INTRODUCTION

Non-ionic surfactants such as Triton X-100 are used in cosmetics, industrial materials, and many other products. Their composition has to be monitored because the differences in ethoxy chain length affect the viscosity, solubility, polarity, and other characteristics of the mixture.

They are typically analyzed by HPLC, SFC, and GC. Analysis by GC and HPLC can be very time-consuming, and HPLC may require derivatization for non-UV absorbing surfactants. In some cases, baseline separation for oligomers is still not achieved.

CONCLUSIONS

UltraPerformance Convergence™ Chromatography (UPC²™) provides a rapid, high efficiency separation for Triton X-100. Excellent resolution for approximately 20 oligomers is achieved in two minutes using lower temperature than in GC or traditional SFC, making UPC² more amenable to thermally labile compounds. Compared with normal phase HPLC, there is a significant reduction in the consumption of toxic solvents.

METHOD CONDITIONS

System: ACQUITY UPC²™
Detection: Photodiode Array (PDA)
PDA 3D Channel: PDA, 210 to 400 nm;
PDA 2D Channel: 222 nm at 4.8 nm resolution (compensated 380 to 480 nm)
Column: ACQUITY UPC² BEH 2.1 x 50 mm, 1.7 µm
Mobile phase A: CO₂
Mobile phase B: Methanol
Wash solvents: 70:30 methanol/isopropanol
Separation mode: Gradient starting at 2% B to 35% over 1.25 min, back to 2% B in 5 s
Flow rate: 2.0 mL/min
UPC² Manager: 1500 psi
Column temp.: 40 °C
Injection volume: 1.0 µL
Run time: 2 min
Sample: 10 mg/mL Triton X-100 in isopropanol
Software: Empower™ 3

Click on the underlined blue text for details on the products used in this application.