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INVITATION TO THE LECTURE

Prof. Paul R. Haddad
Australian Centre for Research on Separation Science,
School of Chemistry, University of Tasmania,
Hobart, Tasmania, Australia

Monday, September 27th 2004 at 1 p.m.
in Lecture Hall at the National Institute of Chemistry
Hajdrihova 19, Ljubljana

Fast, selective and sensitive separations of inorganic ions. Current and future trends in chromatographic and electroseparation methods.

An overview will be presented of approaches developed in the Prof. Haddad's laboratory to improve the speed, sensitivity and selectivity of separations of inorganic ions, using both chromatographic and electroseparation methods. In the case of enhancing selectivity of separations, the use of electrokinetic capillary chromatography using ion-exchange pseudo-stationary phases (typically soluble ionic polymers) will be described. In these examples it will be demonstrated that the separation selectivity can be controlled predictably and can be modelled mathematically. The resultant retention equations can be then used for computer-assisted optimisation of separation conditions.
Enhancements in sensitivity will be discussed in the context of novel wall-coated and monolithic on-line preconcentration methods for capillary electrophoresis which enable sub-parts-per-billion detection limits to be attained. These concentrator columns can be loaded either on-line or off-line. Finally, very high speed ion chromatographic separations using silica and polymer-based monolithic ion-exchange stationary phases will be discussed. Here, separations performed in less than 30 seconds will be demonstrated on capillary ion chromatographic columns, with on-line suppression and conductivity detection.