

Effect of Molecular Weight on Sample Loading in Gel Permeation Chromatography

Technical Overview

Introduction

In gel permeation chromatography and size exclusion chromatography, sample loading is very dependent on the molecular weight distribution of the polymer. Broader distribution polymers can be loaded to a greater extent. This effect is demonstrated on an Agilent PLgel 10 μm MIXED-B column. Figure 1 shows the column calibration using Agilent EasiCal polystyrene calibrants. Figure 2 shows the effect of sample loading on the molecular weight distribution of a polystyrene with $M_w = 250,000$ and dispersity = 2.5.

Conditions

Calibrants	EasiCal (0.1% solution, 200 μL injection)
Column	Agilent PLgel 10 μm MIXED-B, 25 \times 300 mm (p/n PL1210-6100)
Eluent	THF
Flow rate	10 mL/min
Detector	RI
System	Agilent PL-GPC 50



Mp (upper trace)	3,040,000	Mp (lower trace)	8,500,000
	330,000		1,030,000
	66,000		156,000
	9,200		28,500
	580		3,250

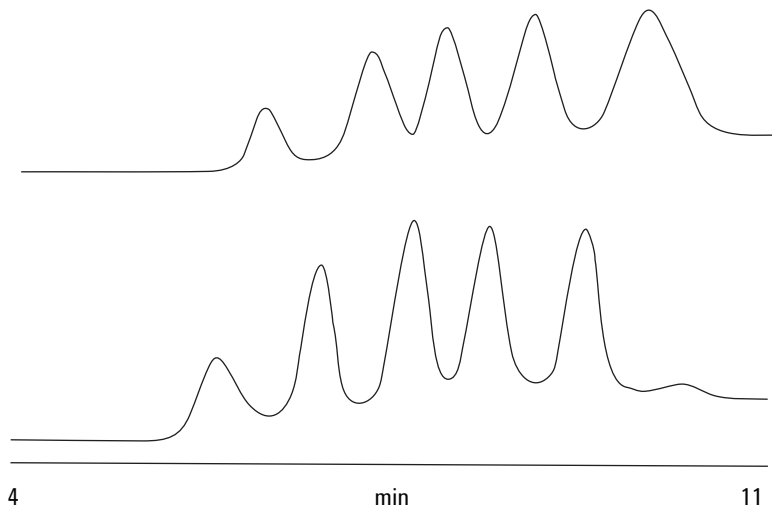


Figure 1. Calibration of an Agilent PLgel 10 μm MIXED-B column with Agilent EasiCal polystyrene standards.

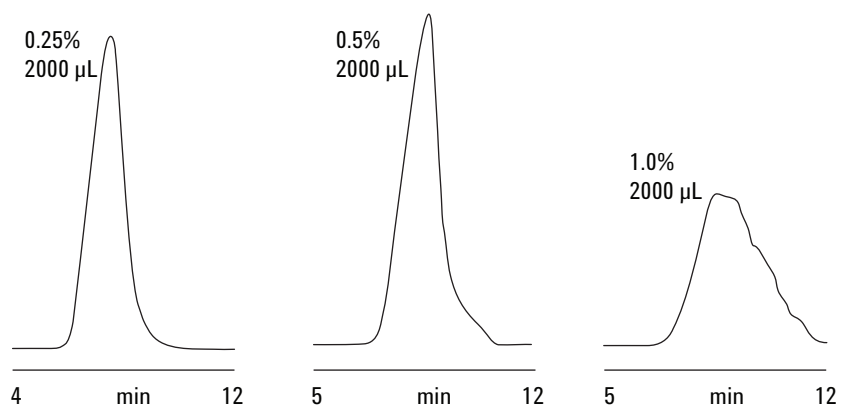


Figure 2. Effect of polystyrene molecular weight on sample loading demonstrated on an Agilent PLgel 10 μm MIXED-B column.

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