to adapt the various uses and characteristics without departing from the spirit and scope of the present invention as described above.

What is claimed is:

1. A method for performing electrophoretic separation from a sample of one or more compounds having distinct electrophoretic mobilities, comprising the steps of:

a) providing a separation path, the separation path having an inlet end and an outlet end;

b) providing a separation buffer in fluid contact with said outlet end;

c) providing a sample in fluid contact with said inlet end of the separation path, the sample containing one or more compounds having distinct electrophoretic mobilities;

d) applying an electric field along the length of the separation path to drive electrokinetic motion of the compounds;

e) varying with respect to time a bulk fluid flow through the separation path concurrent with the application of the electric field in order to affect whether and when each of the one or more compounds moves into and through the separation path, whereby, when the sample comprises multiple compounds with distinct electrophoretic mobilities, each such compound that moves into the separation path is made to do so at a different time; and

wherein the sample is in fluid contact with the inlet end of said separation path continuously throughout the electrophoretic separation of the one or more compounds.

2. A method for performing electrophoretic separation of compounds according to claim 1, wherein a leading electrolyte is provided in the separation buffer and whereby the one or more distinct compounds are concentrated.

3. A method for performing electrophoretic separation of compounds according to claim 2, wherein a terminating electrolyte is provided in the sample.

4. A method for performing electrophoretic separation of compounds according to claim 2, wherein one or more spacing electrolytes are provided in the sample.

5. A method for performing electrophoretic separation of compounds according to claim 1, wherein the bulk fluid flow is comprised of at least one of electroosmotic flow and pressure-driven flow.

6. A method for performing electrophoretic separation of compounds according to claim 1, wherein the one or more distinct compounds are selected from the group consisting of small molecules, large molecules, particles, amino acids, nucleic acids, carbohydrates, proteins, peptides, pesticides, pharmaceuticals, cells, viruses, bacteria, and nanoparticles.

7. A method for performing electrophoretic separation of compounds according to claim 1, wherein the separation path is selected from the group consisting of a capillary tube, a micro fluidic channel, a micro fluidic channel on a microchip, and a separation column.

8. A method for performing electrophoretic separation of compounds according to claim 1, wherein an additive is provided in the separation path, which additive acts to modify the electrophoretic mobility of the one or more compounds in the sample.

9. A method for performing electrophoretic separation of compounds according to claim 1, further comprising the step of detecting each of the one or more compounds that moves into the separation path.

10. The method of claim 1, wherein said bulk fluid flow is varied with respect to time in a substantially continuous manner.

11. The method of claim 10, wherein said bulk fluid flow is varied linearly with substantially constant acceleration.

12. The method of claim 10 wherein said bulk fluid flow is varied non-linearly with non-constant acceleration.

13. The method of claim 10, wherein varying the bulk fluid flow through the separation path concurrent with the application of said electric field is the only step required to affect whether and when each of the one or more compounds moves into the separation path.

14. The method of claim 10, wherein a leading electrolyte is provided in the separation buffer, and whereby the one or more compounds are concentrated.

15. The method of claim 14, wherein one or more additional electrolytes are provided in the sample to act as isotachophoretic terminators or spacers.

16. The method of claim 15, wherein varying the bulk fluid flow through the separation path concurrent with the application of the electric field is the only step required to affect whether and when each of the one or more compounds moves into the separation path.

17. The method of claim 1, wherein varying the bulk fluid flow through said separation path concurrent with the application of the electric field is the only step required to sequentially introduce the two or more distinct compounds into the separation path.

18. A method for performing electrophoretic separation of one or more compounds having distinct electrophoretic mobilities, comprising the steps of:

a) providing a separation path, the separation path having an inlet end and an outlet end;

b) providing a separation buffer in fluid contact with said outlet end;

c) providing a sample in fluid contact with the inlet end of the separation path, the sample containing one or more compounds having distinct electrophoretic mobilities;

d) applying an electric field along the length of the separation path to drive electrokinetic motion of the compounds; and

e) varying with respect to time and in a substantially continuous manner a bulk fluid flow through said separation path concurrent with the application of the electric field in order to affect whether and when each of the one or more compounds moves into the separation path, whereby, when the sample comprises multiple compounds with distinct electrophoretic mobilities, each such compound that moves into the separation path is made to do so at a different time.

19. The method of claim 18, wherein the bulk fluid flow is varied with respect to time linearly with substantially constant acceleration.

20. The method of claim 18, wherein the bulk fluid flow is varied with respect to time non-linearly with non-constant acceleration.

21. The method of claim 20, wherein varying the bulk fluid flow through the separation path concurrent with the application of the electric field is the only step required to affect whether and when each of the one or more compounds moves into the separation path.

22. The method of claim 18, wherein a leading electrolyte is provided in the separation buffer, and whereby the one or more compounds are concentrated.

23. The method of claim 22, wherein one or more additional electrolytes are provided in the sample to act as isotachophoretic terminators or spacers.

24. The method of claim 18, wherein varying the bulk fluid flow through the separation path concurrent with the application of the electric field is the only step required to affect whether and when each of the one or more compounds moves into the separation path.

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