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Recycling Preparative HPLC
LaboACE LC-5060

Related product : Recycling Preparative HPLC Series

Recycling by GPC Column
Purification of Carbazole Derivative

Keyword:
Conductive Polymer Material, 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: Carbazole derivative which is used as monomer of conductive polymers (Fig. 1)
We tried to separate the monomer from byproduct (Fig. 2) by Recycling Preparative HPLC.

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

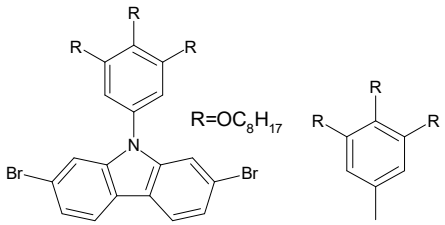

Fig. 1

Fig. 2

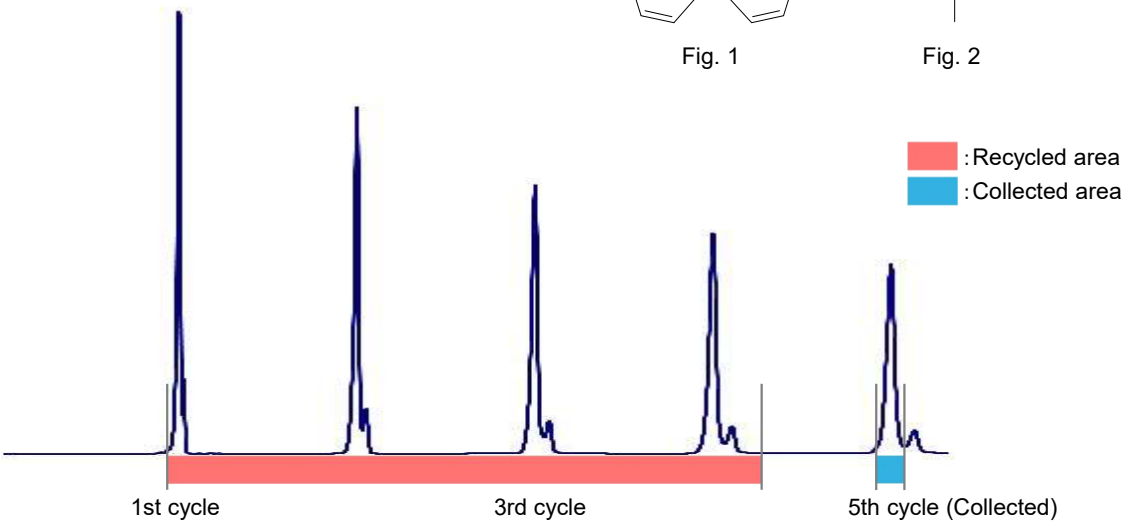

Fig. 3

Conclusion

In separation of Nitrogen-containing organic compounds, which is adsorptive to GPC column filler, Triethylamine (TEA) is often added to eluent for stable chromatogram. However, this sample gave a stable chromatogram without TEA and we were able to isolate the target compound at the 5th cycle.

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