Formation of miniature polymeric surface plasmon sensor chip using confined sessile drop technique.

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In this work, we present a versatile method to fabricate a miniature surface plasmon resonance (SPR) sensor chip using confined sessile drop technique. The liquid photopolymer (NOA 61) was dropped on a circular polydimethylsiloxane (PDMS) substrates. Under equilibrium contention, hemispherical droplets were formed due to liquid spreading resistance at the edge of the substrate defined by Gibbs inequality equation [1]. After UV curing, the hemispherical optical prism was obtained. Miniature SPR sensor chips with Kretschmann configuration could be achieved by the deposition of a gold film with the thickness of 50 nm on the flat surface of the obtained prism [2]. The fabricated miniature SPR sensor chip was then mounted on a 3D-printed flow cell to complete the sensor module.

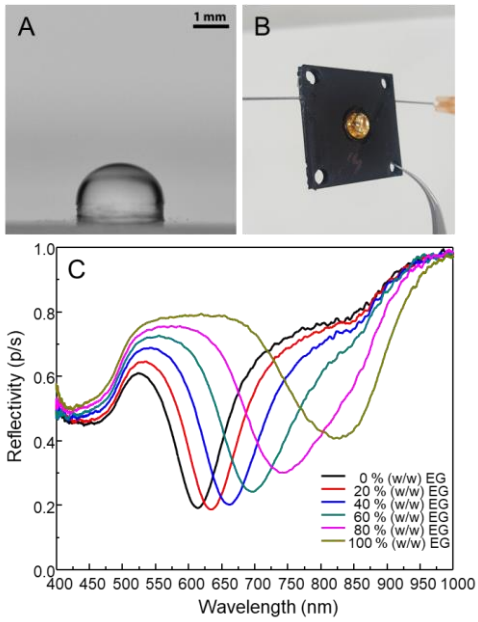

Figure 1 Digital photographs of (A) a sessile droplets of liquid polymer and (B) surface plasmon sensor chips attached to a 3D-printed flow cell. (C) Surface plasmon reflection spectra of water/ethylene glycol solution.

References

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