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Miniaturized high-performance liquid chromatography instrumentation

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Highlights

- â€¢ In this review, an overview of technology leading to miniaturization of an HPLC system is introduced.
- â€¢ Advancements in pumps, injectors, columns and detectors have led to a reduction in size.
- â€¢ Complete integrated and miniaturized systems, both commercial and academic, are presented.

Abstract

Miniaturized high performance liquid chromatography (HPLC) has attracted increasing attention for its potential in high-throughput analyses and point-of-care applications. In this review we highlight the recent advancements in HPLC system miniaturization. We focus on the major components that constitute these instruments along with their respective advantages and drawbacks as well as present a few representative miniaturized HPLC systems. We discuss briefly some of the applications and also anticipate the future development trends of these instrumental platforms.

Graphical abstract



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Abbreviations

EOP, electroosmotic pump; HVPS, high-voltage power supply; $\hat{1}/4$ HPLC, micro-High Performance Liquid Chromatography; USB, universal serial bus

Keywords

Electroosmotic pump; Nanoflow; Gradient generator; High performance liquid chromatography; Miniaturized

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