



TECHNOLOGY

Enhanced Capillary Zone Electrophoresis

OVERVIEW

High Performance Capillary Electrophoresis(HPCE)is a powerful and multifaceted analytical biotechnology and chemistry technique. The technique includes applying an electric field across the solutions in a very small tube of quartz glass. This results in the separation of the materials that are in solution. This separation of the materials is based on their electric charge and mobility. The various materials in the solution can then be identified after separation by various techniques.

When the inside of quartz glass is filled with a bio/chemical laced aqueous solution the quartz becomes negatively charged and it attracts positively charged material from the solution which resides near the tube's inside walls. Application of an electric field, for the solution separation, across the capillary then causes this positively charged material near the wall to move along the capillary. This phenomenon is electro-osmotic flow, and it carries the entire solution with it as a slug flow. This flow is many times faster then the desired rate of bio/chemical separation. The conventional method for controlling electro-osmotic flow is to coat the inside of the capillary; however, coated capillaries have a limited life, over time they do not provide repeatable results, they must be exchanged for different analytical measurements, and they are more expensive then uncoated capillaries.

In this invention, uncoated capillaries are used and an alternative method of controlling electro-osmotic flow is offered. Actual flow control, not just inhibiting the flow is provided by this technology. The flow can be increased, or reversed, or varied with time, and of course, made to be zero. This is achieved by applying a second electric field across the capillary tube, perpendicular to the flow. This second field controls the charge at the inside of the capillary tube and thus the attraction of materials from the solution. Several methods of applying this perpendicular field are disclosed.

A US patent has been granted and other foreign applications are pending. Please contact James A. Poulos, III for additional information regarding this technology and licensing opportunities. Mr. Poulos can be reached at 301 405-7506 or by e-mail at JP227@umail.umd.edu.

U.S. Patent can be found at USPTO.gov, patent no. 5,151,164.

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Additional Information

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PATENT STATUS

US Patent No. 5,151,164

LICENSE STATUS

Contact OTC for licensing information

EXTERNAL RESOURCES

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