

# MICROFLUIDIC ASYMMETRICAL FLOW FIELD-FLOW FRACTIONATION ( $\mu$ AF<sub>4</sub>)

Asymmetrical flow field fractionation (AF<sub>4</sub>) is a soft separation technique allowing a size based separation from several kDa molecules up to 500 nm nanoparticles (NPs).

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L'AVENIR EST FAIT D'AUDACE

## PRESENTATION

For the last two decades, nanoparticles and recombinant proteins have been introduced in the therapeutic field for various applications. The use of these complex molecules in the therapeutic field requires additional characterization, compared to small molecules, in order to ensure the safety of the product. The separation technique most commonly used for size characterization is size exclusion chromatography (SEC) however it suffers from different types of limitations.

As a consequence, we developed an innovative analytical methods to address the specific characteristics of nanoparticles and therapeutic proteins : Microfluidic asymmetrical flow field-flow fractionation ( $\mu$ AF<sub>4</sub>) separation module which will be implemented to an integrated size characterization platform.



Analytical chemistry - Asymmetrical flow - Field-flow fractionation  
Separation méthodes - Lab-on-chip - Microfluidics - Nanoparticles

## APPLICATIONS

- Separation coupled with multi detector approach
- Nanomedicines
- Biotherapeutics (Therapeutic proteins aggregation study, monoclonal antibodies...)
- Biological samples and nanoparticles characterization

## COMPETITIVE ADVANTAGES

- Higher resolution separation,
- Lower sample consumption
- Fast, simple and cheap fabrication process.
- Can performed in purely aqueous mobile phases
- Tolerant to high concentrations of salts
- Easy and rapid changes of conditions

## INTELLECTUAL PROPERTY

European Patent Application pending

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## DEVELOPMENT PHASE

- $\mu$ AF<sub>4</sub> system optimization