Electronic Supplementary Material (ESI) for RSC Advances.

SUPPLEMENTARY INFORMATION

Greener Synthesis and Characterization, Antimicrobial and Cytotoxicity Studies of Gold Nanoparticles of Novel Shapes and Sizes

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This supplementary information section provides additional information showing the uv-vis spectra illustrating the effect of temperature on the shapes of AuNPs; the effect of formation of gold nanoparticles from reaction with different concentration of ATRP; histogram showing the average particle size of AgNPs derived from QPP, ATRP and QSA. Furthermore activity of AuNPs on Citrobacter freundii is provided.

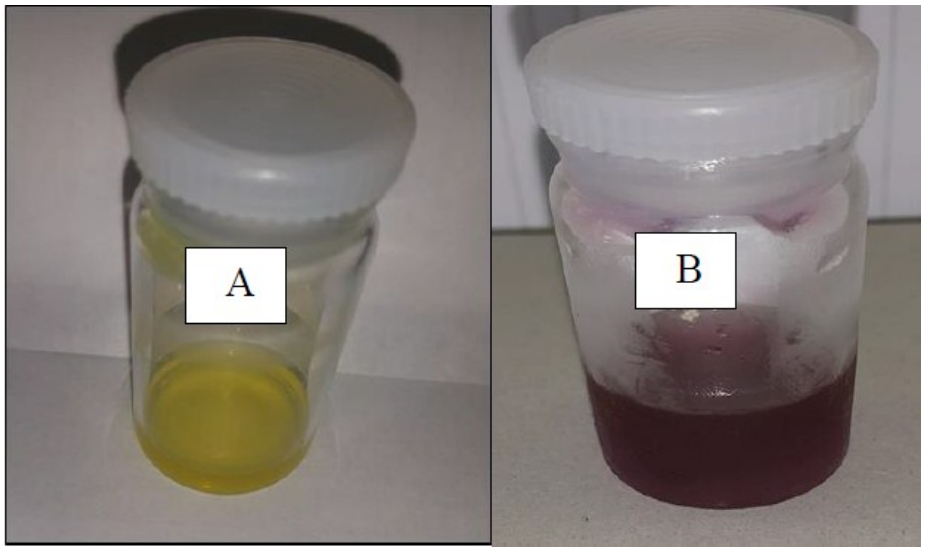

Figure S1 (A) Shows the color of flavonoid derivative (ATRP) before addition of $HAuCl_4 \bullet 3H_2O$ and the formation of purple color (B) depicts formation of gold nanoparticles formed from QPP.

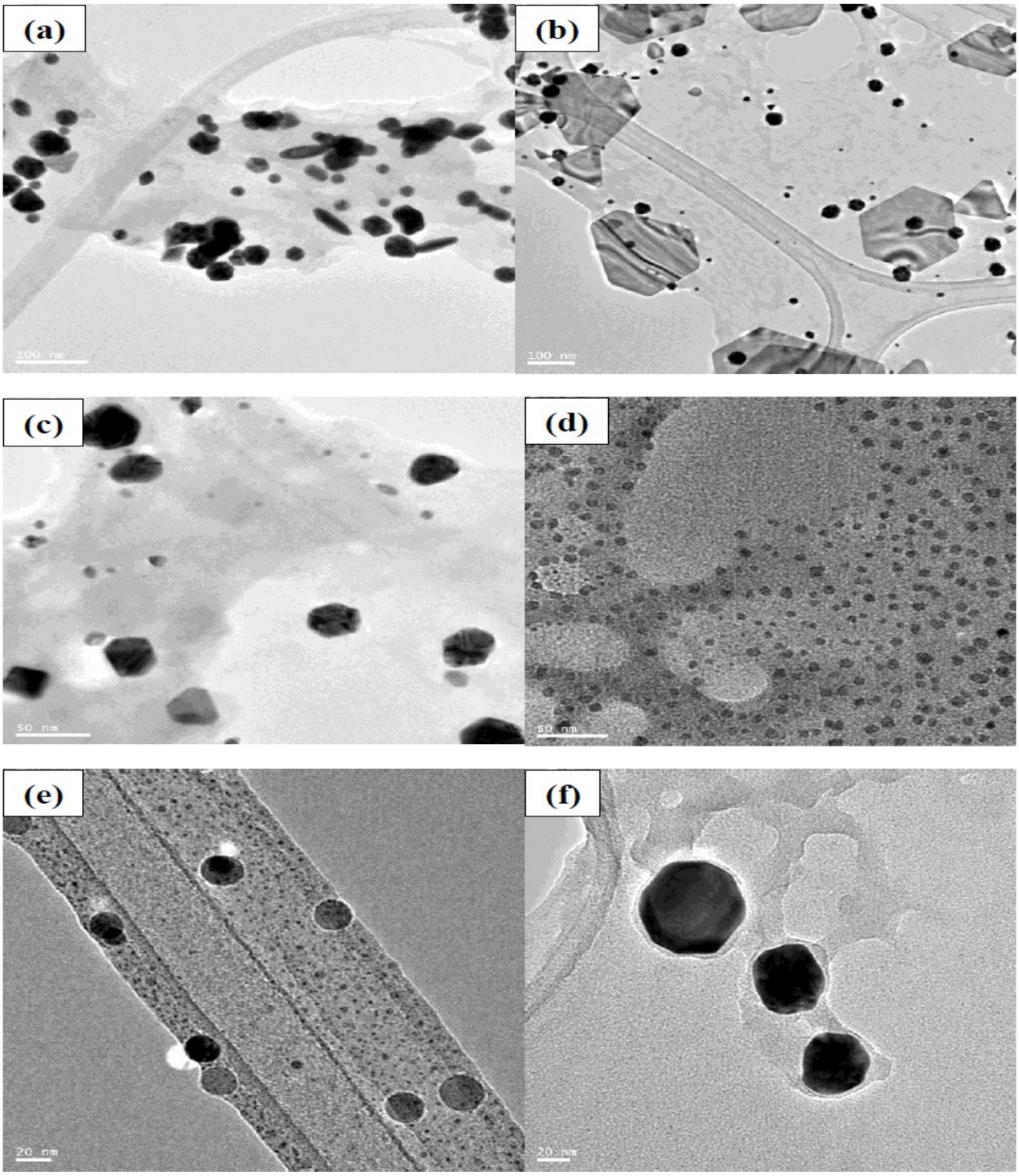

Figure S2: TEM images of AuNPs (derived from QPP) formed at different temperatures depicting different shapes at different temperatures (a) room temperature (b) 40°C (c) 50°C (d) 60°C (e) 80°C and (f) 90°C. Spherical shapes are obtained as from 60°C and above.

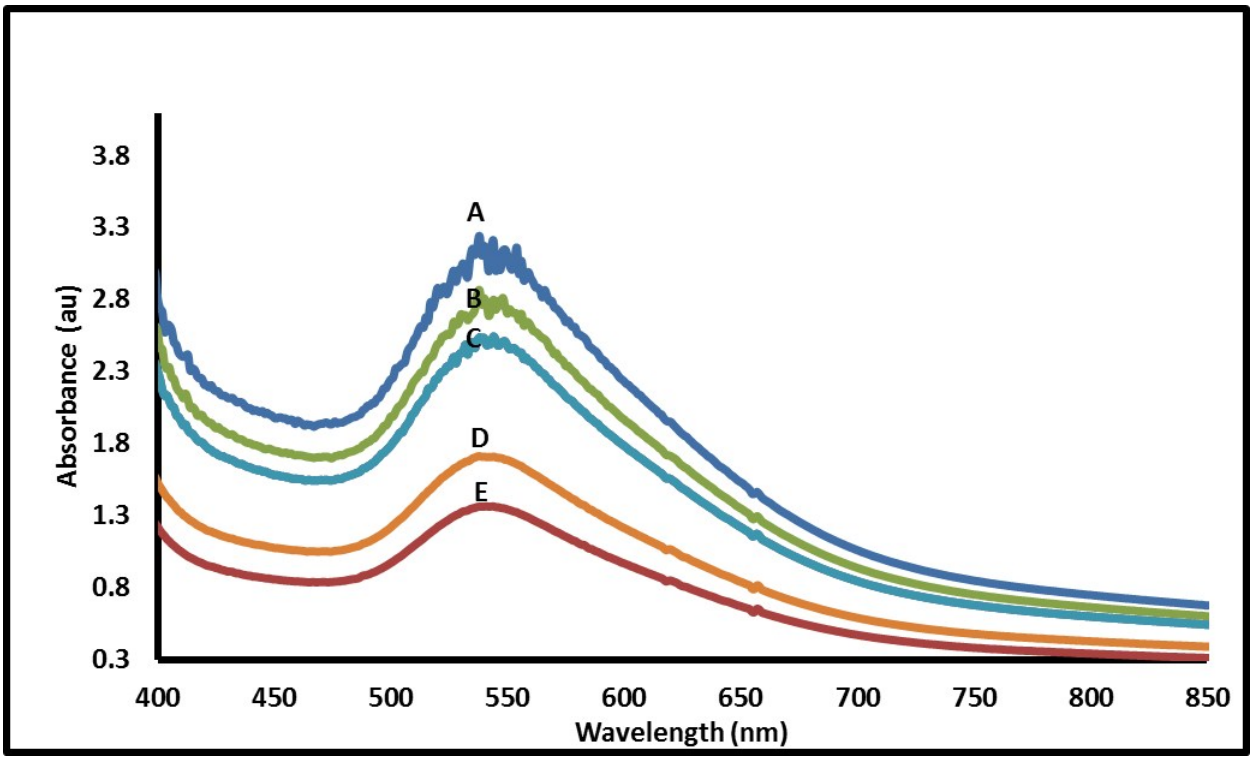

Figure S3: UV-Vis spectra showing the effect of formation of gold nanoparticles from reaction of different concentration of ATRP; A 4.5×10^{-3}; B 3.5×10^{-3}; C 4.5×10^{-4}; D 4.5×10^{-5}; E 4.5×10^{-6} with 5.5×10^{-3} Au^{3+} ions.

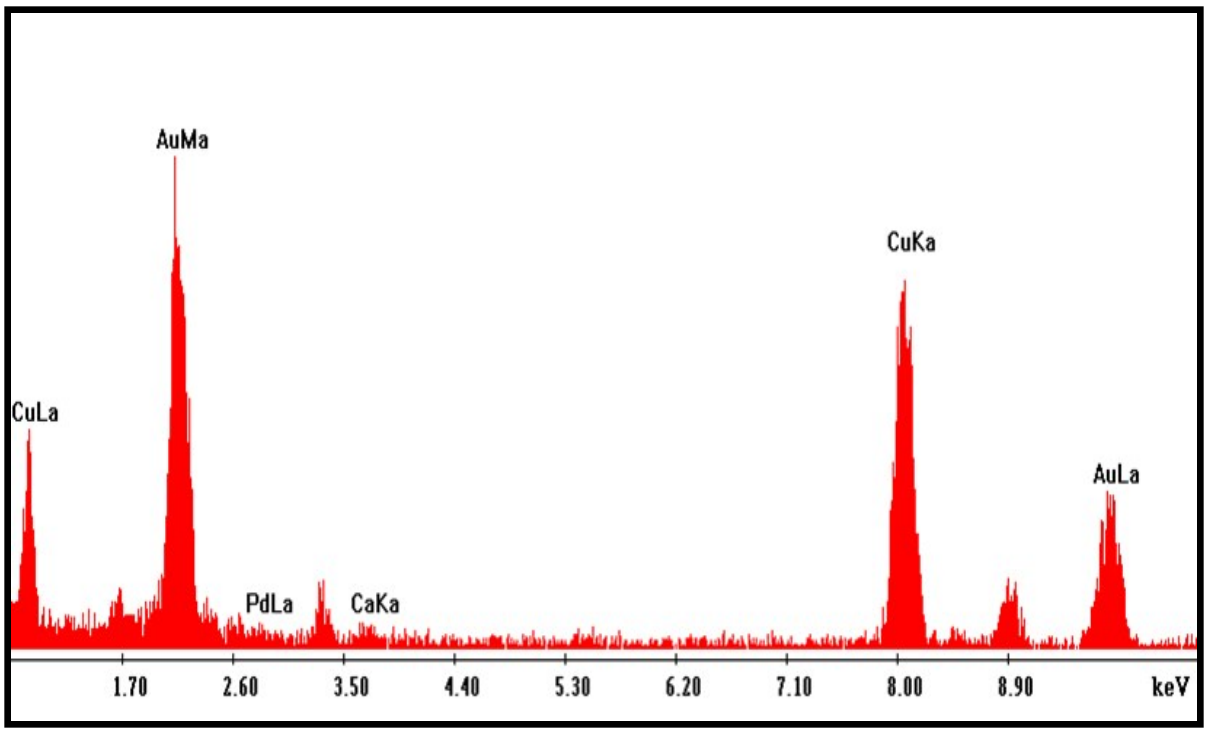

Figure S4A EDX spectrum confirming formation of AuNPs derived from QPP.

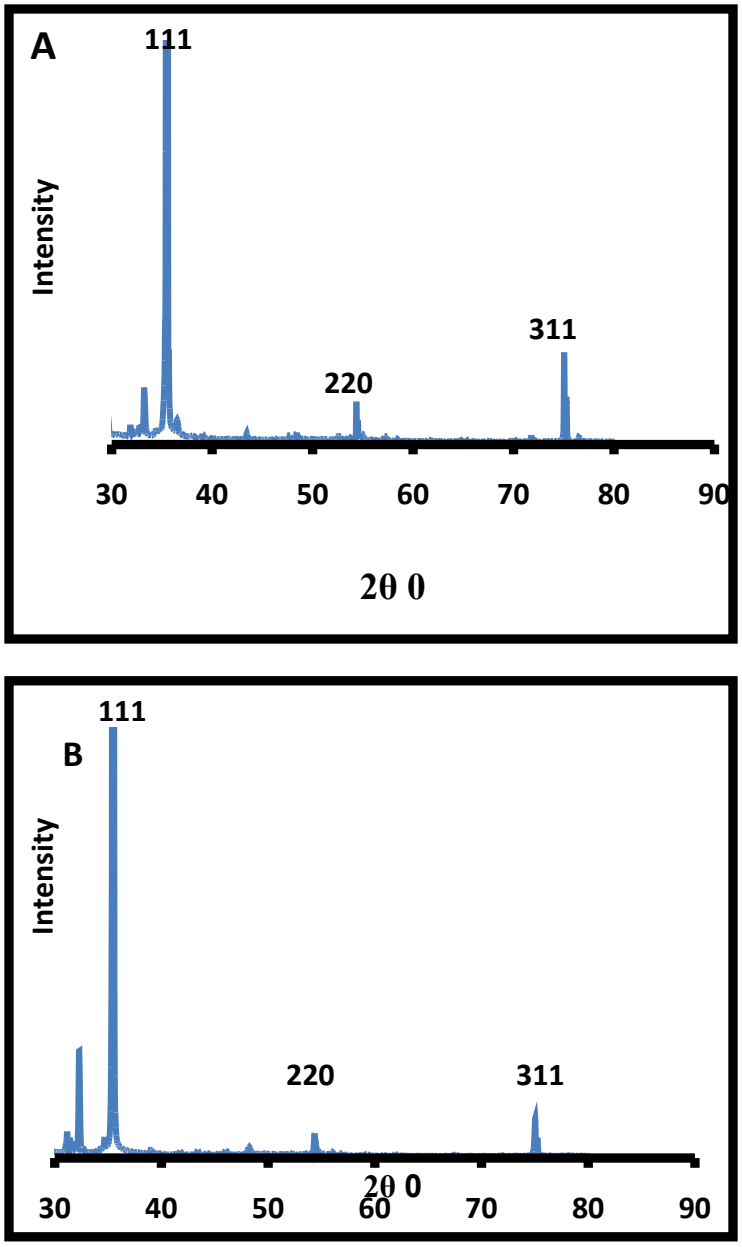

Figure S4B XRD pattern of AuNPs derived from (A) ATRP and (B) QSA

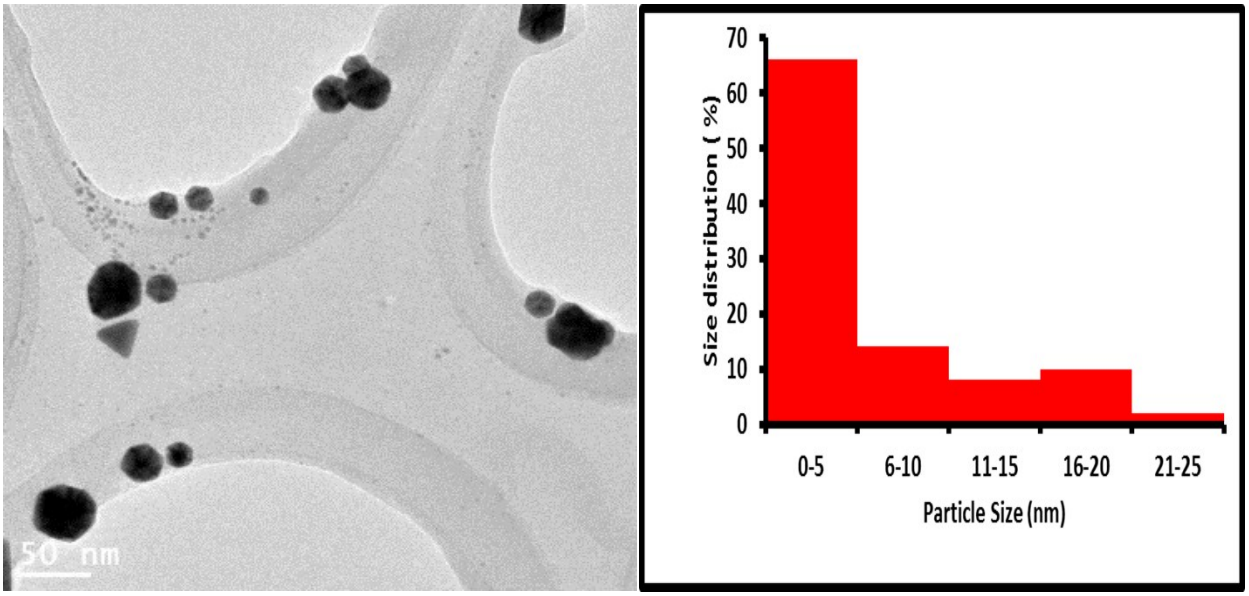

Figure S5: TEM image of AuNPs derived from QPP and the corresponding histogram illustrating the average sizes of AuNPs.

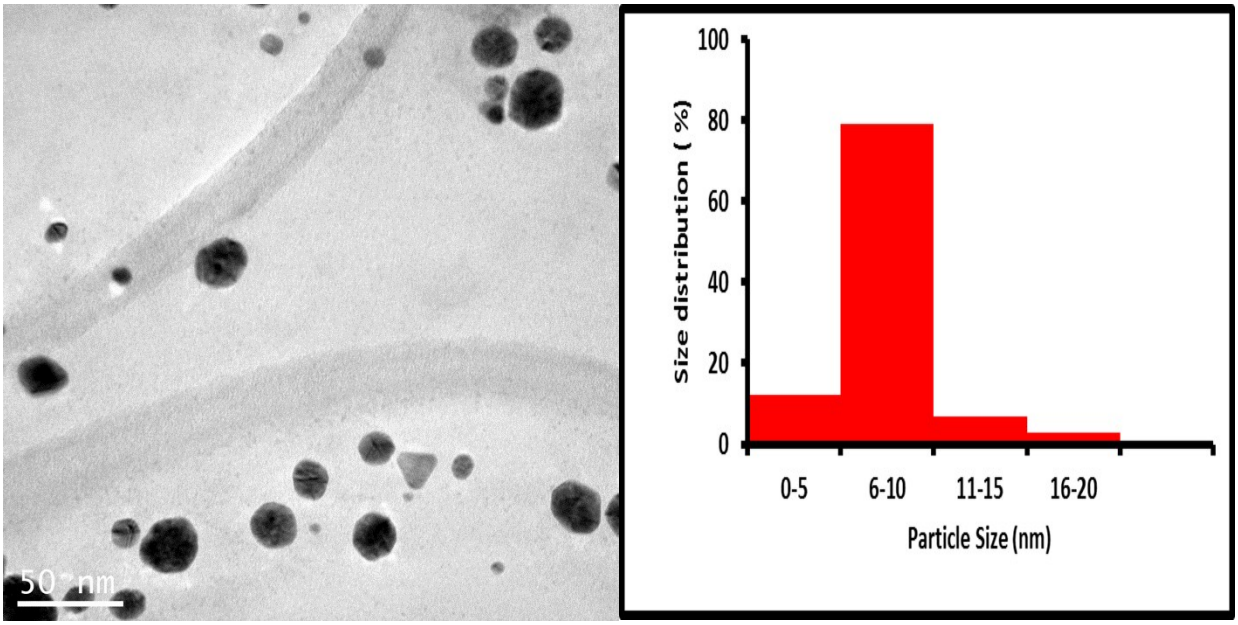

Figure S6. TEM image of AuNPs derived from ATRP and the corresponding histogram illustrating the average sizes of AuNPs.

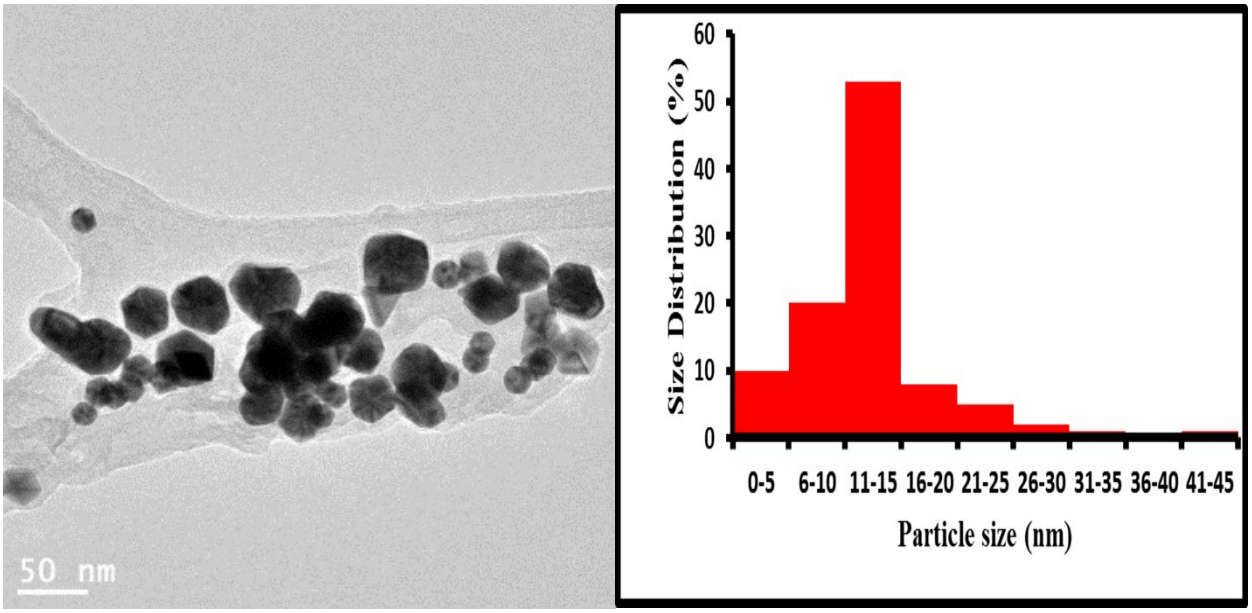

Figure S7: TEM image of AuNPs derived from QSA and the corresponding histogram illustrating the average sizes of AuNPs.

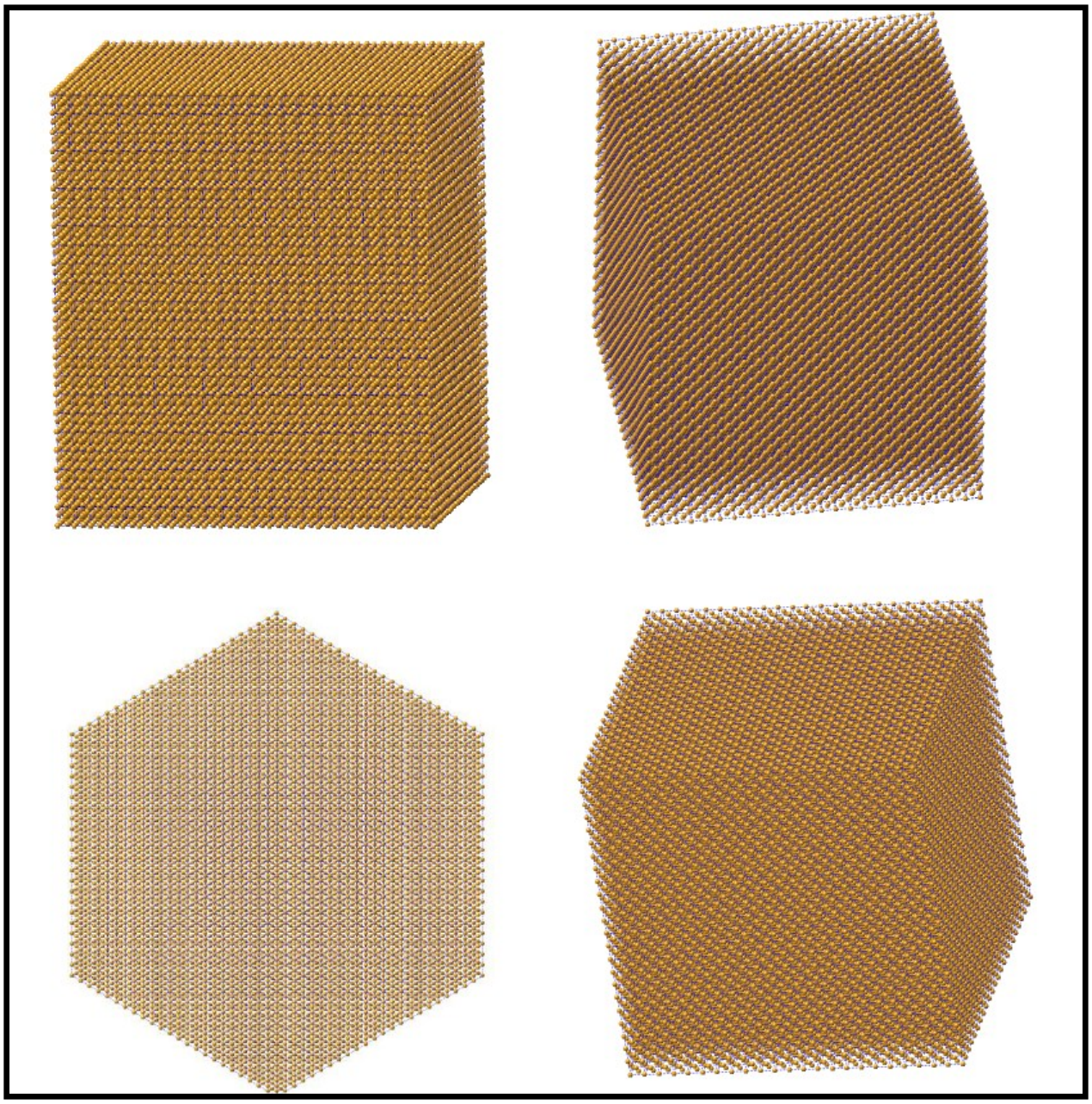

Figure S8: Fcc model showing the arrangement of gold atoms in different orientations clearly demonstrating structure model of gold nanocubes.

Figure S9: *C.freundii* Activities of AuNPs (a) Control (b) 200 ng/mL AuNPs treated plate (c) 2 µg/mL AuNPs treated plate (d) 3 µg/mL AuNPs treated plate and (e) 5 µg/mL AuNPs treated plate.

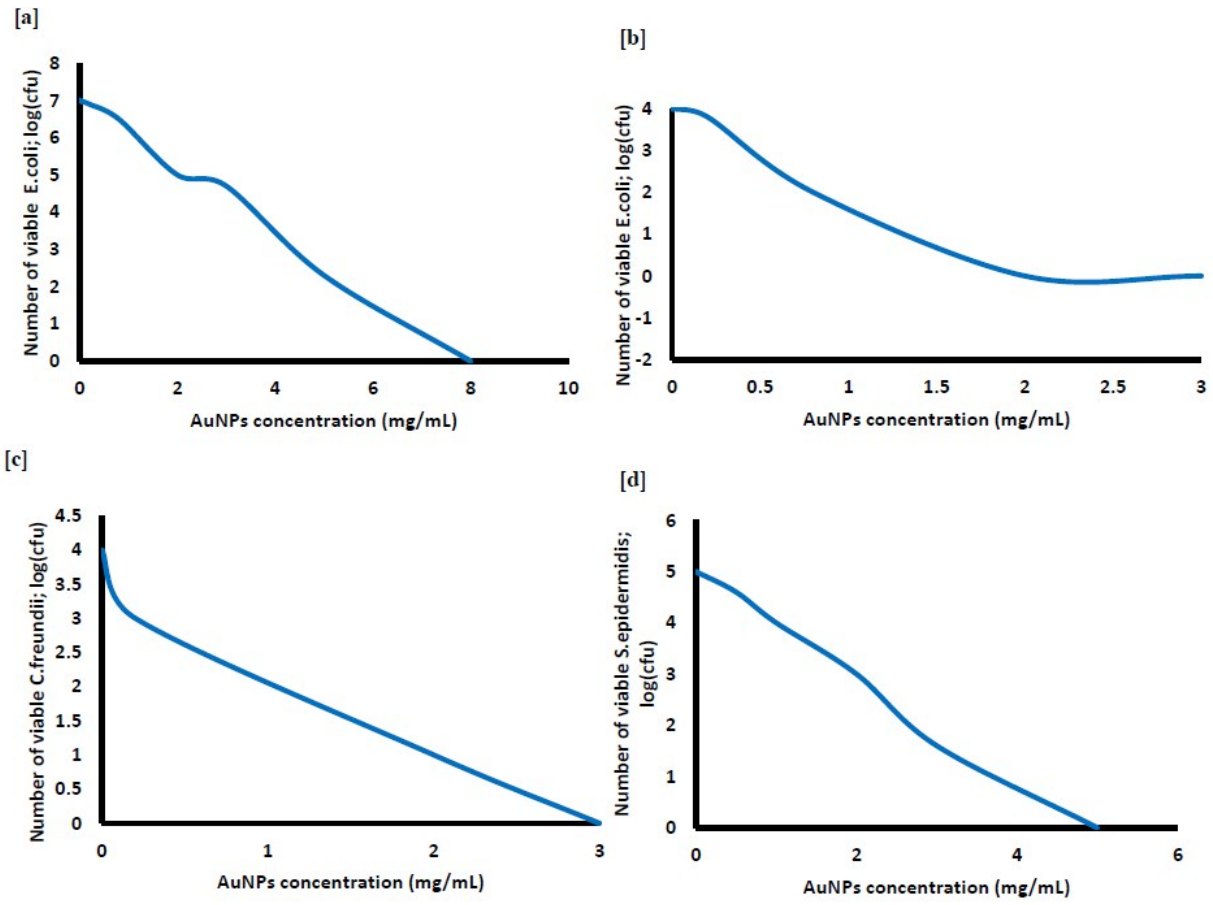

Figure S10: (a) 40 µL from 10^6 cfu/mL *E.coli* stock solution, (b) 10^4 cfu/mL *E.coli* stock solution (c) 10^4 cfu/mL *C.freundii* stock solution and (d) 10^5 cfu/mL *S.epidermidis* stock solution onto nanoparticle treated agar. It is clearly seen that % removal of bacteria is not only related to the concentration of nanoparticle introduced to the agar, concentration of bacteria also makes a difference. Overall, the results show that synthesized AuNPs exhibit dose-dependent antibacterial activity against gram (-) and gram (+) bacteria