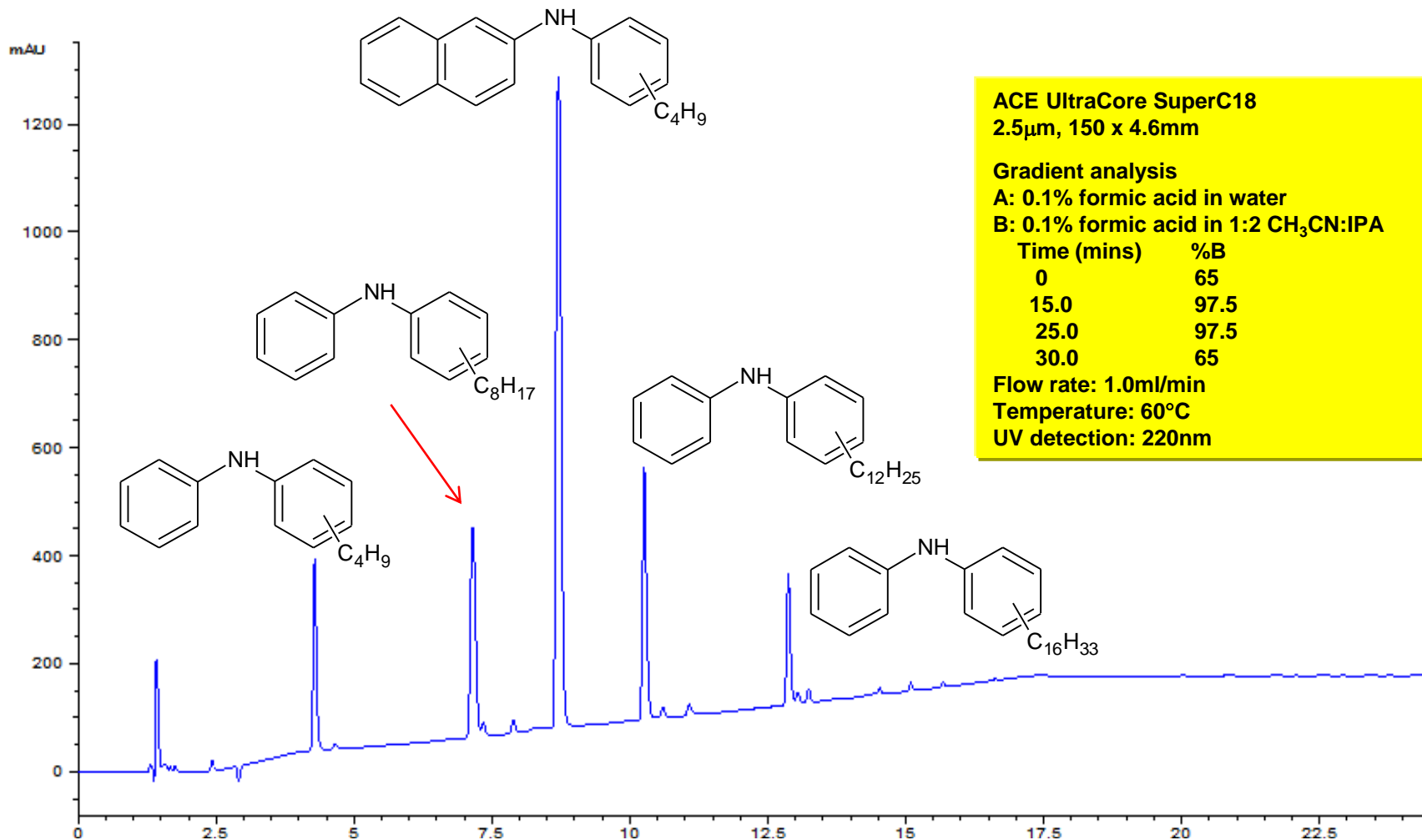


PetroChemical Industry

Lubricant Additives: ADPA / OPAN Antioxidants



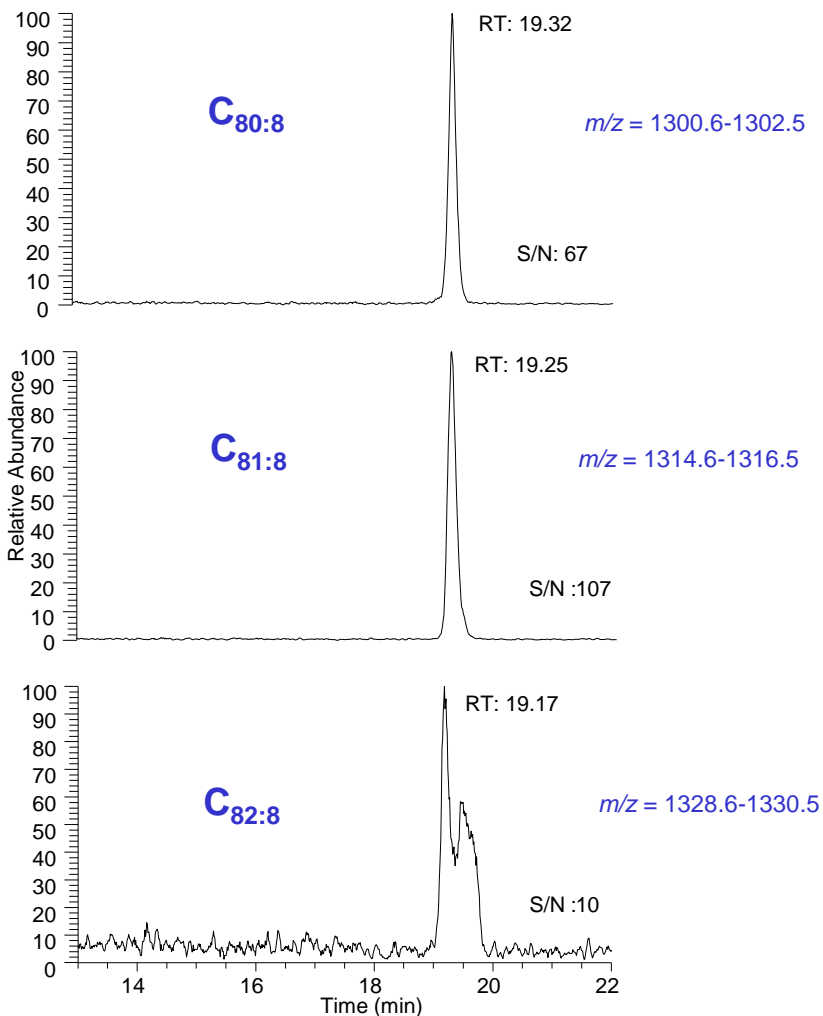
ACE UltraCore SuperC18
2.5µm, 150 x 4.6mm

Gradient analysis
A: 0.1% formic acid in water
B: 0.1% formic acid in 1:2 CH₃CN:IPA

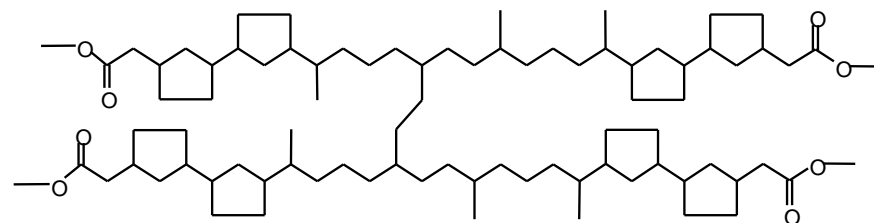
Time (mins)	%B
0	65
15.0	97.5
25.0	97.5
30.0	65

Flow rate: 1.0ml/min
Temperature: 60°C
UV detection: 220nm

Polycyclic Tetracarboxylic Acids



C80-82 polycyclic tetracarboxylic acids isolated from oilfield deposits



Tetramethyl ester of C_{80:8} ring acid

ACE UltraCore SuperPhenylHexyl 2.5µm, 100 x 2.1mm
Gradient analysis
A: CH₃OH – H₂O (98:2) containing 10mM ammonium acetate
B: IPA-H₂O (98:2) containing 10mM ammonium acetate

T (mins)	%B	T (mins)	%B
0	0	15	100
1	0	25	100

Flow rate: 0.15ml/min
Column temperature: Ambient
Injection volume: 5µl
LCQ Ion trap MS
LC-ESI-MS extracted ion chromatograms
Compounds detected as ammoniated quasimolecular ions
[M+NH₄]⁺
Detection limit ~ 0.1ppm