MMI™ JOURNAL ARTICLES

Articles published in industry publications can be a valuable resource for MMI™ users. These articles contain important information on issues such as sampling procedures and problems, the application of MMI™ in various environments and research studies. Please download any of the following Articles and feel free to contact us further information.

Title	Geochemistry of catchment outlet sediments: evaluation of Mobile Metal Ion™ analyses from the Thomson region, New South Wales, Australia (PDF 1.38 MB)
Authors	A.W. Mann, P. de Caritat, and J. Greenfield
Date	2009
Abstract	Outlet sediment (or overbank) samples from 99 catchments in the Thomson region have been examined by conventional geochemical analytical methods and by partial digestion using Mobile Metal Ion (MMI™) extraction. Elements such as Pb have good correlation with known mineral deposits using conventional (near-total digestion) methods, whilst elements such as Cu, Au and Ag show a better correlation with known mineral deposits when MMI concentrations are used. This study shows that very low density sampling of catchment outlet sediments (here 1 site/1540 km2) provides useful and possibly predictive geochemical information for mineral exploration in areas dominated by transported regolith.
Title	Ligand Based Soil Extraction Geochemistry (PDF 1.74 MB)
Authors	A.W. Mann
Date	2009
Abstract	Ligand based soil extraction geochemistry is a high resolution, multi-element soil analysis technique for mineral exploration. The use of strong complexing ligands in the extraction procedure limits matrix element interference, reduces background analyte values (noise) and overcomes potential pH effects. Improvements in the spatial and amplitude (signal to noise) resolution of this technique compared to total digestion or more aggressive partial digestions is useful not only in areas with exotic cover, but in residual and weathered terrain where duricrust development and mechanical transport can cause dispersion of anomalies.
Title	Preliminary results of soil geochemistry surveys in support of shallow gas exploration, Manitou area, Manitoba (NTS 62G2) (PDF 1.95 MB)
Authors	M.A.F. Fedikow, R.K. Bezys, M.B.P. Nicolas and P. Prince
Date	2009

Abstract	The Mobile Metal Ion (MMI™) analytical procedure is a surficial geochemical exploration tool that was used to assess its value in exploring for unconventional shallow gas reservoirs. An old capped gas well situated southwest of the community of Manitou, Manitoba, was chosen as the test site. Results from multi-element geochemistry surveys conducted along a north transect centred on the old gas well suggest that MMI technology can be used for this type of hydrocarbon exploration.
Title	Vertical ionic migration: mechanisms, soil anomalies, and sampling depth for mineral exploration (PDF 1.27 MB)
Authors	A.W. Mann, R.D. Birrell, M.A.F. Fedikow & H.A.F. de Souza
Date	August 2005
	Field studies, in particular mobile metal ion analysis of soil samples taken over mineralization, suggest that subtle geochemical anomalies exist above mineral deposits which are demonstrably covered by allochthonous material such as glacial till. Empirical observations suggest that the anomalies are preferentially located 10 to 25 cm below the soil interface, comprise elements contained in ore, and are located directly above the mineralizing source. Laboratory experiments suggest that capillary rise and evaporation play an important part in determining the position of emplacement of ions in the soil profile: in nature, root-zone transpiration also plays a part in solute deposition/adsorption within the evapo-transpiration zone. The effects of downward-percolating water after rainfall events, as well as the upward force of capillary rise, are considered in a model which explains many of the features of ion emplacement in soils. Laboratory modeling also suggests that convection, perhaps due to the heat produced by oxidation of the deposit, may in some cases provide a mechanism for rapid ascension of ions beneath the water table.

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