

Analysis of Nonionic Surfactant by High Performance Liquid Chromatography with Evaporative Light Scattering Detection

Introduction

Surfactant is well known as main constituent of commercial detergent and is widely used in various industrial and pharmaceutical fields due to various capabilities such as washing performance, moisture absorbency, osmosis, solubility, dispersibility, lubricity, antistatic ability, bactericidal property, anti-rust property. Nonionic surfactant has hydrophilic groups which are not ionized even dissolved in water and since it is hardly affected by water hardness and electrolyte, it can be used together with all other surfactants. Considering its nature, the usage of nonionic surfactant has been increased drastically and its affect to the environment has been pointed out. Since 2003, nonionic surfactant has been the test item for Water Quality Control Standards. This time, Triton X-100 and Polyethylene Glycol 400 as nonionic surfactant samples were measured and analyzed by using of ELSD detector with Silica NH₂ column as HILIC mode.

Keywords : Nonionic surfactant, Triton X-100, PEG400, HILIC, Silica NH₂ column, ELSD

Experimental

Equipment

Pump: PU-2089
 Autosampler: AS-2057
 Column oven: CO-2060
 Detector: ELS-2040

Conditions

Column: Finepak SIL NH₂-5 (4.6 mmID x 250 mmL)
 Eluent A: Acetonitrile
 Eluent B: Acetonitrile/0.1% Acetic acid (90/10)
 Gradient condition:
 Triton X-100; (A/B), 0 min (90/10) → 16 min (2/98) → 26 min (2/98) → 26.1 min (90/10) 1 cycle; 40 min
 PEG400; (A/B) (50/50)
 Flow rate: 1.0 mL/min
 Column temp.: 30°C
 ELSD condition: Nebulizer temp.; 30°C
 Evaporator temp.; 60°C
 Gas flow rate; 1.6 SLM
 Injection volume: 10 μL
 Standard sample: Triton X-100, PEG400 30 mg/mL each in Acetonitrile

Result

Fig. 1 and Fig.2 shows chromatograms of Triton X-100 and PEG400 respectively.

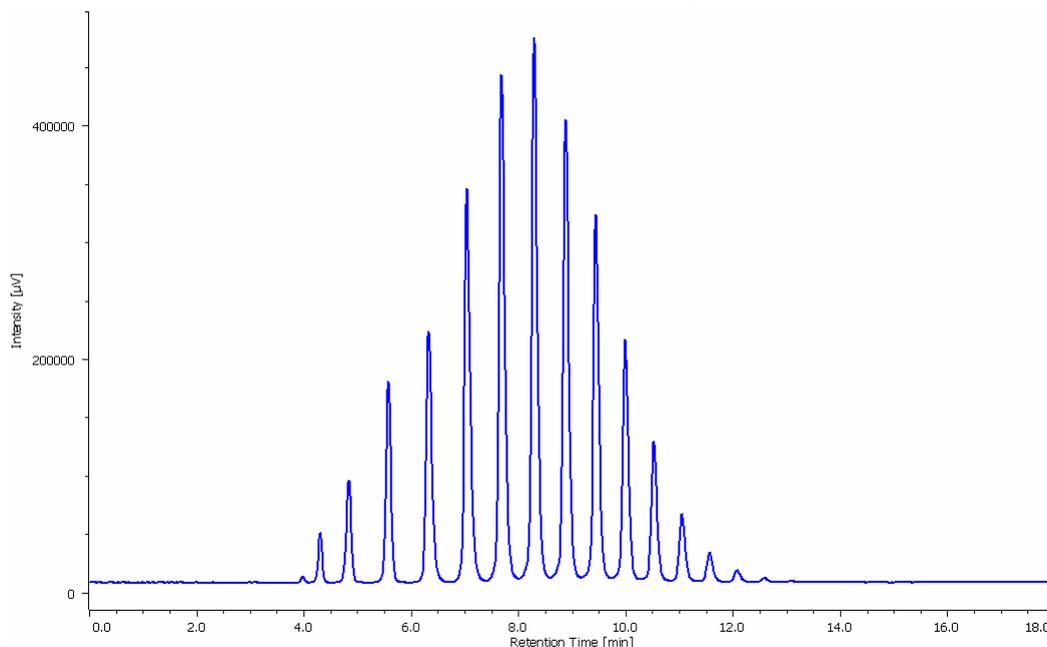


Fig. 1 Chromatogram of Triton X-100

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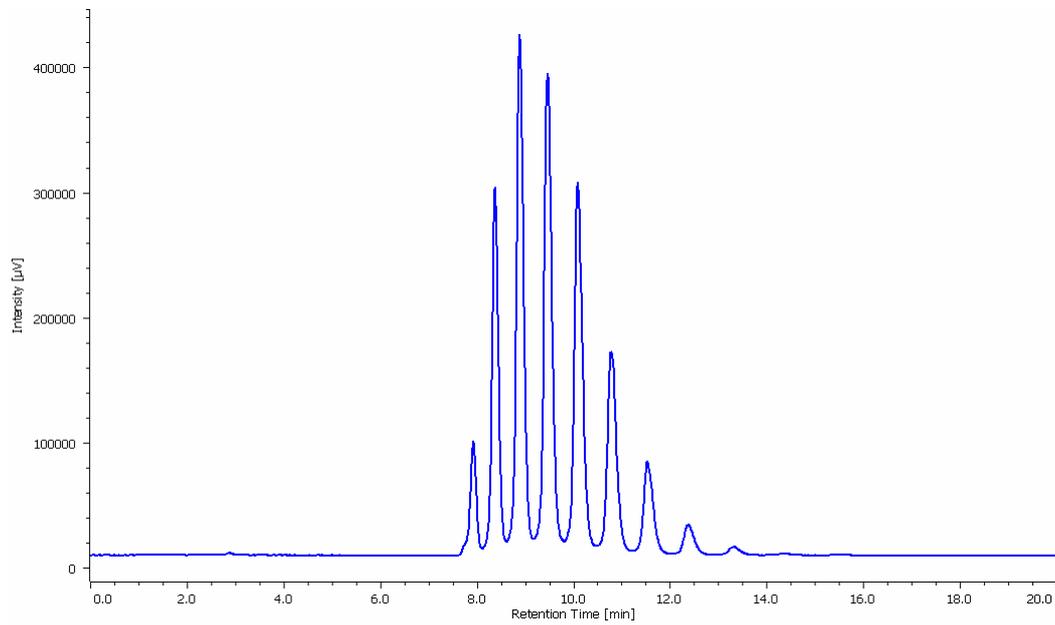


Fig. 2 Chromatogram of PEG400