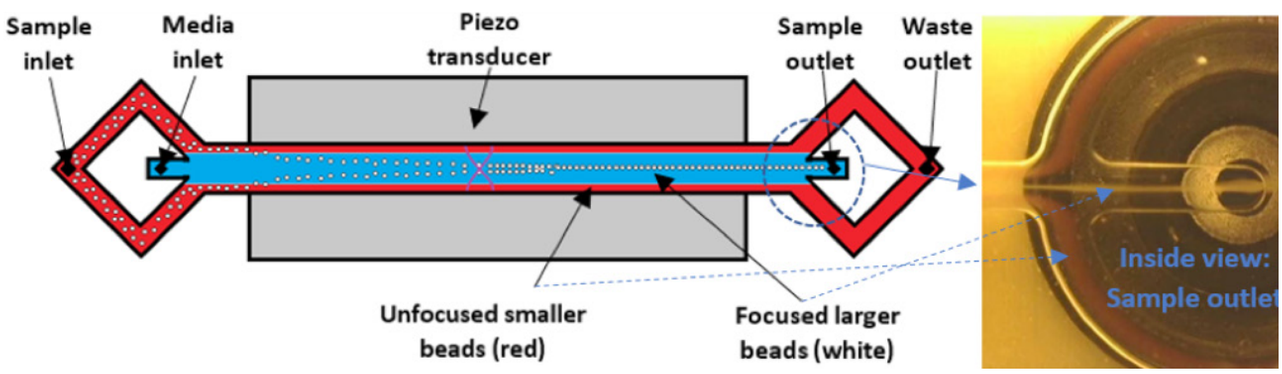
Core technology

The core technology of the AcouWash is based on an acoustic microfluidic chip coupled to a piezo transducer. The schematic below shows the liquid streams and particle trajectories during separation.

The piezo transducer creates an acoustic field that exerts a force on the particles proportional to their radius cubed (r3). This means that larger objects move faster from the outer flow stream (red) into the centre flow stream (blue). In the schematic, 1-µm-diameter (red) and 5-µm-diameter (white) beads from the same test tube enter the separation channel through the side branches of a trifurcation inlet.

From the central branch particle-free media enters the separation channel and occupies the central lamina of the flow stream. When the particles pass the acoustic standing wave, the acoustic radiation force gently pushes the 5-µm-diameter particles into the central flow stream, thereby efficiently re-suspending the particles in new medium.

The smaller 1-µm-diameter red particles, and any solute material, remain in the side flow streams by their lower acoustic mobility – thereby creating a separation of the 1- and 5-µm-diameter particles.



Schematic of the AcouWash acoustic chip where particles (white) being transferred by an ultrasound standing wave from the outer (red) flow stream to the central (blue) flow stream.

Specifications:

- Overall Dimensions: 270mm x 264mm x 240mm (Width x Depth x Height)
- Weight: 16 kg
- Power requirements: 220-240V 50Hz (European) or 120V 60Hz (North American)
- Compressed air or nitrogen supply: 5 bar oil free compressor or standard central laboratory supply line
- Automatic internal precision flow regulation via 3 proportional air pressure controllers
- 3 Sensirion liquid flow sensors
- Dino-Lite USB Microscope
- Dual inlet, dual outlet microfluidic chip, coupled with a 2MHz Piezo electric transducer and integrated thermistor for chip temperature monitoring
- Computer and stand-alone control software

AcouSort

AcouSort is a technology company in the biotech sector located in Lund, Sweden.

AcouSort has developed a platform technology for acoustophoresis that is based on migration with sound. It uses a new method with ultrasound to separate, concentrate and clean cells and other particles.

Separation and cleansing of cells is an important part of research and diagnostics used for cancer and septicemia.

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