LICENSING OPPORTUNITY: A SMARTER WAY TO SEPARATE AND ANALYZE SUBSTANCES

DESCRIPTION

Problem

Traditional separation techniques often struggle with low resolution and inconsistent analyte retention, leading to inaccurate results. This invention addresses these issues by introducing a controlled gradient, ensuring analytes are focused and separated with greater precision. It minimizes sample loss and enhances detection sensitivity, making it ideal for complex chemical and biological analyses. The method also reduces processing time and improves reproducibility in laboratory settings.

Invention

This invention introduces a method and device for affinity gradient focusing, which directs analytes in a solution containing a pseudo-stationary phase within a channel, such as a capillary or microchannel. It establishes a steady-state spatial gradient in the retention factor of the pseudo-stationary phase, allowing precise control over analyte movement. This technique enhances separation efficiency and improves the accuracy of chemical analysis. The method is particularly useful for applications requiring high-resolution separation of biomolecules.

BENEFITS

Commercial Application

This technology can be applied in pharmaceutical research, enabling precise drug compound analysis. It is valuable in biotechnology, assisting in protein and DNA separation for medical diagnostics. Environmental testing labs can use it for detecting contaminants in water and air samples. It also has applications in food safety, ensuring accurate detection of additives and contaminants. Additionally, forensic science can benefit from its ability to separate and identify trace substances in criminal investigations.

Competitive Advantage

Compared to conventional separation methods, this invention offers higher resolution and improved accuracy. It reduces sample loss, making it more efficient for costly or rare analytes. The technique enhances reproducibility, ensuring consistent results across multiple tests. It also speeds up analysis, reducing processing time and increasing laboratory productivity. Furthermore, its adaptability to various analytes makes it a versatile tool across multiple industries.

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