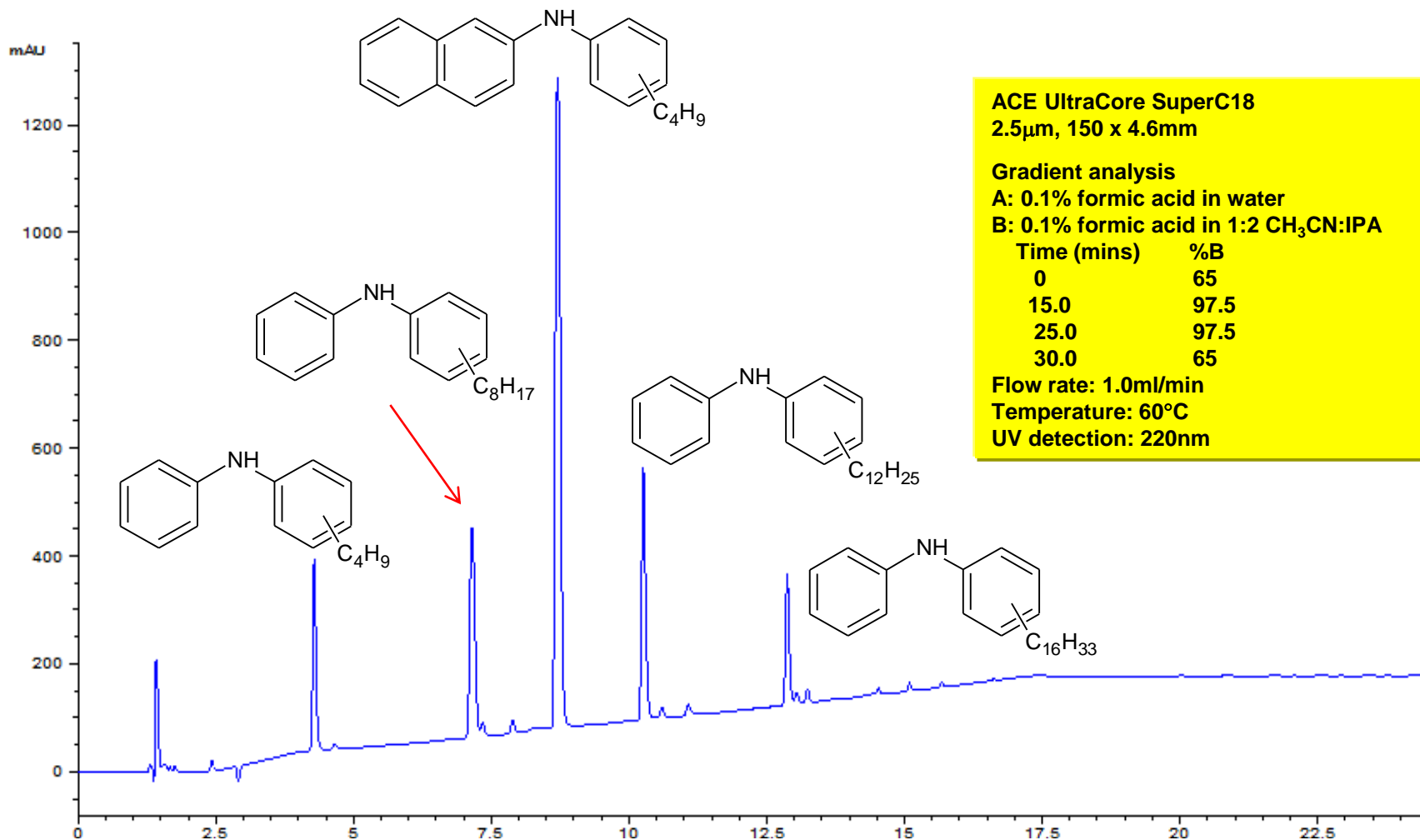


PetroChemical Industry

Lubricant Additives: ADPA / OPAN Antioxidants



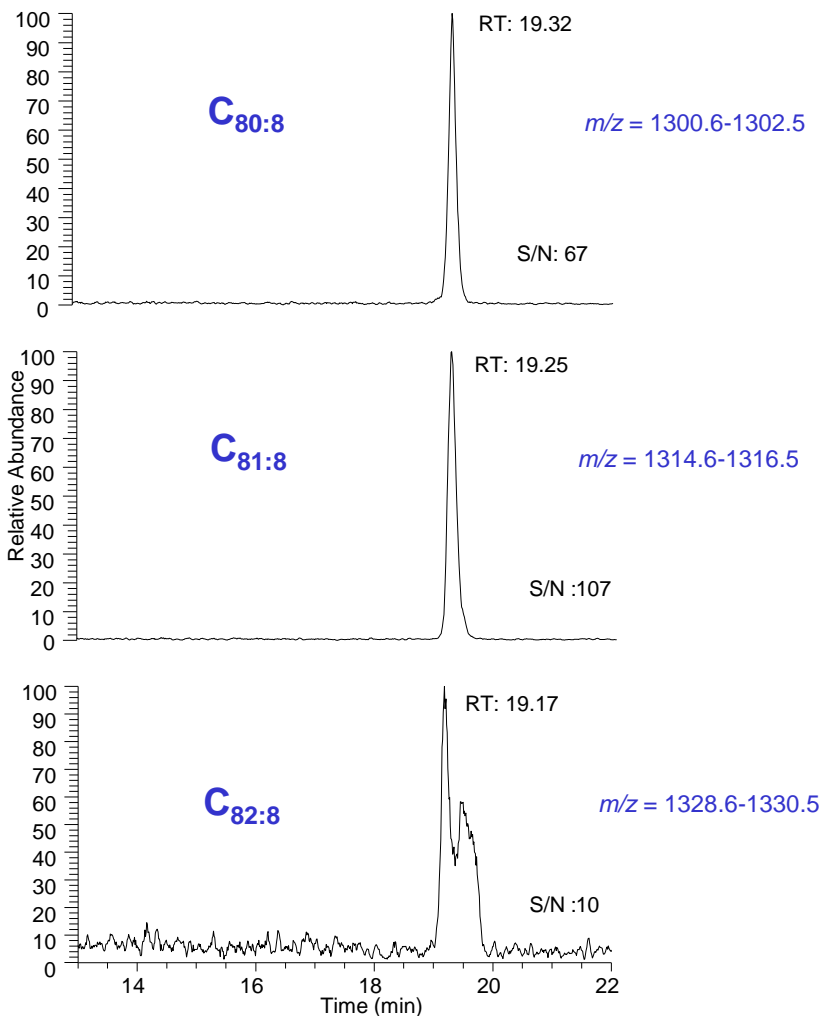
ACE UltraCore SuperC18
2.5µm, 150 x 4.6mm

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

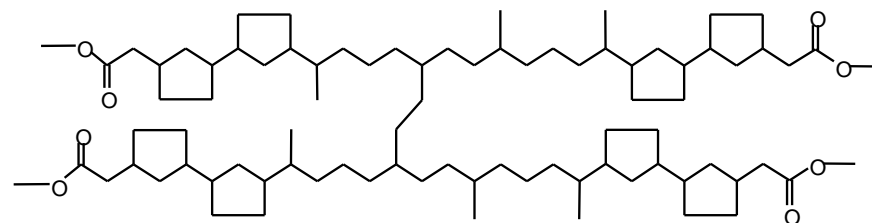
| Time (mins) | %B |
|-------------|------|
| 0 | 65 |
| 15.0 | 97.5 |
| 25.0 | 97.5 |
| 30.0 | 65 |

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