

Advancing Sustainability in Liquid Chromatography: Eco-Friendly Solvents and Innovative Column Technologies

Liquid chromatography is a vital analytical technique widely employed in pharmaceuticals, biotechnology, food and beverage industries, and environmental monitoring. This presentation will explore sustainable alternatives to traditional reversed-phase chromatography, which accounts for over 75% of applications and typically relies on environmentally harmful solvents like acetonitrile.

The role of eco-friendly solvents, including water, hot water, ethanol, supercritical CO₂, and bio-based solvents, will be highlighted, emphasizing their importance in reducing the environmental impact of liquid chromatography. Method optimization through smaller internal diameter columns, shorter column lengths, and energy-efficient systems will also be discussed, focusing on strategies to minimize solvent consumption and waste.

Part 1 will present Capillary High-Performance Liquid Chromatography (HPLC) as a means to enhance sensitivity and sustainability, featuring complementary phases such as RPLC, HILIC, and porous graphitized carbon (PGC) columns for various analytical challenges, including nucleoside separations and glycan profiling.

Part 2 will cover advancements in superficially porous particles, showcasing new additions to the Ascendis® Express and BIOshell™ portfolios. These innovations, including columns designed for improved peak shapes and stability across pH ranges, will be presented in the context of applications in OMICS fields, such as metabolomics and glycomics, underscoring their potential to enhance analytical capabilities while promoting sustainability.

User consent

yes

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