LAB NOTES

Accelerated Method Development with Novel Stationary Phase Chemistries

Analysis of the general resolution equation shows that separation selectivity (relative retention) is the most powerful variable (versus efficiency and retention) that affects analyte resolution in LC separations. Multiple LC method parameters directly affect selectivity, including the column stationary phase, mobile phase composition, organic modifier, temperature, and pH. With so many options available, it is prudent for method developers to utilize systematic approaches to explore separation selectivity and streamline method development processes.

Column stationary phase chemistry is a powerful method parameter that can quickly be assessed to develop and optimize a new separation. Column screening approaches have become increasingly popular as efficient method development approaches to identify the most appropriate stationary phase(s). Typically, samples are screened using a variety of stationary phase chemistries that provide differing analyte-stationary phase interactions, and therefore, different selectivity. This approach can be readily extended to screen additional parameters such as organic modifier and mobile phase pH, providing the method developer with a comprehensive and structured approach to logically explore selectivity.

The Knowledge Note and White Paper below (see links provided) examine the theory behind how the alternative selectivity provided by different stationary phase chemistries can be characterized, and how the ACE family of novel stationary phase chemistries has been developed to be a powerful toolkit for exploring selectivity. These two articles discuss how systematic approaches to method development can be designed and implemented in the lab and demonstrate how such approaches can be used to help streamline and accelerate HPLC and UHPLC method development.

ACE KNOWLEDGE NOTE
The Power of Stationary Phase Selectivity

WHITE PAPER
Accelerating UHPLC/HPLC Method Development and Maximizing Chromatographic Selectivity with Novel Stationary Phase Chemistries