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Portable liquid chromatograph for mobile laboratories I. Aims

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Abstract

According to general standards existing in chemical analysis carried out in a field laboratory, the following requirements apply to field HPLC analysis: sensitivity of the method, resolution, linear dynamic range and detector sensitivity. The construction of a field liquid chromatograph includes: a column of 60–80 mm × 2 mm I.D. (sorbent with $d_p = 5$ μm; $N \approx 5000$ theoretical plates); two-syringe-type gradient pumps (2 × 2.5 ml, $P_{max} = 7$ MPa at $F = 0.005$–1 ml/min); UV spectrophotometric detector with a cell of 1.6 mm × 1 mm diameter; stop-flow injector; and column heater. The efficiency of a field chromatograph is illustrated by the examples of separations which are typical of environmental analyses in situ.

Keywords: Field laboratories; Mobile laboratories; Polynuclear aromatic hydrocarbons; Phenols; Phthalate esters; Pesticides; Explosives, polynitro; Inorganic anions