Application Note

SpeedCore pH Plus Stability

Introduction

The use of core-shell particles has widely been adopted by LC analysts due to the ultra high efficiencies provided, whilst maintaining normal HPLC back pressures.

Up until now there has been a limitation on the use of pH on these core-shell particles, with a quite limited range in the region of 2-8. New SpeedCore® pH Plus has now expanded the usable pH range from 1-12. Method development just became more robust and selective. The use of high pH allows for better peak shape of basic analytes, better loadability and more selectivity.

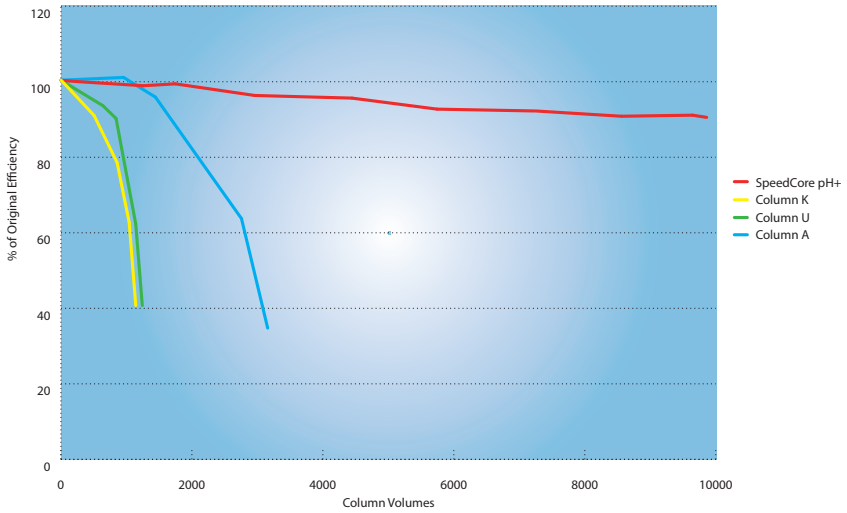

Figure 1. Stability - 50mM Ammonium Bicarbonate pH 10 Temperature 50°C

"Fortis SpeedCore pH Plus brings a new dimension to core-shell particles, by allowing the use of a higher pH range"

Experimental

An accelerated high pH, high temperature stress test using several commercial core-shell columns was run to see how well columns would operate:

Method:
Column: 2.6µm Fortis® SpeedCore® pH+
50 x 3.0mm
p/n SCPLUS18-030326
Mobile phase : 90:10
50mm Ammonium Bicarbonate pH 10 : MeOH
Flow Rate: 0.4ml/min
Temp: 50°C
Detection: UV

All columns were manufacturers own original packed commercially available columns.
Comparative columns were :
ACE Ultracore™ SuperC18™
Phenomenex Kinetex® C18
Agilent Poroshell® EC-C18

Results

As expected the current core-shell particles all fail very quickly under these extreme conditions. This means that using these columns in a separation requiring high pH would lead to irregular results.
Dissolution of silica surface occurs causing reproducibility, peak spacing, peak shape and selectivity between peaks to be compromised.

Due to the proprietary (SGT) Surface Grafting Technology the SpeedCore pH Plus provides a more robust method developed option giving confidence that the peaks would not change due to a change in silica surface chemistry at elevated pH's.

The fast equilibration of core-shell particles, high efficiency and high throughput gives the ability to quickly screen low, mid and high pH. As a result the analyst has the opportunity to screen methods quickly when compound throughput and method development is critical.

Conclusion

SpeedCore pH Plus columns can operate across the full pH range, 1-12. This gives many benefits, including peak shape for basic compounds, loadability in preparative scale and selectivity of basic compounds. If the full pH range is available to the analyst then screening new compounds for the correct pH optimum becomes much simpler.
Robustness and reproducibility of methods is significantly increased if a stable column is chosen for drug discovery. SpeedCore pH Plus is the ultimate in current core-shell technology allowing speed, high efficiency, sensitive, reliable methods to be developed.