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CAPILLARY ELECTROPHORESIS

APPLICATION NOTE No. 21

QUICK ANALYSIS of ANIONS in DRINKING and SURFACE WATER

MAIN FEATURES:

Capillary zone electrophoresis enables very quick and reproducible determination of all basic anions (Cl, Br, SO₄, NO₃, I, NO₂, F, PO₄) in drinking, surface and rain water. Analysis time is less than 5 minutes and for 3 basic macrocomponents (Cl, NO₃, SO₄) less than 2 minutes. Detection limits are on the level of ppb units. For practical analysis of drinking and surface water there is recommended to dilute the sample (1:100) and to analyse macrocomponents (Cl, NO₃, SO₄) see Fig.2a, and then to analyse microcomponents in the same electrolyte system (less than 5 min. – Fig.2b). Presented results were measured by electrophoretic analyser with closed electrolyte system and conductivity detector (producer Villa Labeco).

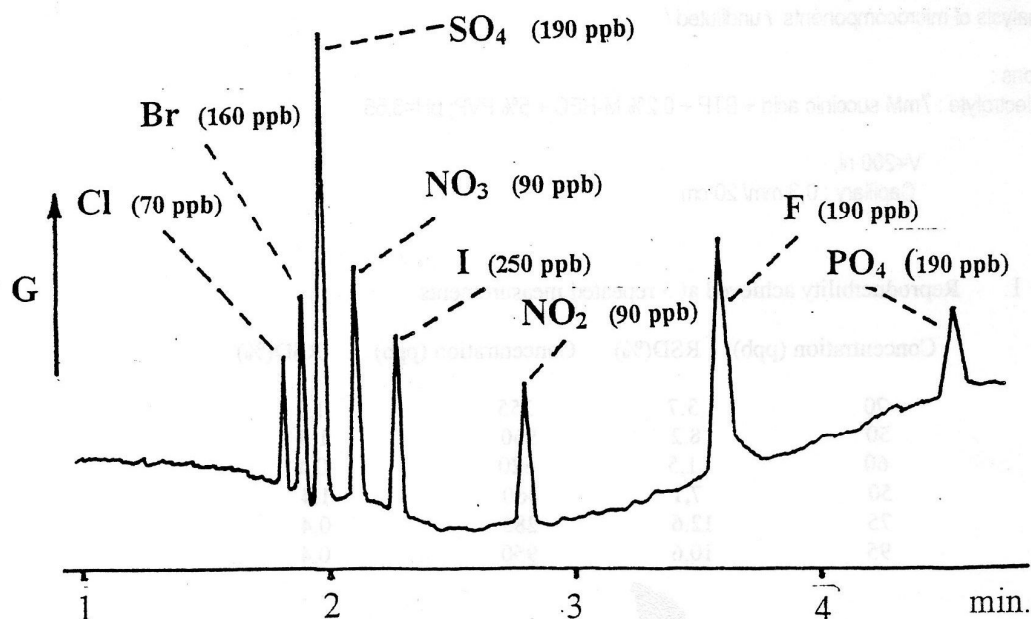


Fig. 1 : CZE record of anion model mixture analysis

Conditions :

Basic electrolyte : 7 mM succinic acid + BTP + 0,2% MHEC + 5% PVP; pH=3,55

V=200 nl, capillary : 0,3 mm/20 cm

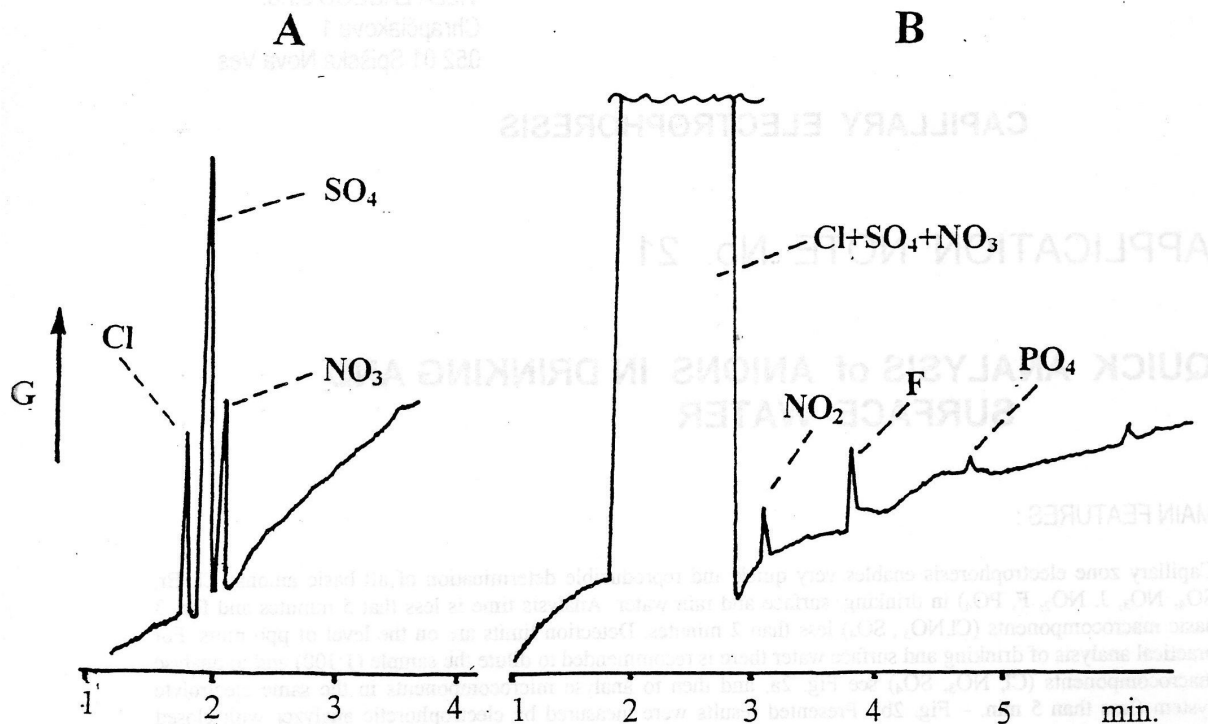


Fig. 2 : Record of river water analysis
 A – analysis of macrocomponents (diluted 1:100)
 B – analysis of microcomponents (undiluted)

Conditions :

Basic electrolyte : 7mM succinic acid + BTP + 0,2%MHEC + 5% PVP; pH=3,55
 V=200 nl; Capillary : 0,3 mm/20 cm

Table 1. Reproducibility achieved at 5 repeated measurements

Anion	Conc.(ppb)	RSD(%)	Conc.(ppb)	RSD(%)
Cl	70	3,7	355	1,2
SO ₄	50	8,2	960	1,5
NO ₃	60	1,5	620	0,4
NO ₂	50	7,1	460	1,4
F	75	12,6	285	0,4
PO ₄	95	10,6	950	0,4

Literature :

D.Kaniansky, V.Zelenská, D.Baluchová : CZE of inorganic anions with conductivity detection, Electrophoresis 1996, 17,1890-1897.

CZE and ITP analysers are produced by :

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