

INTRODUCTION

Reducing the amount of sample required for an analysis, gaining a boost in sensitivity, or decreasing solvent usage and waste generation are some of the reasons laboratories may want to migrate their analyses to 1.0-mm diameter columns. To achieve these benefits, however, highly repeatable chromatography must be demonstrated. Replicate injections of a small molecule standard were analyzed on an ACQUITY UPLC I-Class System with UV detection using a 1.0-mm column to evaluate system performance.

LC CONDITIONS

Sample: 6-component small molecule standard in
30% acetonitrile/water

Mobile phase: A – 0.1% formic acid in water,
B – 0.1% Formic acid in Acetonitrile

Flow rate: 90 µL/min

Gradient: 5% to 95% B, 25 min

Column: HSS T3 1.0 x 150 mm, 1.8µm

Wavelength: 270nm, 10 Hz, normal filter

Column Temp: 40 °C

Injection vol: 1 µL

RESULTS

The results for five replicate injections are shown in the chromatogram and table below. The overlay plot was offset to more clearly show the consistent chromatography. UPLC peak widths were evident, ranging from 5.2 to 9.0 seconds at 10% peak height. Retention time %RSD values were all 0.11% or less. And peak area repeatability for all peaks was ≤0.20% RSD.

CONCLUSION

The ACQUITY UPLC I-Class System produces high-quality UPLC chromatography with 1.0-mm diameter columns.

Retention time (min)	Compound	Avg peak width (sec)	%RSD Retention time	%RSD Area
4.80	Caffeine	5.4	0.11	0.17
6.61	Acetalalide	6.0	0.00	0.16
9.62	Sulfadimethoxine	6.0	0.05	0.17
14.97	Flavone	7.2	0.00	0.17
16.14	Nabumetone	7.8	0.00	0.15
18.35	Danazol	9.0	0.00	0.20

