Acceleration of DNA Hybridization Using Electroosmotic Flow

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Abstract : Deoxyribonucleic acid (DNA) hybridization is a common technique used in genetic assay widely. However, the hybridization ratio and rate are usually limited by the diffusion effect. Here, microfluidic electrode platform producing electroosmosis generated by alternating current signal has been proposed to enhance the hybridization ratio and rate. The electrode was made of aurum fabricated by microfabrication technique. Thiol-modified oligo probe was immobilized on the electrode for specific capture of target, which is modified by fluorescent tag. Alternative electroosmosis can induce local microfluidic vortexes to accelerate DNA hybridization. This study provides a strategy to enhance the rate of DNA hybridization in the genetic assay.

Keywords : DNA hybridization, electroosmosis, electrical enhancement, hybridization ratio

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