Supplementary Material (ESI) for Lab on a Chip

Supplementary Information

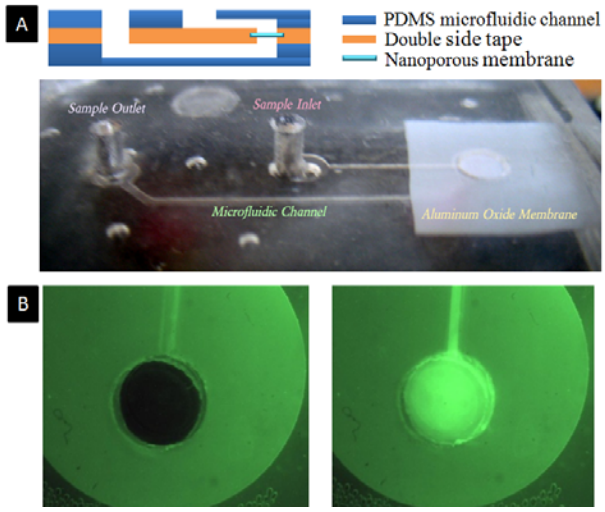

Figure S1. A PDMS/tape composite microfluidic system with an integrated membrane. (A) Double-sided tape integrated with a thin PDMS film. Uncured PDMS was poured on the double-sided tape and covered with a mold for making a microfluidic channel on top of the PDMS. Then, the PDMS was cured and peeled off of the mold. To address the samples, a hole for the membrane inlet and outlet was cut with a coring tool. (B) Before and after pictures showing the ultrafiltration of genomic DNA mixed with LCgreen™ in the microfluidic system. The gDNA sample was flowed through the membrane and fluorescence from the captured DNA molecules was measured with a high resolution CCD camera.

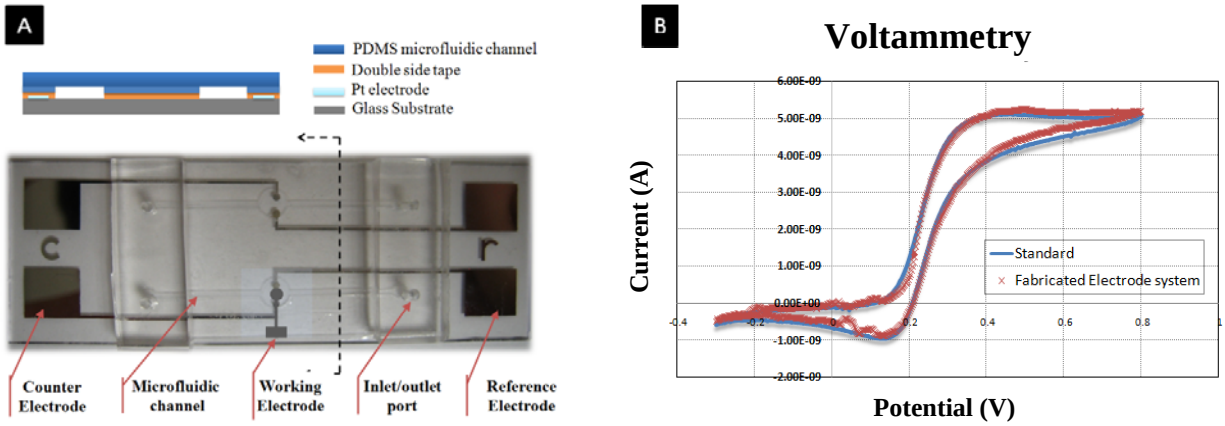

Figure S2. A microfluidic system integrated directly on a metal-coated substrate. (A) Using the PDMS/tape composite method, PDMS microfluidic channels can be integrated over any metal or metal-coated substrate. A platinum electrode patterned using a lift-off process was deposited for electrochemical applications onto a glass microscope slide using a TMV Super Series SS-40C-IV Multi Cathode Sputtering System (Mowry Enterprises, Shrewsbury, MA). A thin layer of Ti (Titanium) was deposited at 45W and 5mTorr on the glass as an adhesive layer prior to the platinum at 90 W and 5mTorr Ar gas pressure. A silver/silver chloride paste (Gwent Electronic Materials Ltd, UK) with a ratio of Ag(Silver) to AgCl(Silver Chloride) of 60/40 was screen printed at appropriate locations on the patterned platinum electrodes using a screen-printing method[1, 2] (B) Using an identical buffer solution, a voltammetry signal was measured using the microfluidic system and compared with that generated using a commercial system. The result for the integrated microfluidic system was essentially identical to the commercial system.

Reference

1. A. W. J. Cranny and J. K. Atkinson, *Meas. Sci. Technol.*, 1998, **9**, 1557-1565.
2. The Gwent Group, *SILVER/SILVER CHLORIDE PASTE C61003P7*, Pontypool, United Kingdom., 2008.