



Determination of metal cations in water samples



Metal cations were complexed by PDC and were detected in an anionic form. Monocharged cations were not detected.

Cédric SARAZIN
Analytical Application Lab. Manager

In collaboration with



INTRODUCTION

A rapid, simple and reliable method was devised for separation and determination of five metal cations, based on the capillary zone electrophoresis. The results showed that the complete separation of Cu^{2+} , Fe^{2+} , Mn^{2+} , Fe^{3+} and Al^{3+} can be achieved within 8 min using the Wyn-CE capillary electrophoresis system with direct UV detection. Metal cations were detected under their anionic forms after complexation with PDC.

STANDARD AND REAL ANALYSIS

Buffer : PDC, pH 3.9

EOF reversing agent : HDMB

Capillary : fused-silica capillary, L = 75 cm, l = 67 cm,
ID = 75 μm

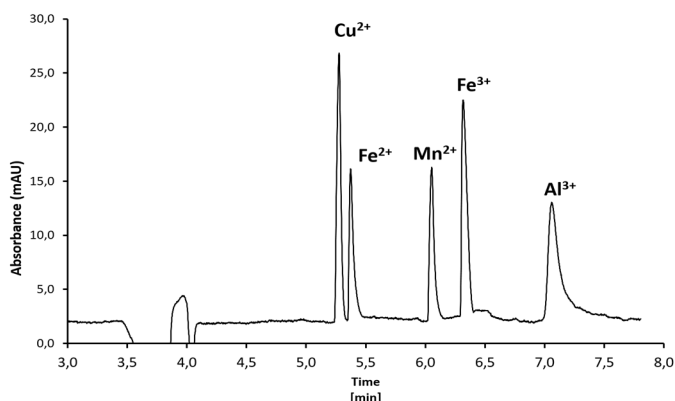
Injection : hydrodynamic, 50 mbar, 15 s

Voltage : -20 kV

Detection : UV, 214 nm

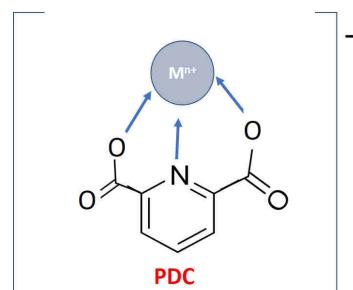
Temperature : 35 $^{\circ}\text{C}$

Standard Analysis : Metal cations at 5 mg/L



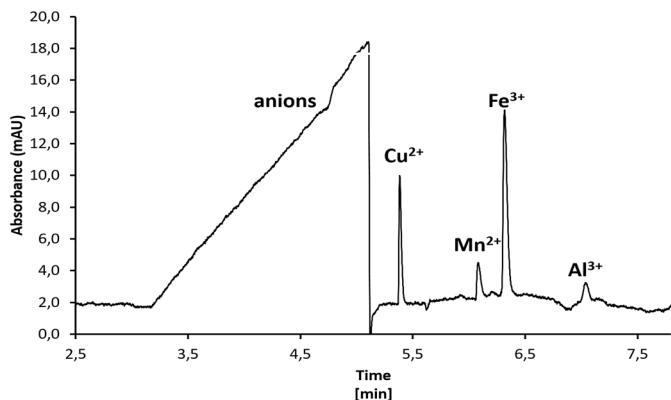
PDC + metal cation = anionic complex

⇒ Separation of anions



Real Sample #1 : Spiked catchment water

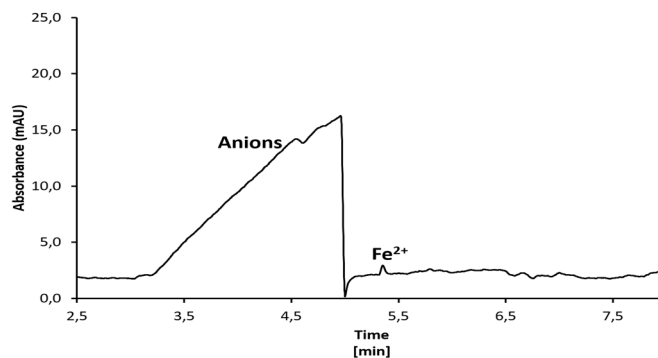
Sample prep : acidification + filtration



Cu^{2+} , Mn^{2+} and Fe^{3+} : 1 mg/L ; Al^{3+} , 0.5 mg/L

Real sample #2 : tap water

Sample prep : acidification + filtration



Fe^{2+} : 0.3 mg/L