294b Role of Tilted Angle and Electrical Field Magnitude in an Electrokinetic Cell of Cylindrical Geometry

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In a previous work, competing driving forces that affect the motion of the solute species* has been identified in electrokinetics processes. The principles of pressure, buoyancy and electrostatic forces are the basis to understand the transport phenomena taking place in an electrokinetic cell. Altogether, this driving forces need to be studied under certain conditions that resemble normal field operations. In particular, certain technologies such as "Lasagna" befit the use of vertical and horizontal arrangement of cells. The implications of this practice and how it affects the hydrodynamic have not been yet studied.

This contribution concentrates on the study of the different driving forces controlling the electrokinetic process in a cell under the most representative tilted positions. In particular, this work values the influence of magnitude of the applied electrical field and how it may promote distinct flow regimes. In this contribution uses a cylindrical capillary model and based on the selection of values of the parameter space presents and discusses several limiting cases and flow regimes.

* Oyanader, M., P. Arce, and A. Dzurik, "Avoiding Pitfalls In Electrokinetic Remediation: Robust Design And Operation Criteria Based On First Principles For Maximizing Performance In A Rectangular Geometry", Electrophoresis, 2003, 24, 3457.