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Bioanalytical Chemistry

Research Interests

Bioanalytical chemistry is a branch of analytical chemistry specifically interested in measuring biological species, usually in complex samples of biological origin. Measuring these species allows an understanding of the biological processes and is critical in the Life Sciences. Our group develops and uses new analytical methods and tools to improve the quality and speed of the analysis. This includes developing new instrumentation, detection strategies and sample preparation methods. Our primary methods of analysis are capillary electrophoresis and capillary electrochromatography but mass spectrometry is becoming more important. We develop and characterize novel stationary phases for capillary electrochromatography using model biological systems. We also have on-going research interest and collaborations in using bioanalytical tools for the analysis of human amniotic fluid for the prediction of birth outcome.

Selected Publications

Duford, David A.; Lafleur, Josiane P.; Lam, Rebecca; Skinner, Cameron D.; Salin, Eric D. Induction heating-electrothermal vaporization for direct mercury determination in a single human hair by atomic fluorescence and atomic absorption spectrometry. Journal of Analytical Atomic Spectrometry (2007), 22(3), 326-329.

Bandilla, D. Cabral, J.-L., Skinner, C. D. Characterization of UV-transparent capillaries for capillary electrochromatography and capillary electrophoresis. Electrophoresis Volume 27, Issue 16, August 2006, Pages 3271-3276

Cabral, Jean-Louis; Bandilla, Dirk; Skinner, Cameron D. Pore size characterization of monolith for electrochromatography via Atomic Force Microscopy studies in air and liquid phase. Journal of Chromatography A, Volume 1108, Issue 1, 3 March 2006, Pages 83-89. Peer-reviewed.

Tisi, D.K., Liu, X.-J., Wykes, L.J., Skinner, C.D., Koski, K.G. Insulin-like growth factor II and binding proteins 1 and 3 from second trimester human amniotic fluid are associated with infant birth weight. Journal of Nutrition, Volume 135, Issue 7, July 2005, Pages 1667-1672. Peer-reviewed.

Bandilla, Dirk and Skinner, Cameron D. Capillary electrochromatography of peptides and proteins. Journal of Chromatography, A (2004), 1044(1-2), 113-129. Invited review.

Dirk Bandilla, Cameron D. Skinner, Protein separation by monolithic capillary electrochromatography. Invited paper to Journal of Chromatography A, Special issue honouring Hjerten, Journal of Chromatography A 1004(1-2), 2003, 167-179.