

## **Monitoring Metal Species Using a Novel New Technique for Environmental Applications- Capillary Electrophoresis Linked to a High Resolution ICP/MS (CE-HRICP/MS)**

Eric L. Hoffman, Yakov Kapusta and M. Dzierzgowska  
Activation Laboratories Ltd.

Trace elements in natural ecosystems rarely exist in a native condition or as free ions. Usually they occur as part of a species resulting from a series of natural bio(geo) chemical processes. It is important to be able to distinguish between species because relative toxicity or non toxicity could depend on the state of the element. Arsenic for example can occur as As(3), As(5), arsenobetaine and arsenosugars. Of these forms of Arsenic, As(3) will exhibit the highest toxicity. Similarly chromium, mercury, antimony and selenium are examples of elements which can exist in a variety of forms, some more toxic than others.

Capillary electrophoresis (CE) offers several advantages as an analytical separation technique for these metal species including very high separation efficiencies, rapid analysis times, often relatively simple analysis methodologies and small sample volume requirements. When CE is interfaced to a high resolution inductively coupled plasma mass spectrometer (CE-HR ICP/MS) as the final measurement device, an ultra sensitive metal speciation capability is available.

Examples from environmental base line studies will be shown showing the application of this technique in geological and biological systems.

Eric Hoffman  
Activation Laboratories Ltd.  
1428 Sandhill Drive  
Ancaster, ON L9G 4V5  
Phone: +1.905.648.2430  
Toll Free: +1.888.228.5227  
Fax: +1.905. 648.9613  
Web Site: [www.actlabs.com](http://www.actlabs.com)  
E-mail: [stacy@actlabs.com](mailto:stacy@actlabs.com)