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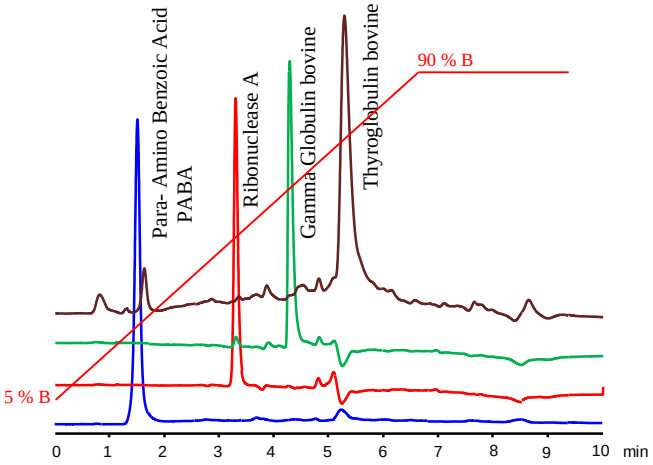
APPLICATION NOTE

STYROS® Simulated-Monolith™ Polymeric Reversed Phase.
Fast convective channels of monolith to separate different size molecules in a mixture.

The interconnected convective channels of monoliths and Simulated-Monoliths™ mitigate the inconvenience of having to decide in choosing a specific pore seize for the separation of a mixture.

This becomes more important when dealing with unknown entities with unknown sizes.
The separation media needs to accommodate any mixture with more than one size.

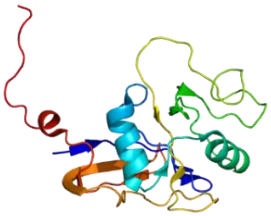
In the present application note we have chosen small molecules as well as large ones to highlight the universality and comprehensiveness of Simulated-Monoliths™ for most separation.



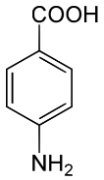
A STYROS® 2R narrow bore column of 2.1 mm ID was used for the separation to minimize the use of sample and the generation of waste as well as to increase sensitivity.
The peeks show high symmetry indicating the absence of slow diffusion.

Table 1. Operating parameters.

HPLC System.	Agilent 1290 with thermostatted column compartment.
Columns	**STYROS® 2R**/NB 2.1 X 50 mm
Mobile phase.	A: 0.075% TFA in H2O B: 0.075% TFA in ACN: H2O 95:5
Flow rate	0.2 ml/min
Gradient	5 to 90 % B in 7 min.
Temperature	40°C
Detection	280 nm
Injection volume	1-20 µl
Pressure Drop	23 bar at the start of the gradient.
Sample:	PABA, Ribonuclease A, gamma-Globulin bovine, Thyroglobulin bovine 1 mg/ml each in buffer A.


Thyroglobulin bovine
MW: 670 kDa


γ-globulin bovine
MW:150 kDa



PABA
para- Amino Benzoic Acid
MW: 137.14 g/mol


Ribonuclease A
MW: 13.7 kDa

The use of monoliths prevents the occurrence of eddies that are the primary cause of band broadening, loss of resolution as well as shear forces damaging labile molecules.
Such phenomena happen at the interstices of particles in packed bed.

To be noted that the laminar flow in monoliths as well as the convective exchange process assure a fast response to intentional pH adjustments for separation.
It also facilitates the changes in buffer composition that enhances the kinetics of elution, provides sharper, better resolved as well as more concentrated peaks.