Agilent Technologies **Forum** NEWSLETTER

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Column Selectivity - A Powerful Tool When Developing Reversed-Phase HPLC Separations

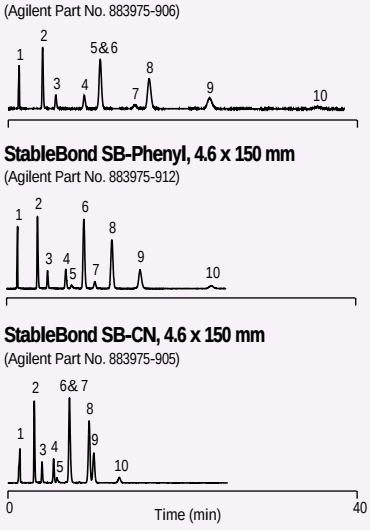
Changing the mobile phase to change selectivity and obtain a good separation, while a common practice, can be tedious and time consuming. Instead, consider changing your column bonded phase to change relative peak position (selectivity) while keeping other HPLC experimental parameters constant. This latter approach is quick, easy and surprisingly powerful. Agilent's ZORBAX StableBond (SB) family offers you many different bonded phases (SB-C18, SB-C8, SB-Phenyl, SB-CN and SB-C3) to optimize selectivity while providing exceptional column durability for low pH reversed-phase separations. And, by simply changing the bonded-phase, you can reduce the amount of time spent in developing a separation.

Column Selectivity Differences

Selecting the right column chemistry (bonded-phase) can often decrease the total run time and can change peak elution order for the analysis of samples containing both non-polar and polar compounds. Non-polar compounds have more retention on SB-C8 or SB-C18 columns, but elute sooner on SB-Phenyl, reducing run time for a given set of experimental conditions. Earlier eluting polar compounds, however, generally show smaller retention differences on these different columns - so that a savings in analysis time does not result in lost resolution for early eluting analytes. These selectivity differences can be used to develop faster separations with good resolution (See Figure 1). In addition, selecting a SB-Phenyl or SB-CN column may help you avoid using gradient elution when separating a mixture of compounds with widely varying polarities.

Figure 1 shows the separation of a mixture of herbicides on ZORBAX SB-C8, SB-Phenyl and SB-CN columns. Both SB-Phenyl and SB-CN reduce analysis time, and in this case, the SB-Phenyl column provides the best separation for the ten herbicides, since all components are baseline separated in a reasonable time. And as expected, the run time on the ZORBAX SB-Phenyl column is significantly shorter — almost 34% — than on the SB-C8 column.

FIGURE 1
Separation of Herbicides on Different Bonded Phases



Mobile Phase: A: 65% H_2O
B: 35% Acetonitrile

Flow Rate: 1.0 mL/min

Temperature: Ambient

Sample:
1. Bentazon
2. Tebuthiuron
3. Simazine
4. Atrazine
5. Prometon
6. Diuron
7. Propazine
8. Propanil
9. Prometryne
10. Metolachlor

Try a new SB-CN or SB-Phenyl HPLC column for FREE

Now through September 15th

See details inside

For more information about the complete line of ZORBAX StableBond HPLC columns ask for Agilent's new brochure on ZORBAX HPLC columns using the fax back form attached to this Newsletter. Or call 800-227-9770, and ask for Agilent HPLC Column Technical Support.

Durability of SB-Phenyl and SB-CN HPLC Columns

Many chromatographers don't take advantage of short-chain bonded phases, such as phenyl and cyano, because the instability of other commercially available phases often causes poor reproducibility and short column lifetime. However, Agilent's patented ZORBAX StableBond technology is used to make stable SB-Phenyl and SB-CN columns with outstanding reproducibility and durability, even when operating at pH 2 and 60°C. Figure 2 contrasts the durability of ZORBAX SB-CN columns with a non-stabilized commercially available CN column. SB-Phenyl columns have been shown to provide long column lifetime similar to that of SB-CN, shown in Figure 2.

FIGURE 2
Short Chain ZORBAX SB-CN is Exceptionally Stable at Low pH (pH 2.0, 50°C)