

Enhanced Methods for Liquid Chromatography

Continuous Stationary Phase Gradients

Virginia Commonwealth University researchers have developed a novel gradient method for high performance liquid chromatography (HPLC). Existing technologies for HPLCs currently use discontinuous gradients, which have increased void volume due to the columns needing to be connected to their adjacent ones. Increased void volume can result in column inefficiency and can also lead to asymmetric peaks. VCU researchers have aimed to revise this methodology in order to address these ongoing issues.

The developed technology utilizes a continuous stationary phase gradient on a packed column. Not only does this technology have the ability to be more efficient by reducing the void volume of current liquid chromatography methods, it also has the ability to improve their separation performance. This allows for the separation of complex mixtures in a variety of fields, making this a valuable tool for any research lab looking to refine/enhance their current process.

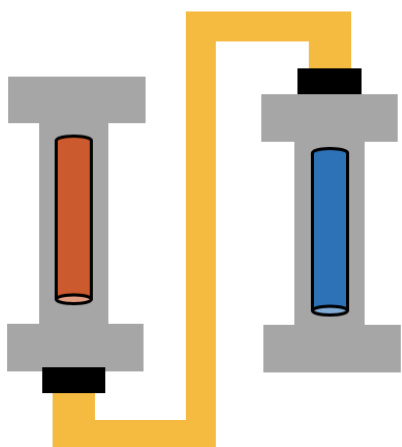
Benefits

- » Allows for more selectivity in separation
- » Reduced void volume
- » Decreased analysis time
- » Eliminate artifacts caused by solvent detectors

Applications

- » Environmental analyses
- » Biomedical assays
- » Material characterization

Existing Discontinuous Gradient Stationary Phase for HPLC



VCU's Novel Continuous Gradient Stationary Phases for HPLC

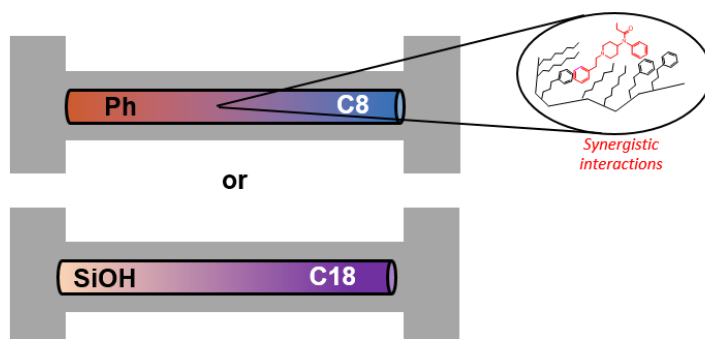


Figure 1: The existing methodologies for HPLCs (as seen on the left) use discontinuous gradients. VCU's developed methodology (as seen on the right) uses continuous gradients



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The technology

Unlike current systems, VCU's developed technology utilizes a continuous methodology. This eliminates the need for serially connected columns and thereby reduces the void volume of the overall system. This allows the system to be more efficient and for cooperative interactions to take place between solutes and multiple functional groups that are in close proximity on the stationary phase. These cooperative interactions are what allow the system to be more selective during separations. This method can be used on a packed column for reversed phase HPLCs, using destructive or constructive methodologies, or hydrophilic interaction liquid chromatography (HILIC). VCU is seeking market insights on the commercialization of this versatile continuous stationary phase gradient and welcomes interest from any potential partners and licensees.

Additional information

Patent status:

Patent Pending; U.S. and foreign rights available

License status:

This technology is available for licensing to industry for further development and commercialization

Category:

Chemistry

VCU Tech #:

18-030

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[C.N. Cain, et al. \(2018\)](#)

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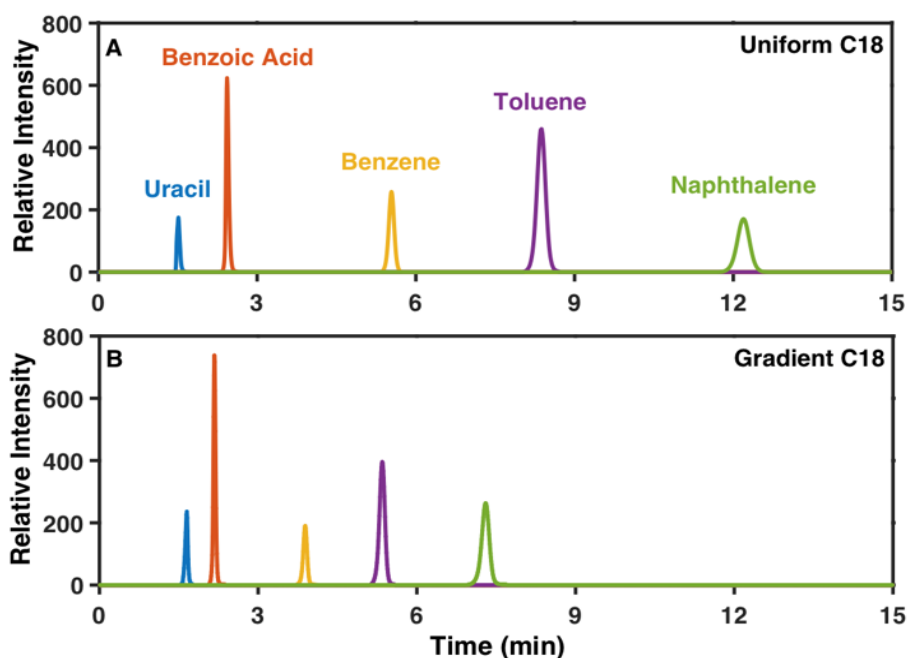


Figure 2: Comparison between traditional discontinuous HPLC method (A) and VCU's developed continuous HPLC method (B). Not only does the continuous method allow for shorter analysis time, it also allows for improved resolution.

VCU Innovation Gateway is responsible for commercializing VCU research. We are committed to enhancing the overall culture of innovation and entrepreneurship at VCU and contributing to the growth of the region's innovation ecosystem. This broader mission fosters collaborations with local and prospective companies to build external support for our inventors, and grows an entrepreneurial population to help us commercialize our technologies through new venture creation and thus support economic growth of our region.

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