

# LAB NOTES

## LC Method Development Using a Unified Column Screening and Retention Modeling Approach



Optimization of separation selectivity is the most powerful route to developing a new LC method. Various method parameters have a substantial impact on selectivity, including the column stationary phase, mobile phase composition, organic modifier, pH, and temperature. With so many options available for tuning selectivity, method development can become a daunting and time-consuming task. Establishing structured approaches to method development can help laboratories develop new methods more efficiently and provide better and more robust separations.

An example of such an approach combines a column screening strategy with retention modeling software. Column stationary phase is one of the most powerful options to explore selectivity and can be conveniently assessed by screening a new sample on a set of LC columns with different selectivity. This allows the most promising stationary phase for the separation to be quickly identified. This approach can be readily extended to include additional parameters such as organic modifier and temperature, allowing the analyst to explore a more extensive selectivity space.

Once the column stationary phase (and any other additional screened parameters) have been selected, the method often requires further development and refinement. This development and optimization can be rapidly achieved by incorporating retention modeling software into your method development protocols. From as few as two analytical runs, retention models can easily be constructed, from which the chromatographer can rapidly simulate and optimize thousands of potential separations without the need to run additional experiments. This modeling software allows the final separation to be optimized in a highly time-efficient manner and provides powerful insights into method robustness. The links below discuss this unified approach further and demonstrate how it can be incorporated into HPLC and UHPLC method development workflows.

### TECHNICAL NOTE

[Streamlined Method Development Using Column Screening With Advanced Computer Simulation Software](#)

### WEBINAR

[A Streamlined Approach for Reversed-Phase Method Development](#)

### LEARN MORE

[ChromSword Method Development Kits](#)



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