

APPLICATION NOTE

STYROS® 2R Simulated-Monolith™ Polymeric Reversed Phase: Assessment of columns from different manufacturers.

The use of small bore columns is now the norm in most laboratories.

They not only save on solvents but also minimize the use of valuable samples.

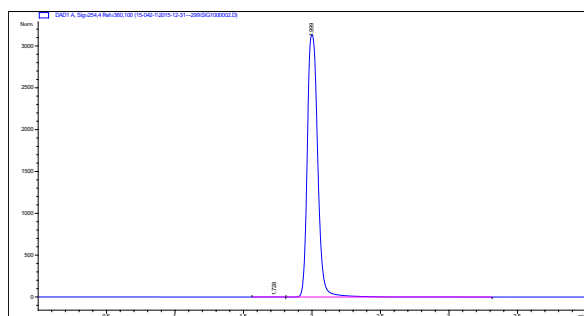
The importance of knowing the column prior to any protocol of validation is crucial in the interpretation of results.

It is therefore highly recommended that columns are assessed at the point of acquisition and monitored periodically for any eventual changes.

Other factors to be considered are the dwell volume of the instrument during gradient elution as well as its performance in isocratic mode.

We have found the Agilent 1290 Infinity to be of superior quality and reliable in performing good separation with small bore or capillary columns.

The followings are chromatograms of STYROS® NB Simulate-Monolith™ polymeric compared with another column of 3µm particle size with the same dimensions.



Chromatogram 1

Acetone on **STYROS® 2R/NB Simulated-Monolith™**
Flow Rate: 0.2 ml/min.

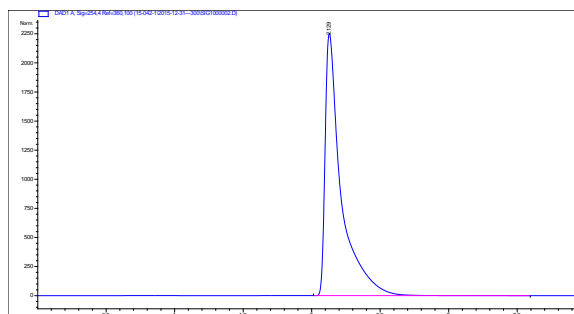
Table 1. Operating parameters.

HPLC System.	Agilent 1290 with thermostatted column compartment.
Columns	STYROS® 2R/NB 2.1X 150 mm
Mobile phase.	A: 0.075% TFA in H ₂ O B: 0.075% TFA in ACN: H ₂ O 95:5
Flow rate	0.2 ml/min
Isocratic	92:8 B:A or 7:1 ACN:H ₂ O
Temperature	30°C
Detection	254 nm
Injection volume	0.5 µl
Pressure Drop	29 bar (~ 420psi)
Sample:	Acetone

The low back pressure of 29 bar is characteristic of STYROS® 2R/NB Simulated-Monolith™ compared to 98 bar for a 3µm particle size column.

As Simulated-Monolith™ the separations can be run at high linear velocities to allow faster regeneration.

The column can take up to 5,000 psi of pressure.



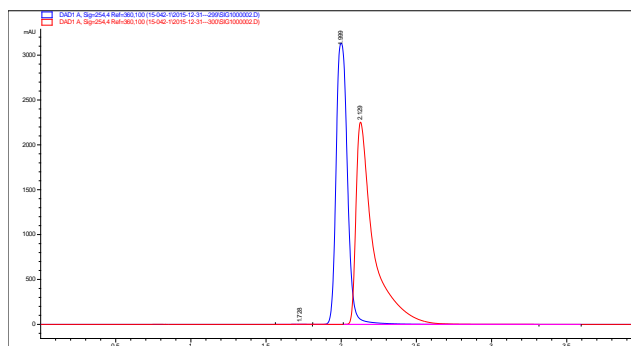
Chromatogram 2

Acetone on same dimension column of 3µm particle size.
Flow Rate: 0.2 ml/min.

Table 2. Operating parameters.

HPLC System.	Agilent 1290 with thermostatted column compartment.
Columns	2.1X 150 mm column with 3 µm particle size
Mobile phase.	A: 0.075% TFA in H ₂ O B: 0.075% TFA in ACN: H ₂ O 95:5
Flow rate	0.2 ml/min
Isocratic	92:8 B:A or 7:1 ACN:H ₂ O
Temperature	30°C
Detection	254 nm
Injection volume	0.5 µl
Pressure Drop	98 bar (~ 1,420psi)
Sample:	Acetone

Comparison of the performances of the two columns.



Note that as Simulated-Monolith™ the pore size is no longer a factor in separation.

