

# Pressure-assisted capillary electrophoresis for cation separations using a sequential injection analysis manifold and contactless conductivity detection

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**Abstract:** Pressure assisted capillary electrophoresis in capillaries with internal diameters of 10  $\mu\text{m}$  was found possible without significant penalty in terms of separation efficiency and sensitivity when using contactless conductivity detection. A sequential injection analysis manifold consisting of a syringe pump and valves was used to impose a hydrodynamic flow in the separation of some inorganic as well as organic cations. It is demonstrated that the approach may be used to optimize analysis time by superimposing a hydrodynamic flow parallel to the electrokinetic motion. It is also possible to improve the separation by using the forced flow to maintain the analytes in the capillary, and thus the separation field, for longer times. The use of the syringe pump allows flexible and precise control of the pressure, so that it is possible to impose pressure steps during the separation. The use of this was demonstrated for the speeding up of late peaks, or forcing repeated passage of the sample plug through the capillary in order to increase separation. © 2010.

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