

Chemiluminescence immuno-detector based on single planar transparent digital microfluidic device

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We reported a compact and portable prototype of chemiluminescence immuno-detector based on a single planar transparent electro wetting-on-dielectrics (EWOD) device. The single planar transparent EWOD device was realized by a coupling ground electrode which could be driven under a single polar voltage. Such design not only simplified the chip construction and control circuitry, but also made the ball-like droplet itself focus the fluorescence and thus enhance the detection sensitivity. The sensitivity of the prototype detector was 5.45 mV/mmol/L and the detection limit was 0.01 mmol/L when the contact angle of the EWOD surface was 120°. Further increase of the sensitivity and decrease of the detection limit could be achieved by increasing the contact angle of the EWOD device and decreasing the dark current of the photomultiplier. Such detector shows promises for cost effective and portable diagnoses of blood glucose.

Biography

Jia Zhou received her Ph.D. degree from Fudan University in 2004. Her research interests focus on chemical and biological sensors and their applications. She has published over 90 papers.

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