

## Supporting Information

# SERS-based immunoassay using a gold array-embedded gradient microfluidic chip

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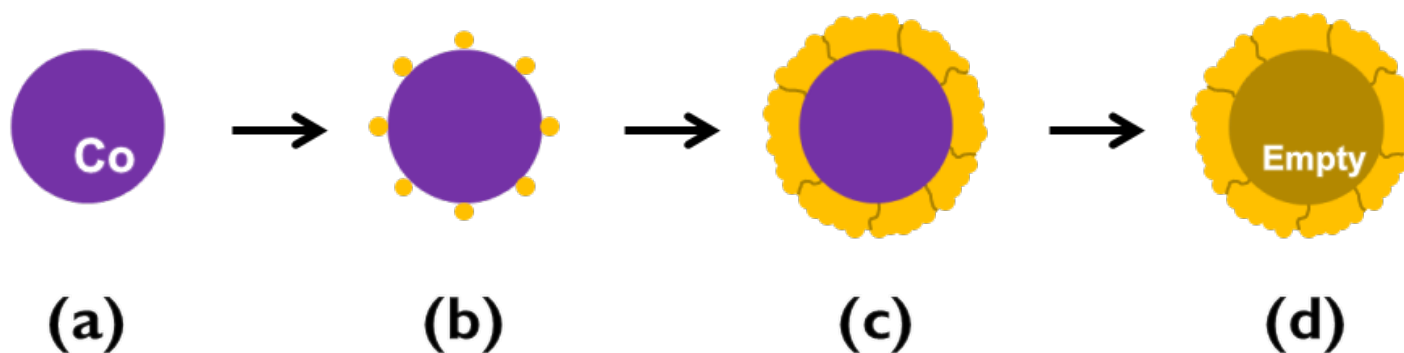


Figure S1. Fabrication process of hollow gold nanospheres (HGNs): (a) Synthesis of cobalt template, (b) Gold seeding, (c) Growth of the seeded gold, and (d) Oxidation of cobalt template and formation of HGN. A hollow interior is formed by dissolving the cobalt nanoparticle in the core.

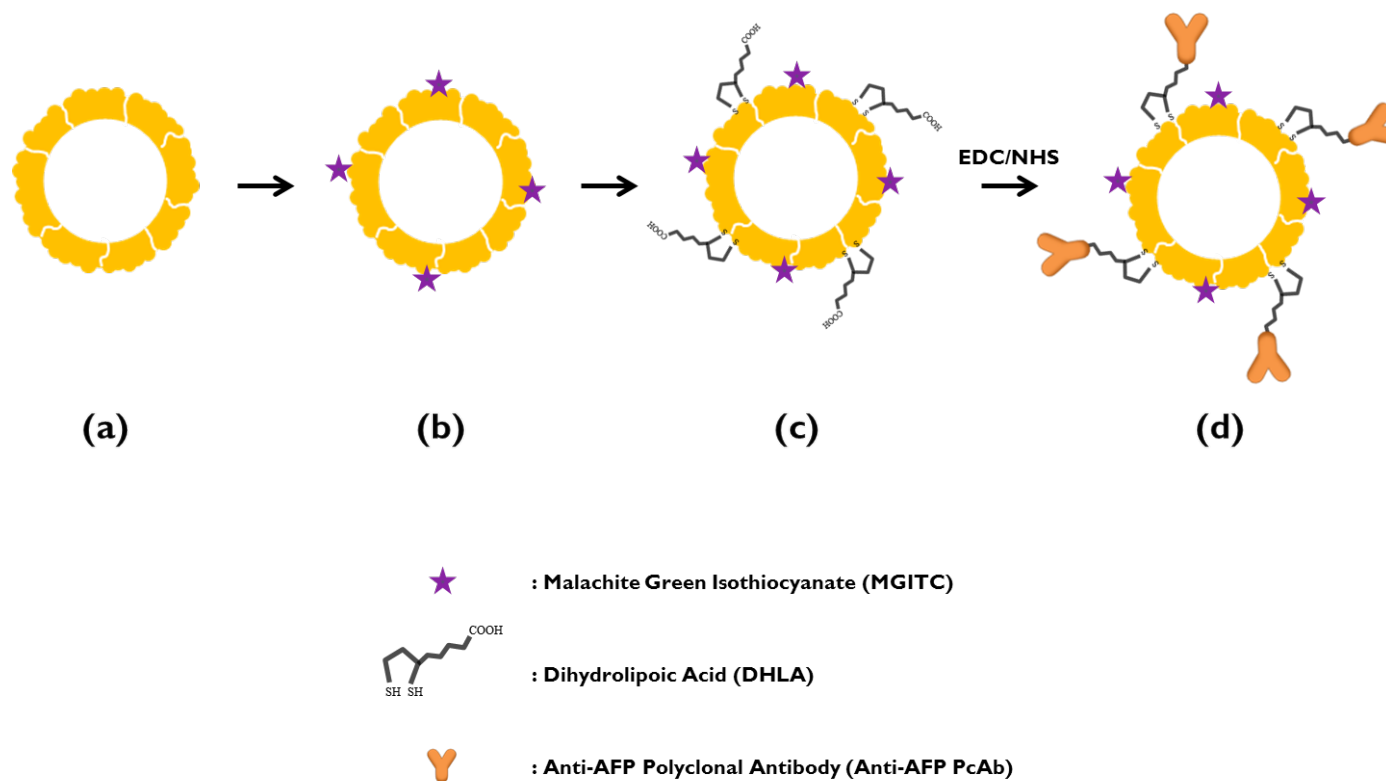


Figure S2. Antibody conjugation process on the fabricated hollow gold nanospheres (HGNs): (a) Fabricated HGN, (b) Adsorption of Raman reporter (Malachite green isothiocyanate, MGITC), (c) Activation of carboxylic acid group on the HGN, and (d) Conjugation of polyclonal antibody through EDC/NHS coupling chemistry.

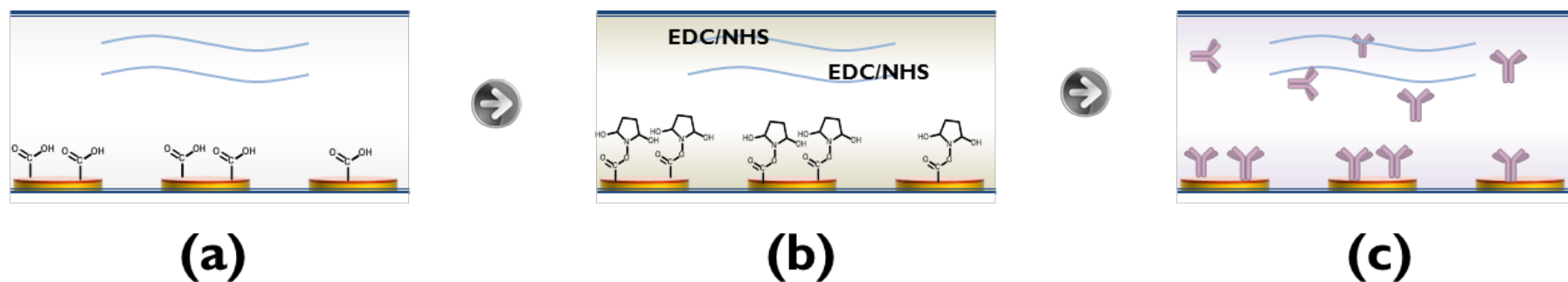


Figure S3. Schematic illustrations of the antibody conjugation process on the gold array wells embedded in a gradient microfluidic chip: (a) Preparation of carboxylic acid group on the gold array surface, (b) Activation of carboxylic acid group by NHS/EDC solution, and (c) Capture antibodies conjugation on the EDC-activated gold array surface.