



Recycling Preparative HPLC
LaboACE LC-5060

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Recycling by GPC Column Fractionation of P3HT

Keyword:

Conductive Polymer, 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: Mixture of P3HT, Poly(3-hexylthiophene-2,5-diyl) (Fig. 1)
We tried to fractionate the polymer based on molecular weight.

Instrument : LC-9110NEXT (Detector : UV (254 nm))
Column : JAIGEL-2H + JAIGEL-3H in series
Mobile phase : Chloroform
Flow rate : 3.5 mL/min

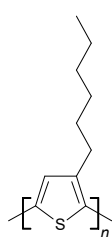


Fig. 1

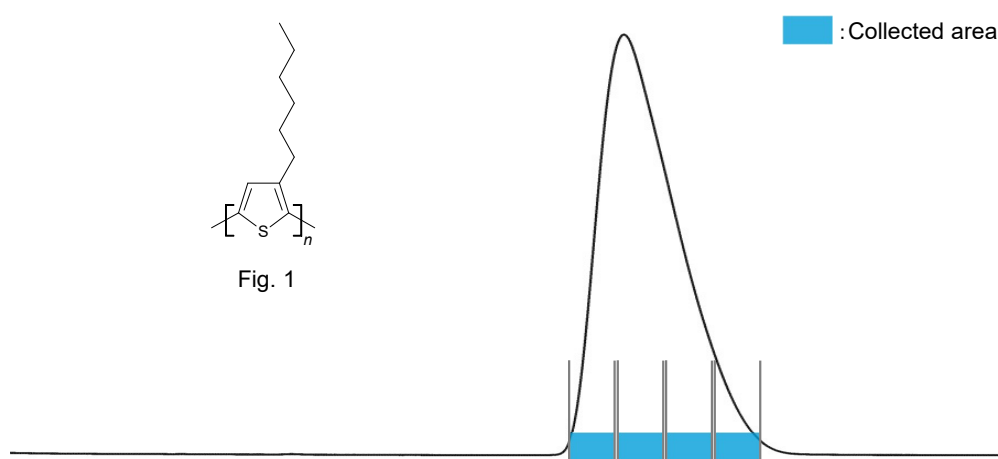


Fig. 2

Conclusion

We fractionated the polymer into four fragments based on molecular weight.