Optofluidic Biosensing of Single Nucleotide Polymorphisms

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Surface enhanced Raman scattering (SERS) sensing has attracted considerable attention for ultrasensitive, highly specific and multiplex biomolecular assays. Recently, new optofluidic approaches have been developed for the reliable and reproducible on-chip SERS detection. These optofluidic systems have opened up possibilities of small sample requirements, fast mixing, and enhanced sensing signals. In accordance with these requirements, we here describe the development of an electrokinetic optofluidic SERS chip using the electro-active microwell for sensitive and multiplex SERS detection. This device allows for both efficient mixing to enhance the rate of binding between the SERS enhancers and the biomolecular targets and sample enrichment to improve detection sensitivity through the use of electroactive microwells.