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 Recycling Preparative HPLC
LaboACE LC-5060

Recycling by GPC Column Separation of PTV Precursor

Keyword:

Conductive Polymer, Polythienylenevinylene, GPC Column, Size Exclusion Chromatography

Introduction

In preparative HPLC, the column length is one of the key factors to get better separation. However, there is a limit in length due to restriction on the pressure the column can endure.

Recycling preparative HPLC is the solution to the problem. By cycling the sample solution back to the same column repeatedly, it causes the same effect as a longer column is used. Further, no solvent is consumed during the cycles. So it is the ideal way to efficiently increase separation (resolution) ability.

Moreover, combined use of SEC column, which separates compounds by their size, has gained great popularity among synthetic organic chemists since it can considerably save labor and time for method development as far as the sample is dissolved in some solvent.

Here is an example of recycling preparative HPLC using organic GPC column.

Experiment & Results

Sample: Precursor of Polythienylenevinylene, one of conductive polymers. (Fig. 1)

We first fractionated the polymer and then tried to separate oligomers using Recycling Preparative HPLC.

Instrument : LC-9110NEXT (Detector : UV (265 nm))
 Column : JAIGEL-2H + JAIGEL-3H in series
 Mobile phase : 0.5% Triethylamine in Chloroform
 Flow rate : 3.5 mL/min

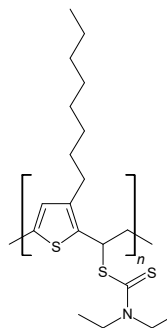


Fig. 1

Red : Recycled area
 Blue : Collected area

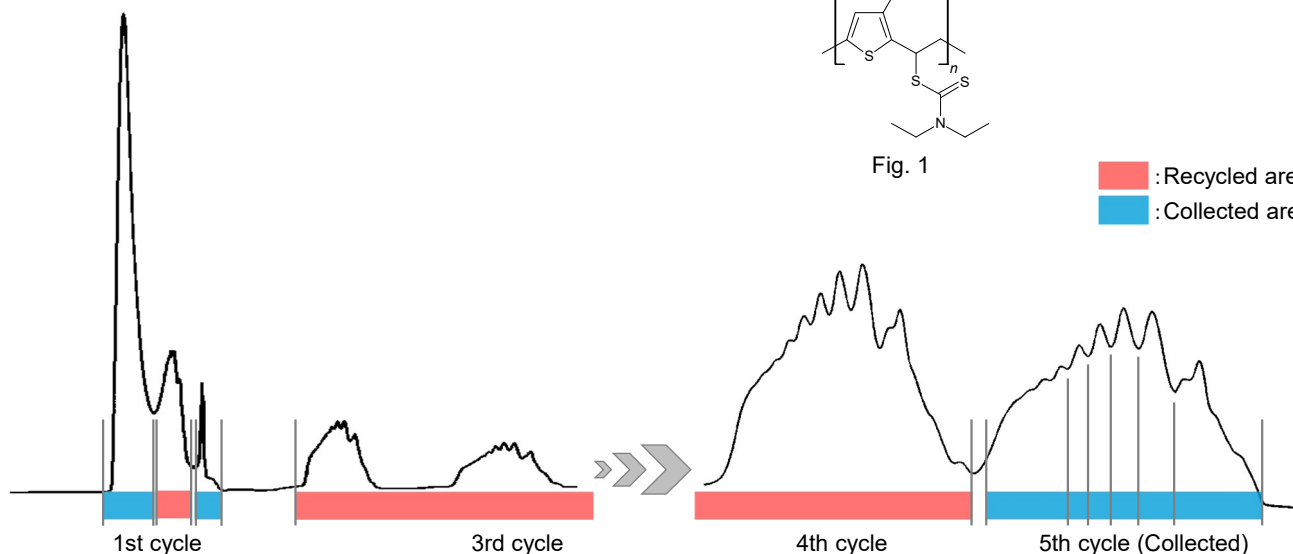


Fig. 2 Chromatogram (4th and 5th cycles were enlarged)

Conclusion

We were able to separate the oligomers at the 5th cycle. As you may know, nitrogen-containing organic compounds are often trapped inside GPC column, so we added Triethylamine to the eluent to get stable chromatograms.