SEC Analysis of a Acrylamide Copolymer

Application Note

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Introduction

This sample is a copolymer of acrylamide and dimethylaminoethyl acrylate quaternized with methyl chloride. It was necessary to maintain a low sample concentration (0.1 %) to minimize problems of shear with this high molecular weight polymer. The sample was assessed by aqueous SEC with Agilent PL aquagel-OH 40 and 60 15 µm columns. These columns were employed in order to avoid on-column shear degradation, and cover a molecular weight range from 10^4 to 10^7.
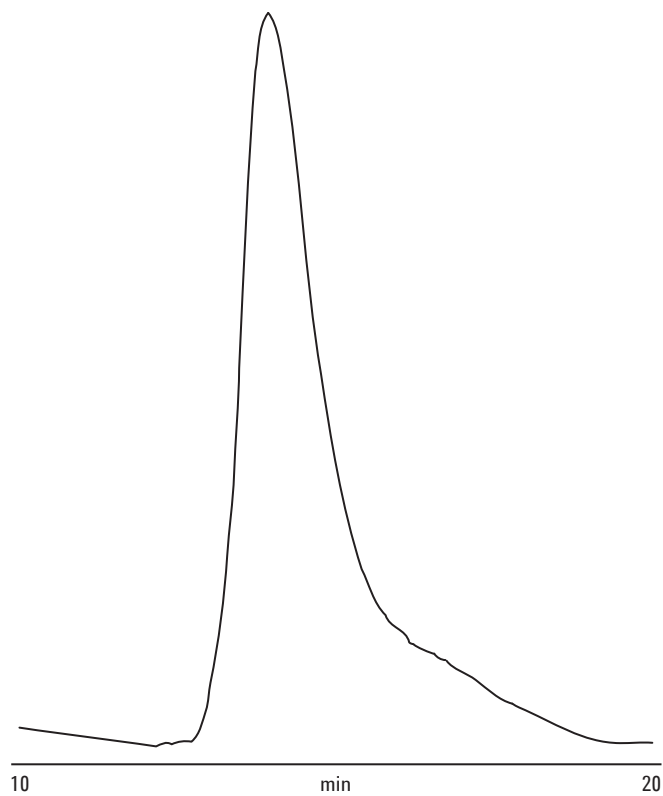
Verified for Agilent
1260 Infinity
GPC/SEC System

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Conditions

Samples: Sodium polyacrylate
Columns: 2 x PL aquagel-OH 60 15 µm, 300 x 7.5 mm (p/n PL1149-6260)
+ 1 x PL aquagel-OH 40 15 µm, 300 x 7.5 mm (p/n PL1149-6240)
Eluent: 0.2 M $NaNO_3$ + 0.01 M NaH_2PO_4 at
pH 7
Flow Rate: 1.0 mL/min
Detection: RI

Figure 1. Raw data chromatogram of an acrylamide co-polymer

Conclusion

Size exclusion chromatography using PL aquagel-OH 40 and 60 15 µm columns successfully analyzed a sample of acrylamide copolymer. Aqueous SEC with PL aquagel-OH columns provides information not only on the molecular weight of the polymer but also on the polydispersity and the shape of the molecular weight distribution. The excellent chemical and mechanical stability of these columns offer high performance with good repeatability and column lifetime.

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