

Enhanced Electrochemical Conductivity of Surface-Coated Gold Nanoparticles/Copper Nanowires onto Screen-Printed Gold Electrode

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1. AuNP Synthesis

It can be seen in Figure S1, the color of AuNPs solution darkens with an increase of HAuCl_4 solution concentration. At lower concentration of HAuCl_4 (0.1 mM), the solution containing AuNPs dispersion is pink in colour and the darkening of solution colour (1.0 mM) can be linked to an increase of particles size for the formed AuNPs [1].

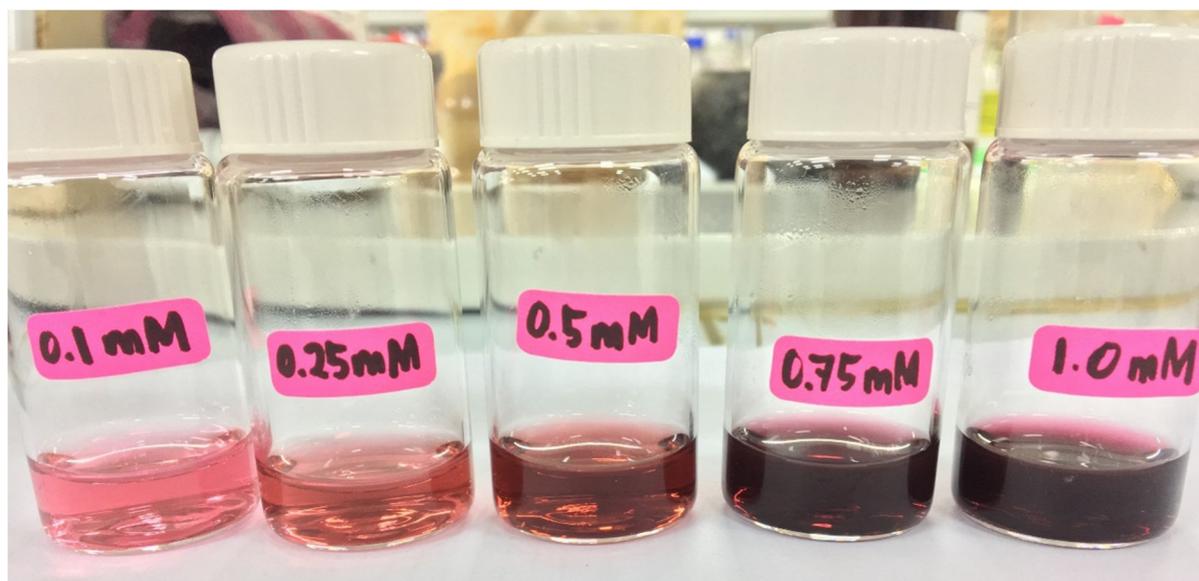


Figure S1. Color variation of AuNPs solution of 0.1 mM, 0.25 mM, 0.5 mM, 0.75 mM and 1.0 mM concentration showing increase in color intensity from pink to dark red.

2. FESEM Characterization of AuNPs

Figure S2 shows the FESEM of AuNPs formed with five different sizes at 100,000 \times magnification and from the analysis, all images confirm very narrow size distribution of AuNPs. Also, the porosity and surface roughness of formed AuNPs is getting reduced on increasing the gold salt concentration from 0.1 mM to 1 mM. This is due to the formation of larger size AuNPs at higher gold salt concentrated solution that covers all the porous sites on the SPGE surface, hence make the surface more smooth as compared to the smaller particle sizes (formed with low concentration of HAuCl₄ salt) [2].

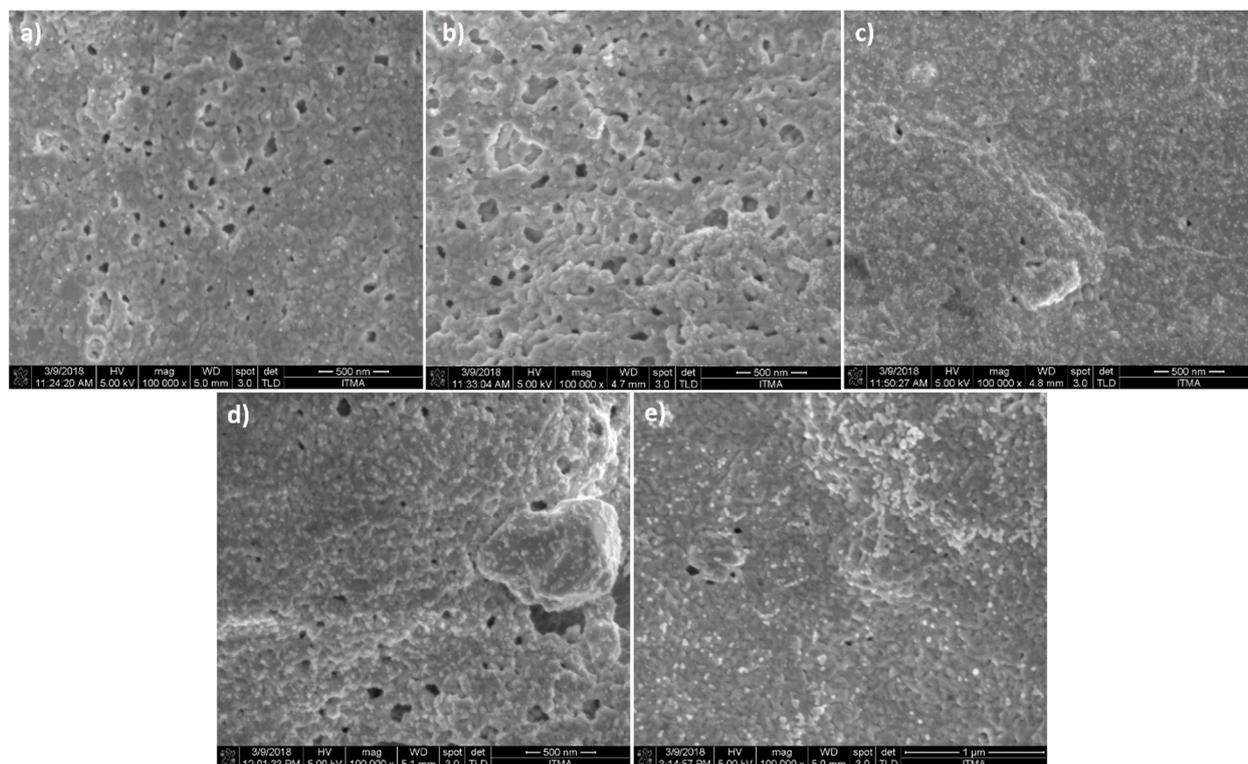


Figure S2. FESEM images of AuNPs formed from different concentrations, (a) 0.1 mM, (b) 0.25 mM, (c) 0.5 mM, (d) 0.75 mM, and (e) 1.0 mM of gold solution.

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