Visions to Products

LabDisk
Axial Centrifugal Filtration

Axial centrifugal filtration enables continuous filtration and enrichment on a centrifugal microfluidic LabDisk. The orientation of the filter perpendicularly to the axis of rotation allows for continuous removal of the filter cake by centrifugation preventing clogging.

The permeate passes the filter, is transported radially outwards and spun into a receptacle. Continuous sample feed allows for processing of large samples. One possible application includes the analysis of drinking water where large volumes have to be processed and rapid bacterial concentration is required.

An inlet chamber on the upper side of the disk is arranged on the circumference around the axis of rotation allowing for continuous non-contact sample application onto the disk.

The inlet chamber is connected to a chamber harboring an integrated filter. Here, the sample is split into permeate and retentate. The retentate is continuously centrifuged across the top side of the filter into collection chambers located radially outward, thus preventing clogging of the filter.

The permeate passes the filter from top to bottom. For small volumes, a reservoir can be integrated on disk to collect the permeate. For large volumes, the permeate is centrifuged off the disk into a receptacle.

After on-disk bacterial filtration, the retentate as well as the permeate have been plated on agar plates and incubated overnight. Bacteria from the retentate were successfully cultivated whereas the permeate was completely free of bacteria.

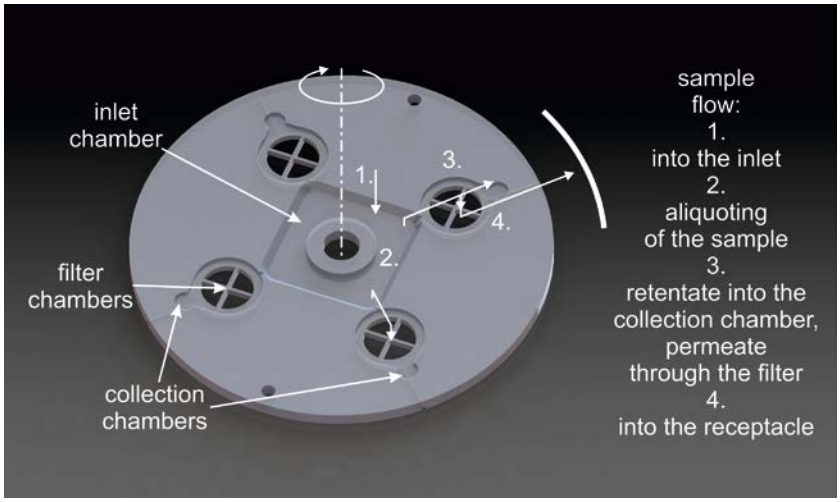

Fig. 1: Schematic for continuous on-disk axial filtration allowing for processing of large samples without clogging of the filter.

Fields of application

- Continuous clogging-free filtration and enrichment of particles or cells
- Processing of large volumes in the liter range
- Water contamination monitoring
- Filtration principle can also be implemented in a tube format (sterile and aerosol-free)

Fig. 2: Filters are integrated into the filter chambers by thermal bonding. The receptacle can be connected to a larger vessel for storage of larger fluid volumes.

Acknowledgement
Project is funded by the AiF within the project KomPro (16583 N).

Hahn-Schickard
Georges-Koehler-Allee 103
79110 Freiburg
Germany

Phone: +49 761 203-73275
Fax: +49 761 203-73299
E-mail: Info@Hahn-Schickard.de
Website: www.Hahn-Schickard.de

Contact
Dr. Marc Karle
Phone: +49 761 203-73224
E-mail: Marc.Karle@Hahn-Schickard.de