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 Recycling Preparative HPLC
LaboACE LC-5060

Recycling Fractionation by GFC Column 2 Macrocylic Compounds

Keyword:

Separation of Constitutional Isomers of Macrocylics, 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.

Also, 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 work as long as the sample is dissolved in some solvent.

Here is an example of recycling preparative HPLC using aqueous GFC column.

Experiment and Results

Sample: Mixture of macrocylic compounds having sodium sulfonate group on different positions
We tried to separate them with recycling preparative HPLC using aqueous GFC column.

Instrument : LC-9101 (Detector : UV (254 nm))
Column : JAIGEL-GS310 + GS310 in series
Mobile phase : 100 mM NaClO₄ in Water / Methanol (10 / 90)
Flow rate : 5 mL/min

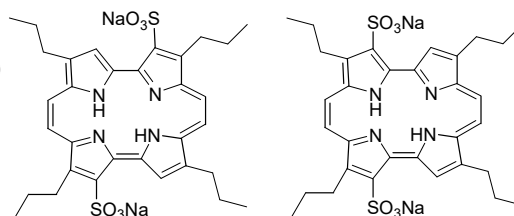


Fig. 1

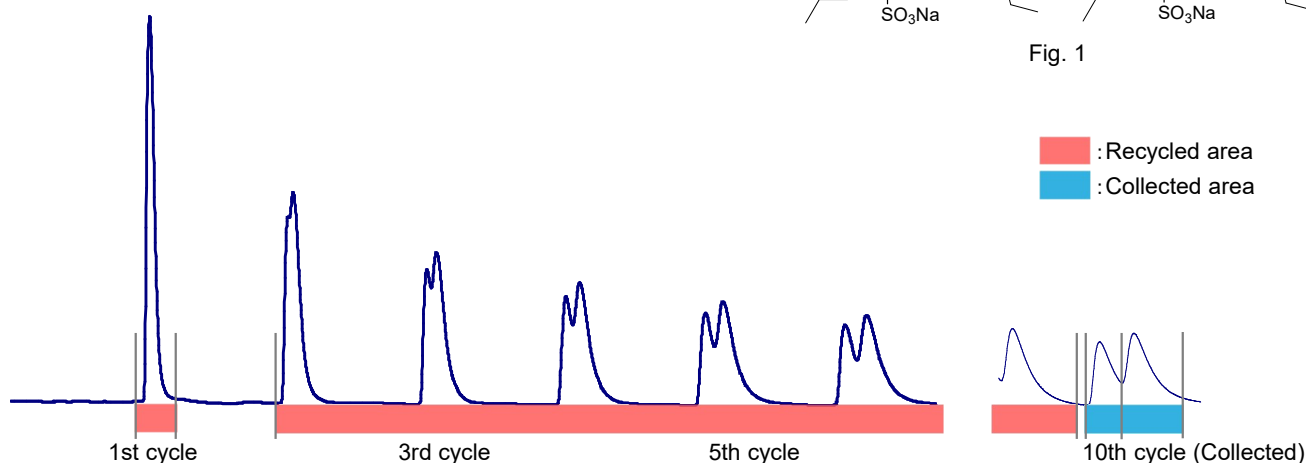


Fig. 2

Conclusion

These isomers were separated at the 10th cycle.