

Analysis of Anionic Surfactants using LC-MS

Surfactants are widely used in various industrial fields, including production of domestic synthetic detergents, owing to their ability to reduce surface tension. Nowadays, with the increasing awareness of environmental problems, concerns have been arising for the influence of surfactants contained in domestic and industrial wastewater on the environment and living organisms. Investigations are therefore being undertaken to monitor it.

There are many types of surfactants such as anionic, cationic, and nonionic. Introduced here is an example of the

analysis of the anionic surfactant alkyl phenyl polyoxyethylene sulfonate.

The mass chromatogram and mass spectrum of the alkyl phenyl polyoxyethylene sulfonate are shown in Figs.1 and Fig.2 respectively. Components in surfactants, which include substances with different carbon numbers, can be accurately identified and quantified by performing mass chromatography at a specific mass number.

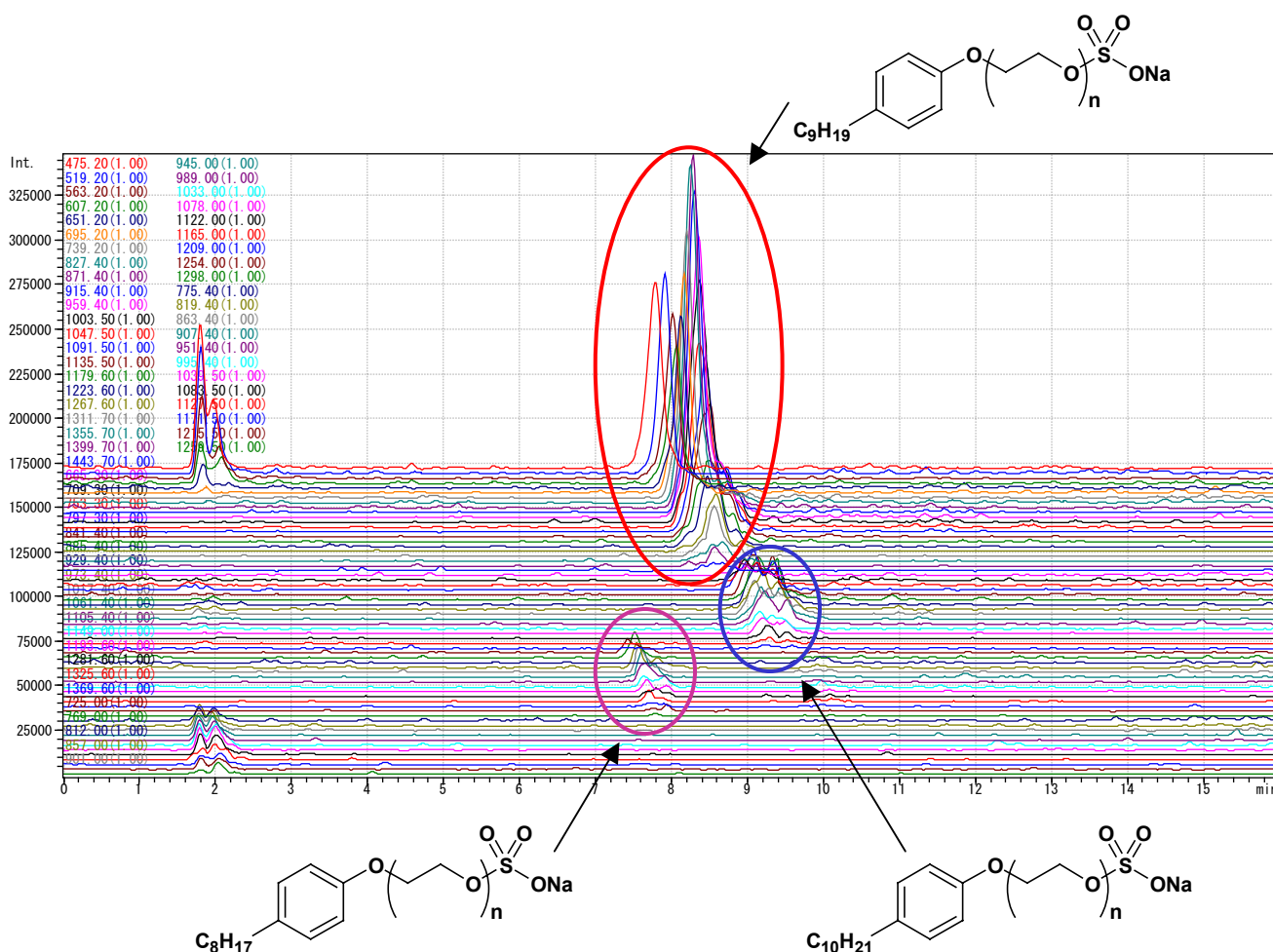


Fig. 1 Mass chromatograms of alkyl phenyl polyoxyethylene sulfonate

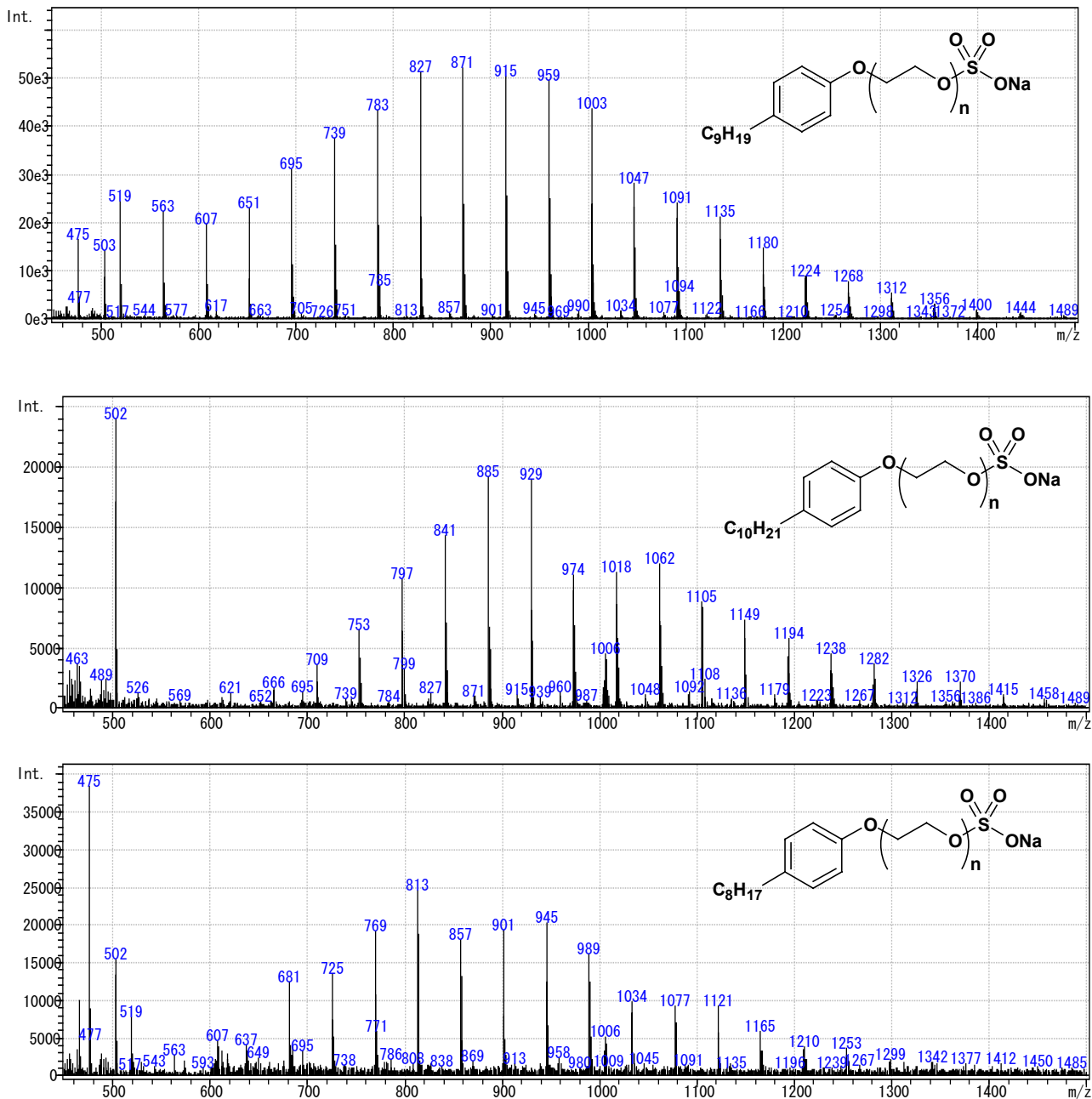


Fig. 2 Mass spectrum of alkyl phenyl polyoxyethylene sulfonate

Table 1 Analytical conditions for LC-MS

Column	: Shimadzu Shim-pack VP-ODS (2.0 mmI.D. x 150 mm)	Column temperature	: 40 degree C
Mobile phase A	: water containing 10mM ammonium acetate adjusted to pH4 with acetic acid	Block Heater temperature:	200 degree C
Mobile phase B	: acetonitrile	Q-array RF	: scan mode
Gradient program	: 50% B - 90%B(10min) - 90%B(16min) - 50%B(16.01-26min)		
Flow rate	: 0.2 mL/min		
Injection volume	: 5 uL		
Probe voltage	: -3.5 kV (ESI-Negative mode)		
Probe temperature	: 400 degree C		
CDL temperature	: 200 degree C		
Nebulizing gas flow	: 4.5 L/min		
CDL voltage	: C-mode		
Q-array DC voltage	: scan mode		
Scan range	: m/z 450 - 1500 (2 sec/scan)		

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