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trolled, variable pressure-driven flow that is varied over time, such that:

the oppositely charged analytes are selectively introduced into the inlet end of the separation channel and are sequentially detected and quantified in the separation channel.

19. The method of claim 18, wherein the length of the separation channel is straight.

20. A method of performing gradient elution moving boundary electrophoresis (GEMBE) to separate complex samples having charged particulates and oppositely charged analytes, the method comprising:

introducing a run buffer into a separation channel having an inlet end, an outlet end, and a length extending therebetween;

preparing the complex sample for GEMBE, wherein the preparing is selected from the group consisting of diluting the complex sample in sample buffer, suspending the complex sample in sample buffer, and combinations thereof;

introducing the complex sample in the sample buffer into a sample reservoir in fluid contact with the separation channel; and

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separating the charged particulates and the oppositely charged analytes via GEMBE by:

applying an electric potential along the length of the separation channel to achieve electrophoretic migration of the oppositely charged analytes; and

varying with respect to time the bulk flow of the run buffer through the separation channel concurrent with application of the electric potential to achieve selective introduction of the oppositely charged analytes into the inlet end of the separation channel and differential migration of the oppositely charged analytes therethrough, wherein the bulk flow of the run buffer is varied in a direction substantially aligned with the electric potential, and wherein the bulk flow comprises a combination of electroosmotic flow and controlled, variable pressure-driven flow that is varied over time, such that:

the oppositely charged analytes are selectively introduced into the inlet end of the separation channel and are sequentially detected and quantified in the separation channel.

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