

Recycling Preparative HPLC of Polystyrene Oligomer

Introduction

Recycle analysis is an analytical technique to achieve the sufficient separation of unseparated components eluted from the column by returning such components to the same column repeatedly, which is considered to have the same effect as using the longer column or multiple columns enabling the better separation. When this technique is applied to preparative HPLC, each purified component can be fractionated very effectively. This technique has the following features:

- (1) It reduces column costs, because by recycle system, for better separation, it is not necessary to use the longer column or multiple columns.
- (2) It reduces environmental loads and costs, because in recycle mode, the same mobile phase solvent is used repeatedly while improving the separation,
- (3) It allows effective preparative purification, because each component is fractionated only after improving the separation,.

In this LC application data, the recycle preparative analysis of Polystyrene Oligomer was implemented as reported below.

Keyword: Recycling preparative HPLC, Polystyrene Oligomer

Experimental

[Equipment]		[Conditions]	
Eluent Pump:	PU-2086	Column:	Megapak GEL 201C (20 mm ID x 500 mmL)
Autosampler:	AS-2058	Eluent:	Chloroform
Detector:	UV-2070 (with semi-prep. cell)	Eluent Flow Rate:	3.0 mL/min
Fraction Collector:	ADVANTEC CHF122SC	Wavelength:	254 nm
Fraction Controller:	FC-2088-30	Injection Volume:	200 μ L
Fraction Valve unit:	HV-2088-06	Standard Sample:	Polystyrene Oligomer (1.0 % (w/v) in Chloroform)
Recycle kit			

Fig. 1 shows the flow diagram of Recycling Preparative HPLC system.

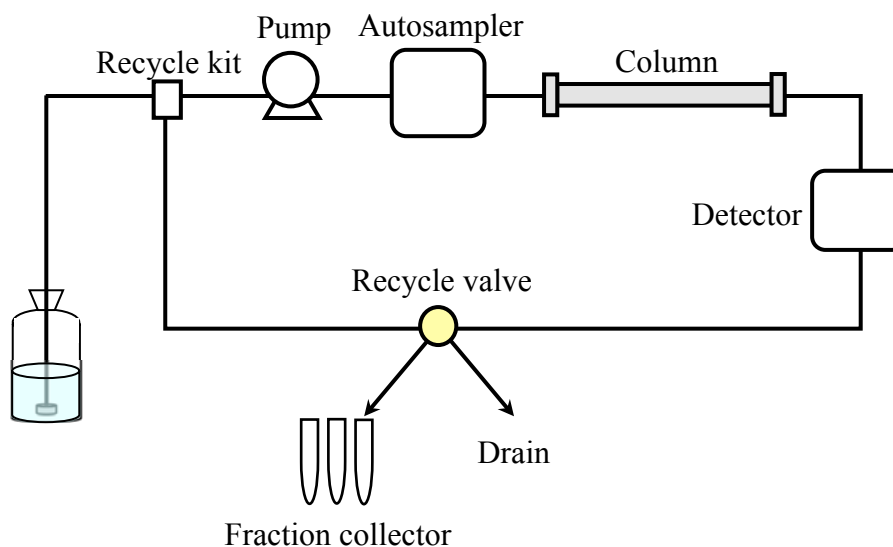


Fig. 1. Flow Diagram of Recycling Preparative HPLC system

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Result

Fig. 2 shows the recycle chromatogram of Polystyrene Oligomer, showing the improvement of separation by recycling six times in approximately 180 minutes. Three components such as tetramer, pentamer and hexamer of Polystyrene Oligomer were clearly separated and fractionated.

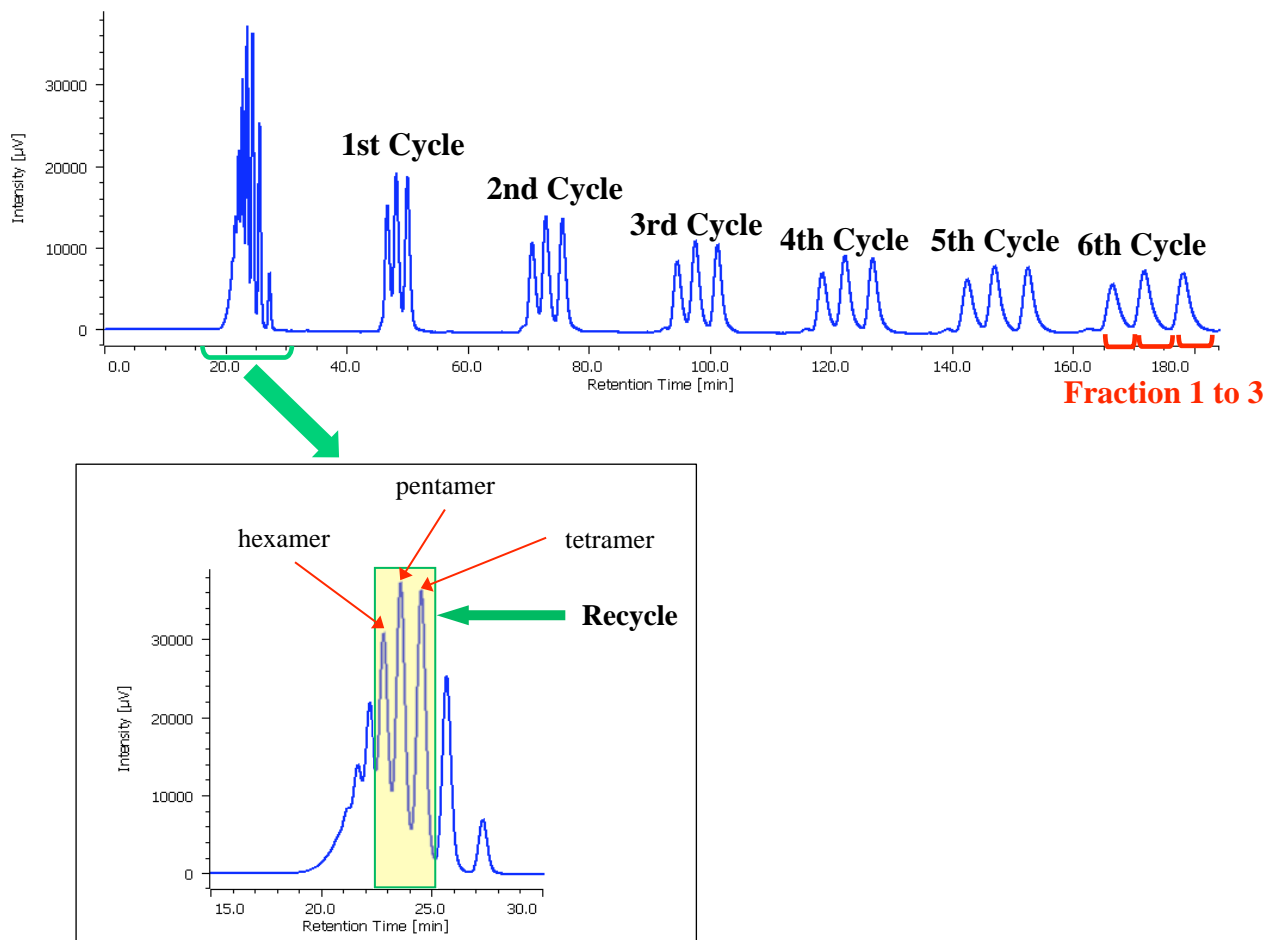


Fig. 2. Recycle Chromatogram of Polystyrene Oligomer