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Recycling by GPC Column Separation of Porphyrin Oligomers

Keyword:

Separation of Porphyrin Oligomers, 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 work 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 Porphyrin oligomers ($n=3$ to 7) having bulky Aryl groups
We tried to separate the oligomers by Recycling Preparative HPLC using organic GPC column.

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

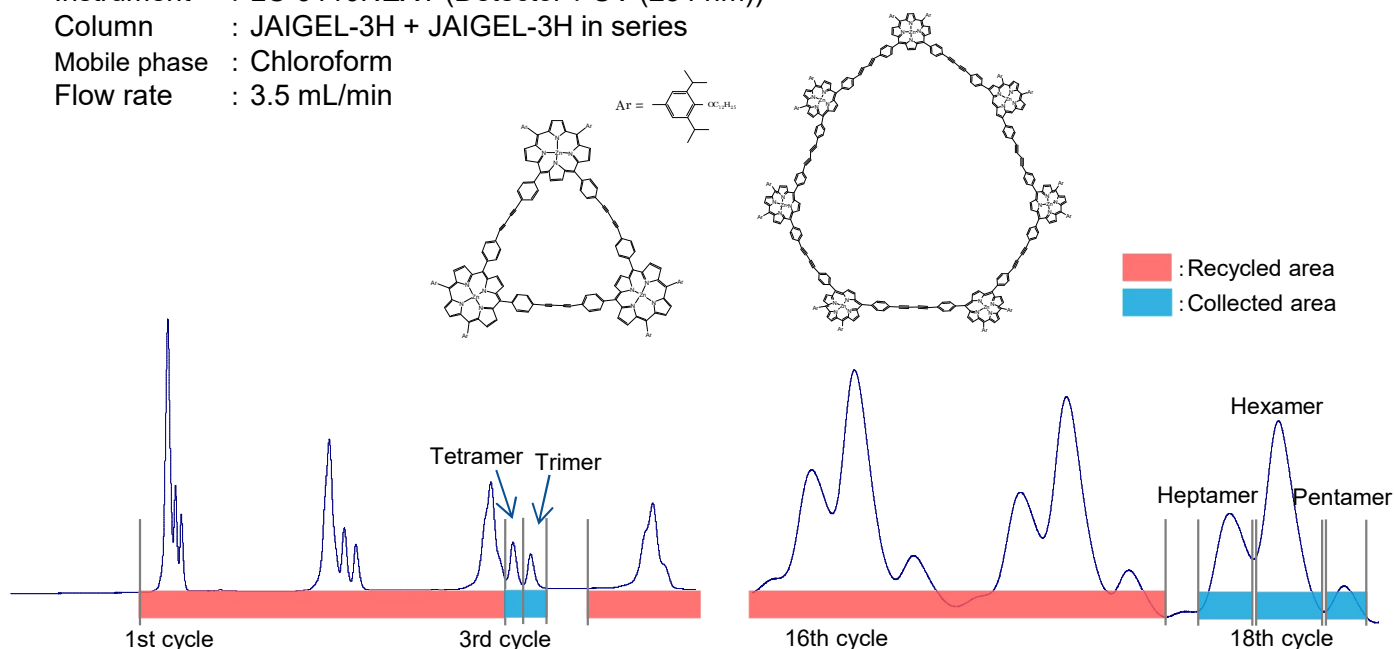


Fig. 1

Conclusion

Trimer and Tetramer were isolated at the 3rd cycle and others were isolated at the 18th cycle.