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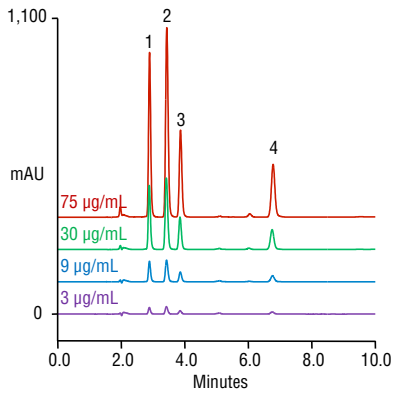
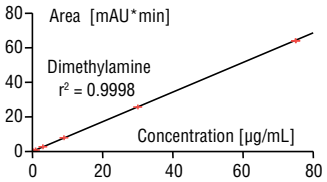
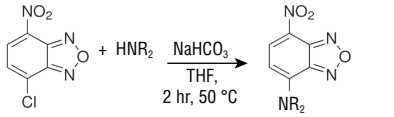
NBD Derivatives of Volatile Alkylamines Using an Acclaim C30 Column



Column:	Thermo Scientific™ Acclaim™ C30, 3 µm
Dimensions:	3 × 150 mm
LC System:	Thermo Scientific™ Dionex™ UltiMate™ 3000 LC system
Mobile Phase:	Methanol:10 mM Formic acid 50:50 (v/v)
Flow:	0.50 mL/min
Temperature:	35 °C
Injection:	1.0 µL
Detector:	Diode Array (spectra 200-600 nm); Visible 470 nm shown
Peaks:	1. NBD-methylamine 2. NBD-dimethylamine 3. NBD-ethylamine 4. NBD-diethylamine





λ_{max} = 335 nm

λ_{max} = 470 – 500 nm

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Volatile amines are an occupational health hazard. There are several methods published by the U.S. Occupational Health and Safety Administration (OSHA). Typical methods use some kind of trapping reagent in an air-sampling tube. In this case, 4-chloro, 7-nitro, 1,2,3-benzoxadiazole (NBD-chloride) reacts with amines in the trap, to produce a highly-colored, fluorescent derivative. OSHA methods describe the use of normal-phase LC, but reversed-phase LC can provide equivalent or better results. As shown here, the Acclaim C30 resolved four common volatile amines with simple, isocratic reversed-phase conditions. The unreacted reagent elutes at 5 minutes and does not interfere with the analytes of interest. This new method is compatible with four existing methods (34, 36, 40 and 41), while providing improved peak shape and faster analysis time. Linearity is excellent from 0.1 to 7 5 µg/mL, with detection limits below 0.05 µg/mL.