

ACQUITY UPLC I-Class System: Repeatable Chromatographic Performance with 1.0 mm Diameter Columns

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Abstract

The ACQUITY UPLC I-Class System produces high-quality UPLC Chromatography with 1.0 mm Diameter Columns.

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.

Experimental

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, 1.8 µm
Wavelength:	270 nm, 10 Hz, normal filter Column
Temperature:	40 °C
Injection vol:	1 µL

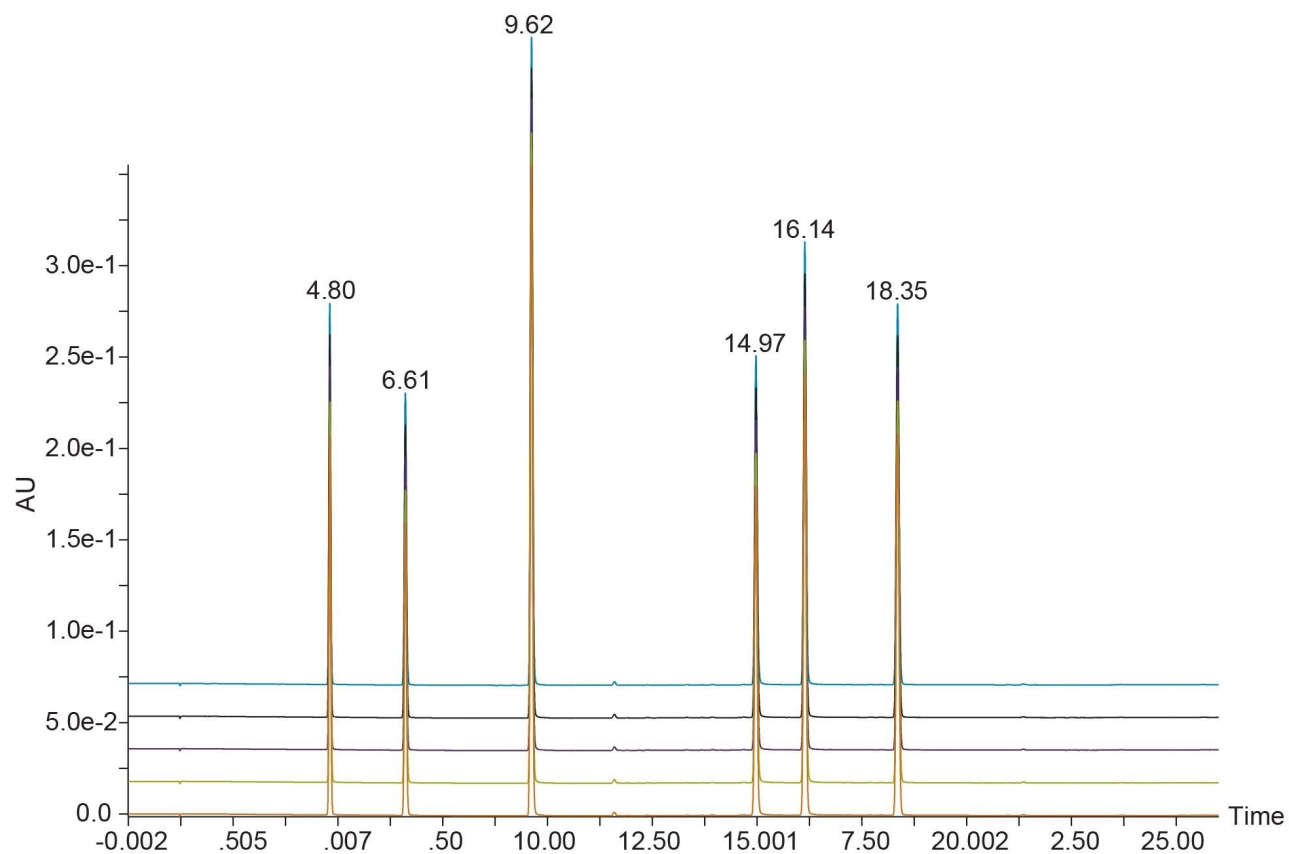


Figure 1. The consistent chromatography results for five replicate injections overlay period plot

Results and Discussion

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 $\leq 0.20\%$ RSD.

Retention time (min)	Compound	Avg peak width (sec)	%RSD Retention time	%RSD Area
4.80	Caffeine	5.4	0.11	0.17
6.61	Acetanalide	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

Table 1. Gradient Table.

Conclusion

The ACQUITY UPLC I-Class System produces high-quality UPLC Chromatography with 1.0 mm Diameter Columns.

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2489 UV/Visible (UV/Vis) Detector <

<https://www.waters.com/nextgen/global/products/chromatography/chromatography-detectors/2489-uv-visible-uv-vis-detector.html>>

720005305, January 2024



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