

### On-Chip Concentration of Bacteria via Cluster Formation by Capillary Electrophoresis

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An on-chip concentration of bacteria via a “cluster” formation by applying an electric field is described. Food-borne pathogenic bacterium cells spontaneously formed clusters, approximately 28  $\mu\text{m}$  in diameter, in the microchannel and continuously concentrated at the edge of the microchannel by capillary electrophoresis (CE). In this study, while 3% PEO or 20% polyvinylpyrrolidone (PVP) solution placed in the anode reservoir, the bacterium cells in the cathode reservoir migrated and formed clusters in the microchannel, 100  $\mu\text{m}$  in inner diameter and 10 mm in length, after applying an electric field. Moreover, the formed clusters of *Listeria monocytogenes* were continuously stacked at the edge of the microchannel. The formed cluster size is more than 15-fold larger than the size of a food-borne bacterium cell, which is approximately 2  $\mu\text{m}$  in length and 0.5  $\mu\text{m}$  in diameter. Both of the cluster formation and aggregation of the clusters enhance the concentration efficiency.