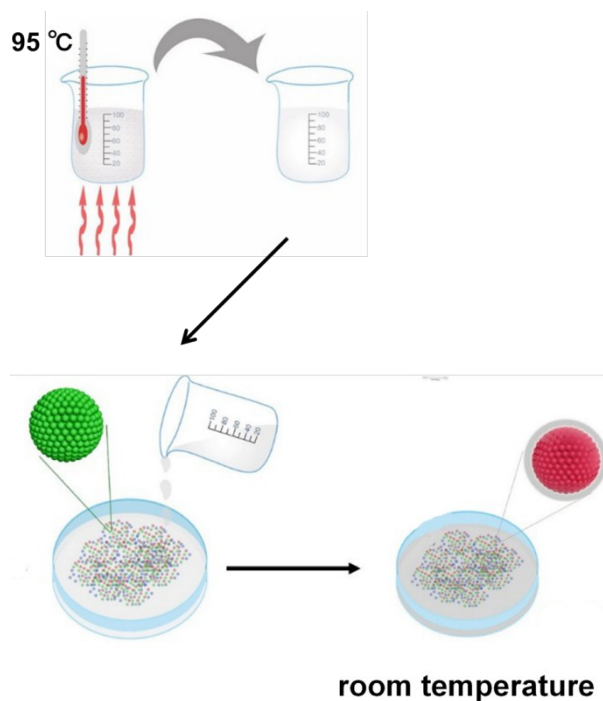
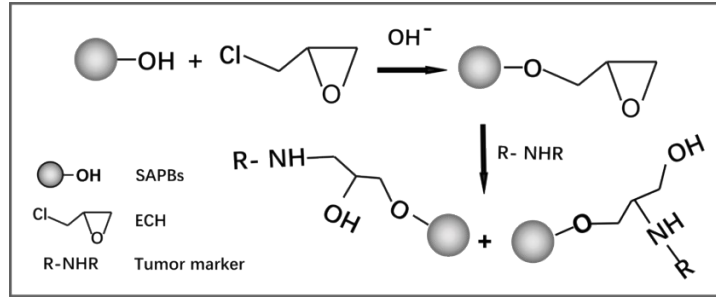


Supplementary materials

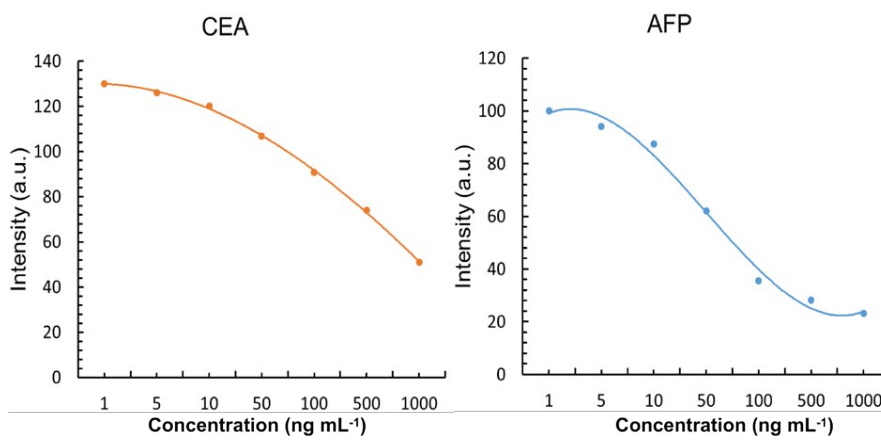


Supplementary.1. Schematic diagram of SAPBs fabrication.

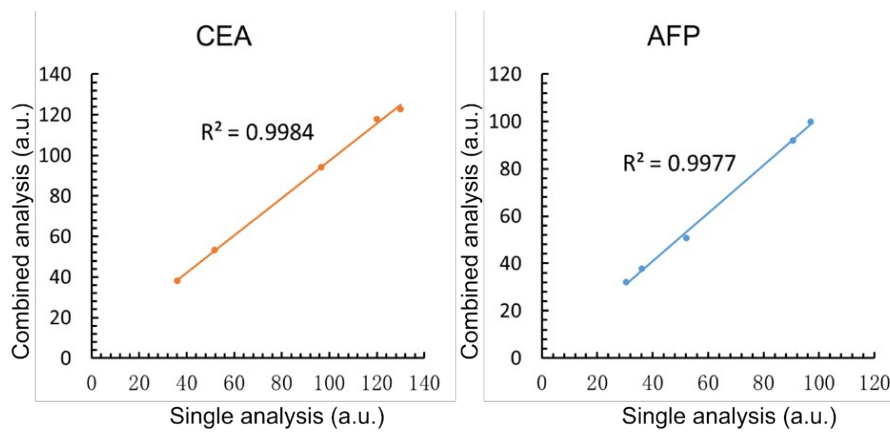
1. Agarose solution (4%) was completely dissolved at 95°C 2. SPBs were immersed in heated transparent agarose solution. Liquid agarose went into the pores of SPBs through capillary-attraction-force. 3. The agarose solution was cooled at room temperature and allowed to solidify, and the SAPBs were rubbed out of a massive piece of agarose gel by hand. SAPBs were observed under a low-power microscope to determine whether the agarose gel had been removed completely. The silica was then corroded with 10% hydrofluoric acid to confirm whether the SPBs perfusion was completed.



Supplementary.2. Schematic diagram of functionalized SAPBs preparation.



Supplementary.3. Fluorescent concentration curves for single CEA/AFP analysis.



Supplementary.4. Comparison between single analysis and combined detection of CEA and AFP.