Prof. Norman Dovichi

Notre Dame University

Thursday, November 4, 2010

12:15 p.m., Seminar Hall (1315)

Analytical Seminar

"Automated enzyme-based diagonal capillary electrophoresis: application to phosphopeptide characterization "

Diagonal capillary electrophoresis is a form of two-dimensional capillary electrophoresis that employs identical separation modes in each dimension. The distal end of the first capillary incorporates an enzyme-based microreactor. Analyte that are not modified by the reactor will have identical migration times in the two capillaries and will generate spots that fall on the diagonal in a reconstructed two-dimensional electropherogram. Analyte that undergo enzymatic modification in the reactor will have a different migration time in the second capillary and will generate spots that fall off the diagonal in the electropherogram. We demonstrate the system with immobilized alkaline phosphatase to monitor the phosphorylation status of a mixture of peptides. This enzyme-based diagonal capillary electrophoresis assay appears to be generalizable; any post-translational modification can be detected as long as an immobilized enzyme is available that reacts with the modification under electrophoretic conditions.