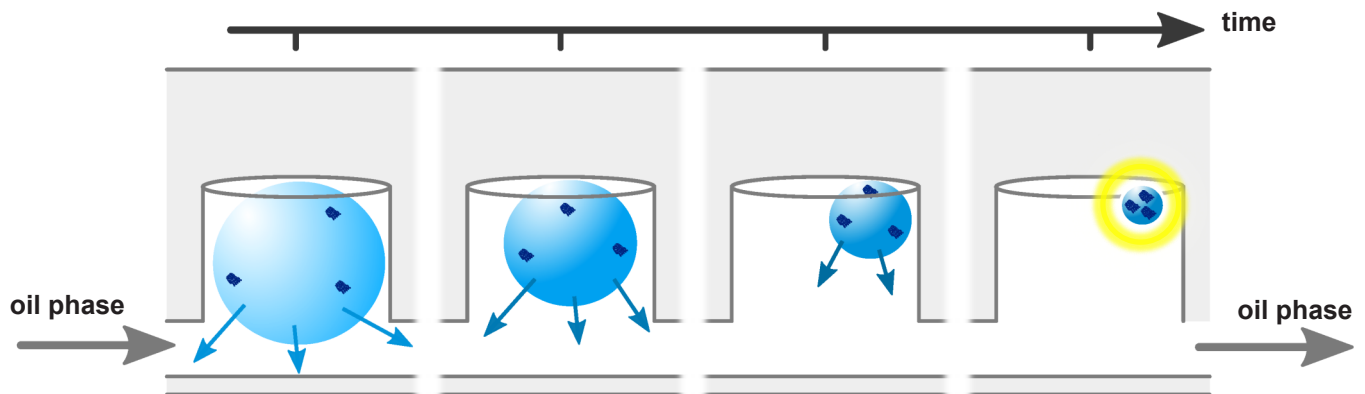


Licensing Opportunity

Microfluidic device for concentrating and detecting trace analytes



The droplets shrink as water is extracted by the oil phase, thereby concentrating their content.

Summary

The microfluidic droplet platform facilitates detection of highly diluted substances by a 100'000 fold up-concentration, independent of the physicochemical properties of the analyte.

Background

Concentrating the sample is a common approach for increasing the signal-to-noise level in a given detection scheme. Current concentrators mostly rely on specific physicochemical properties and, therefore, can be limited in various applications.

Invention

The proposed droplet concentrator is universally applicable to small molecules, macromolecules, proteins, nanoparticles, protein aggregates such as amyloid fibrils and exosomes. Water-in-oil droplets containing the analyte are trapped inside micro-wells located on top of a microfluidic channel. The droplets shrink during storage due to water uptake by the surrounding oil. The decrease in droplet volume over time increases the concentration of the analyte and, thus, amplifies its signal.

Features & Benefits

- Accurate quantification of ultra-low amounts of analytes in solution, attractive in particular when immunoassays and amplification strategies are unavailable
- Preparation of a measureable sample at higher concentration

Fields of Application

- Detection of disease biomarkers or food contaminants
- Forensic sciences
- Point of care diagnostics

Patent Status

- Patent pending

Publication

- Kopp M.R.G. et al, "Microfluidic Shrinking Droplet Concentrator for Analyte Detection and Phase Separation of Protein Solutions", *Analytical Chemistry*, 2020 <https://doi.org/10.1021/acs.analchem.9b05329>

Technology Readiness Level



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