Supporting Information

Calculation of AgNPs concentration

The concentration of the synthesized AgNPs was calculated by the method described by Mariam et al. [7]. By assuming that AgNPs are spherical in shape, the number of silver atoms was calculated by considering that the volume ratio of silver atom to AgNPs is 74.1% in the cubic structure. The radius of silver atom is 0.144 nm, and therefore its volume is 0.0125 nm^3. For AgNPs with the diameter of *d* nm, its volume is $(\pi/6)d^3$ nm^3. Thus, the number of silver atoms (N) in each AgNPs is equal to $\frac{74.1}{100} x \frac{\pi}{6} d^3 x \frac{1}{0.0125}$, which is calculated to be 31 d^3 [7]. The concentration of the AgNPs was then calculated by taking the ratio of the total number of silver atoms added to the reaction solution (N_{Total}) and the product between the number of silver atoms present in each nanoparticle (N) and the volume of the reaction solution in liters (V) and the Avogadro's constant (N_A). In this experiment, the total number of silver atoms added to the reaction solution (N_{Total}) was 0.015 x 10^{-3} x 6.02 x 10^{23} atoms. The volume of the reaction solution was 30 mL or 0.03 L.

Example 1 2.6 nm AgNPs

$N = 31\ d^3 = 31 \times (2.6)^3 = 544.856$

The concentration of the AgNPs $= \frac{N_{Total}}{NVN_A} = \frac{0.015\ x\ 10^{-3}\ x\ 6.02\ x\ 10^{23}}{544.856\ x\ 0.03\ x\ 6.02\ x\ 10^{23}} = 9.2 \times 10^{-7}$ M.

Example 2 10 nm AgNPs

$N = 31\ d^3 = 31 \times (10)^3 = 31000$

The concentration of the AgNPs $= \frac{N_{Total}}{NVN_A} = \frac{0.015\ x\ 10^{-3}\ x\ 6.02\ x\ 10^{23}}{31000\ x\ 0.03\ x\ 6.02\ x\ 10^{23}}$ = 1.6 x 10^{-8} M.

Example 3 23 nm AgNPs

N = 31 d^3 = 31 x $(23)^3$ = 377177

The concentration of the AgNPs $= \frac{N_{Total}}{NVN_A} = \frac{0.015\ x\ 10^{-3}\ x\ 6.02\ x\ 10^{23}}{377177\ x\ 0.03\ x\ 6.02\ x\ 10^{23}}$ = 1.3 x 10^{-9} M.

By assuming that all silver atoms were converted to AgNPs completely, therefore, the concentrations of various AgNPs sizes of 2.6, 10, 23 nm were calculated to be 9.2 x 10^{-7}, 1.6 x 10^{-8}, 1.3 x 10^{-9} M, respectively.