

**Influence of Various Chloride Ion Concentrations on Silver Nanoparticle
Transformations and Effectiveness in Surface Enhanced Raman Scattering
for Different Excitation Wavelengths**

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Preparation of silver nanoparticles using glucose as reducing agent

The silver nanoparticles were prepared by a reduction of the silver ammonia complex cation $[\text{Ag}(\text{NH}_3)_2]^+$ by glucose. The concentrations of the reaction components were $10^{-3} \text{ mol}\cdot\text{L}^{-1}$ and $10^{-2} \text{ mol}\cdot\text{L}^{-1}$ for AgNO_3 and glucose, respectively. The concentration of ammonia was $5\cdot 10^{-3} \text{ M}$. The pH of the reaction mixture was adjusted to the value 11.5 ± 0.1 by adding of sodium hydroxide solution. These silver nanoparticles had an average particle size of about 50 nm.

Preparation of silver nanoparticles using ascorbic acid as reducing agent

The silver particles were prepared by a reduction of the silver ammonia complex cation $[\text{Ag}(\text{NH}_3)_2]^+$ by ascorbic acid. The concentrations of the reaction components were $10^{-3} \text{ mol}\cdot\text{L}^{-1}$ and $10^{-2} \text{ mol}\cdot\text{L}^{-1}$ for AgNO_3 and ascorbic acid, respectively. The concentration of ammonia was $5\cdot 10^{-3} \text{ M}$. The basic environment of the reaction system was adjusted to the value of pH at 11.5 ± 0.1 by adding of sodium hydroxide solution. These silver particles had an average particle size of about 120 nm.

DLS and UV-Vis measurements

For the purpose both of DLS and UV-Vis measurements, 0.4 mL of the stock aqueous solution of silver nanoparticles was diluted by deionized water (volumes ranged from 1.50 to 1.55 mL) and then 0.050 or 0.100 mL of 1 M and 0.100 mL of 4 M NaCl solution was added. The final concentrations of chloride ions were 25 mM, 100 mM, and 400 mM, respectively. After adding chloride ions, the solution was quickly mixed and immediately the measurements began. All the measurements were performed at the laboratory temperature (20 °C).

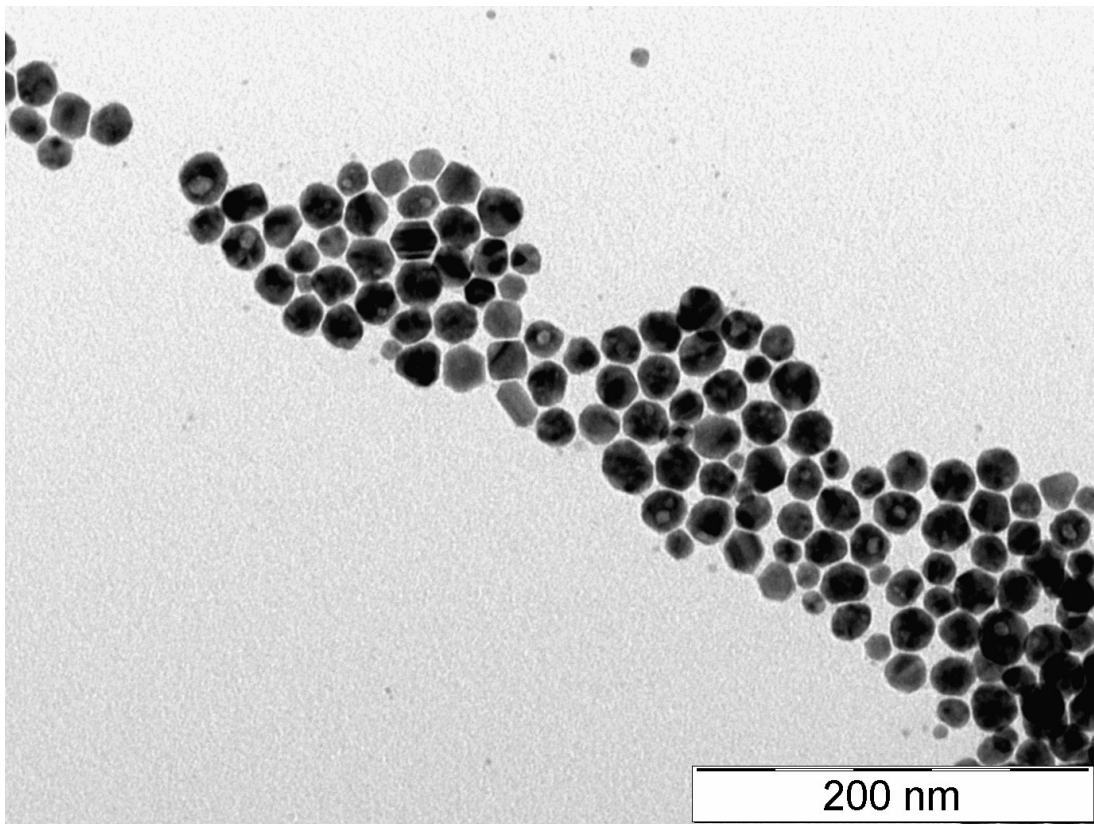


Figure S1. TEM images of primary silver particles reduced by D-maltose without the addition of NaCl.

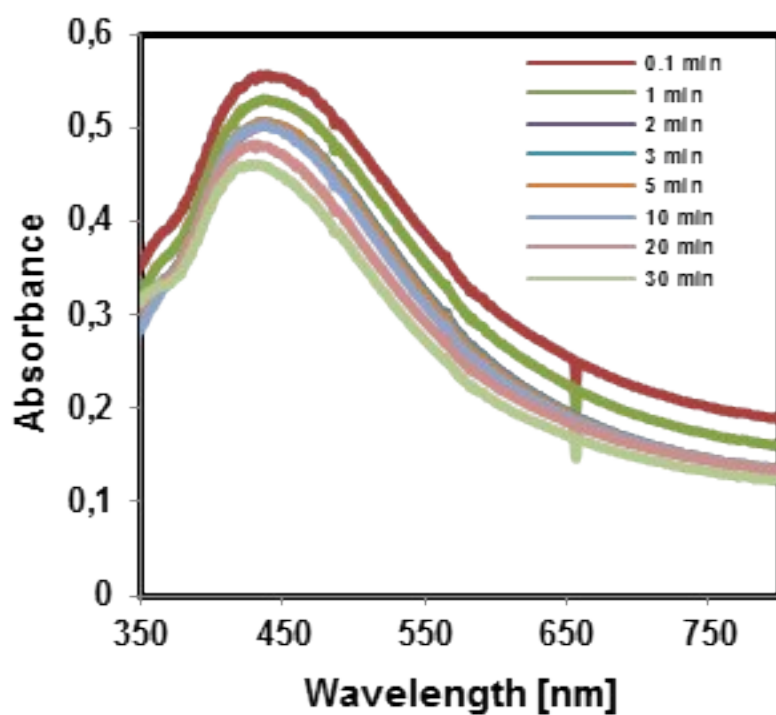
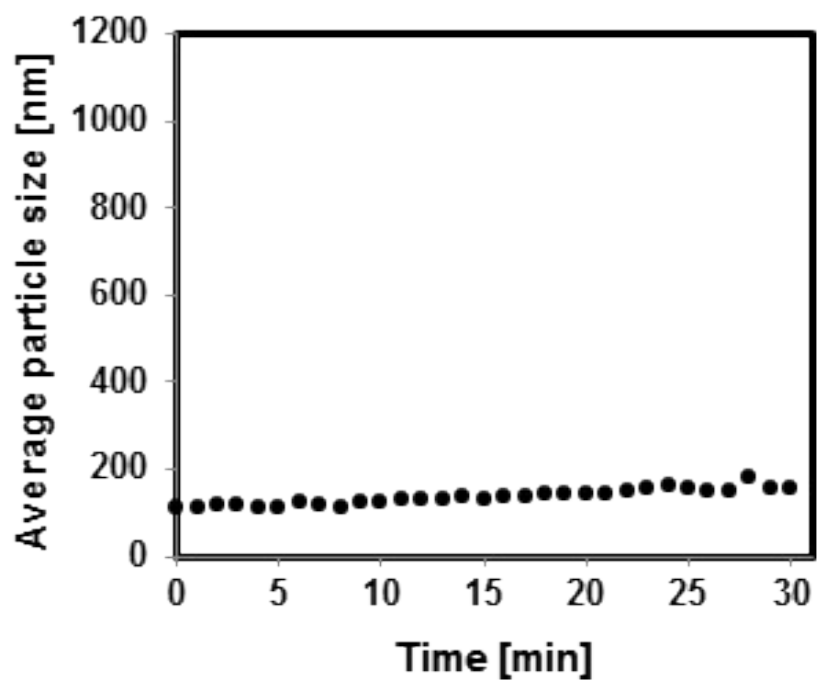


Figure S2: Time dependences of the average size of ascorbic acid Ag NPs and its UV/Vis absorption spectra recorded during 30 minutes after the addition of the 25 mM NaCl solution.

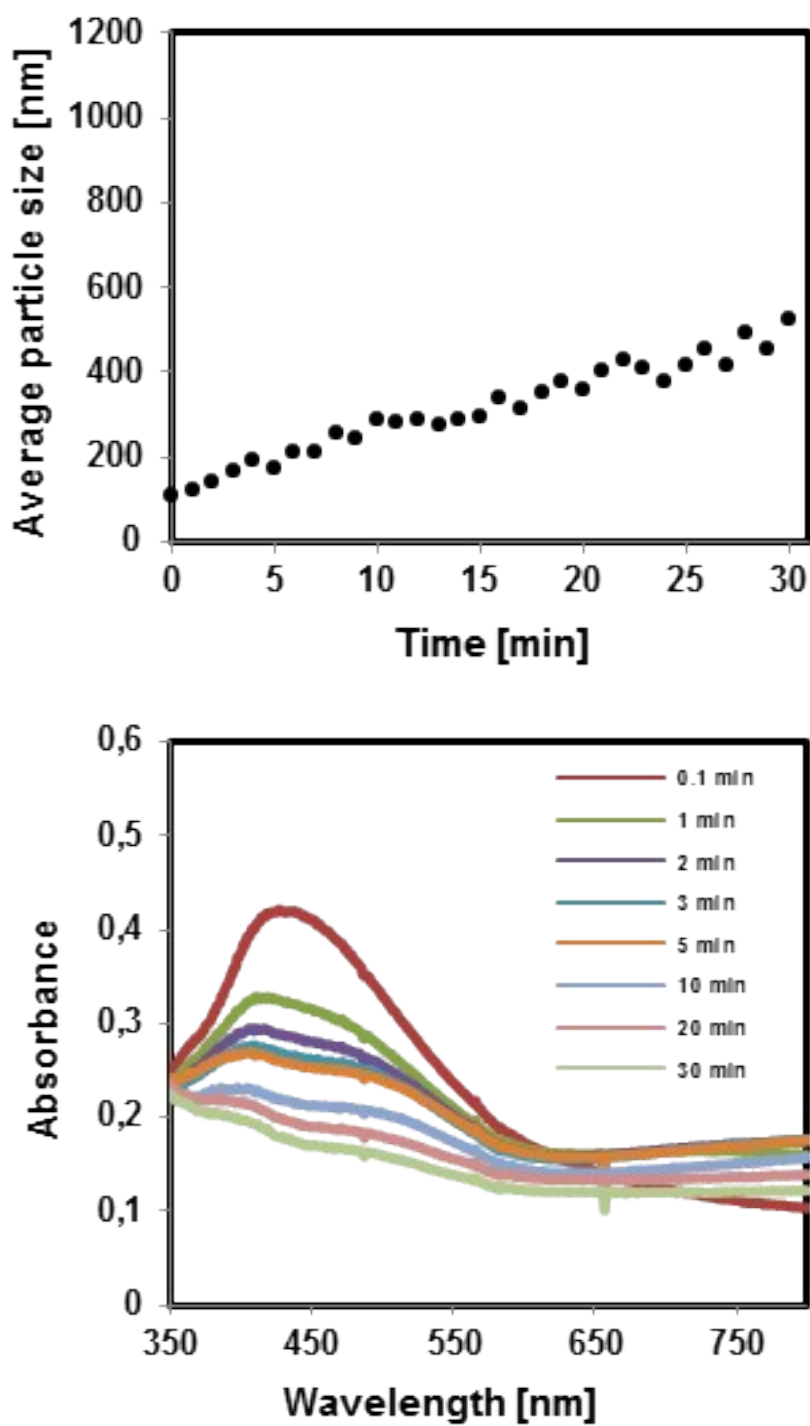


Figure S3: Time dependences of the average size of ascorbic acid Ag NPs and its UV/Vis absorption spectra recorded during 30 minutes after the addition of the 100 mM NaCl solution.

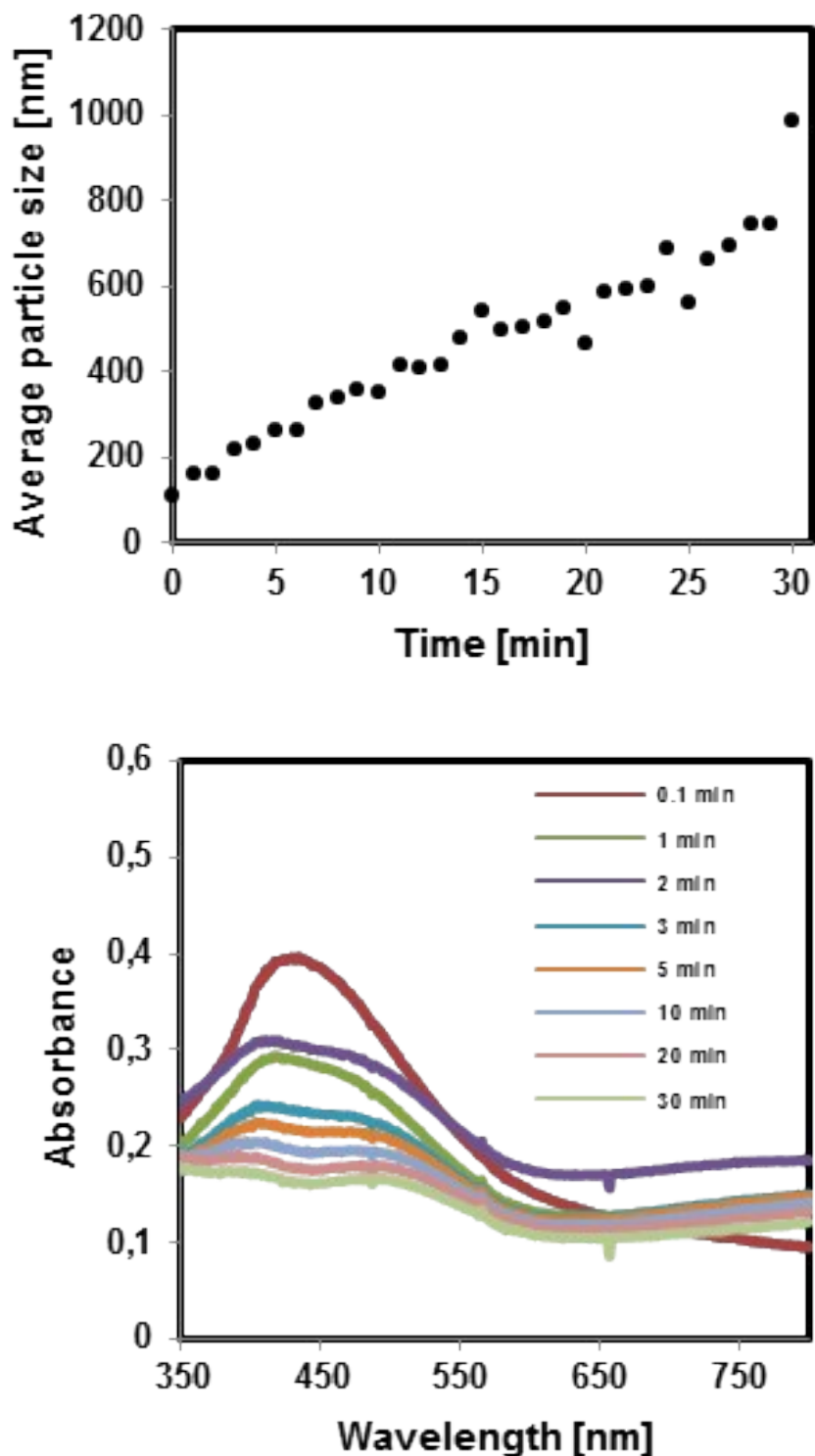


Figure S4: Time dependences of the average size of ascorbic acid Ag NPs and its UV/Vis absorption spectra recorded during 30 minutes after the addition of the 400 mM NaCl solution.

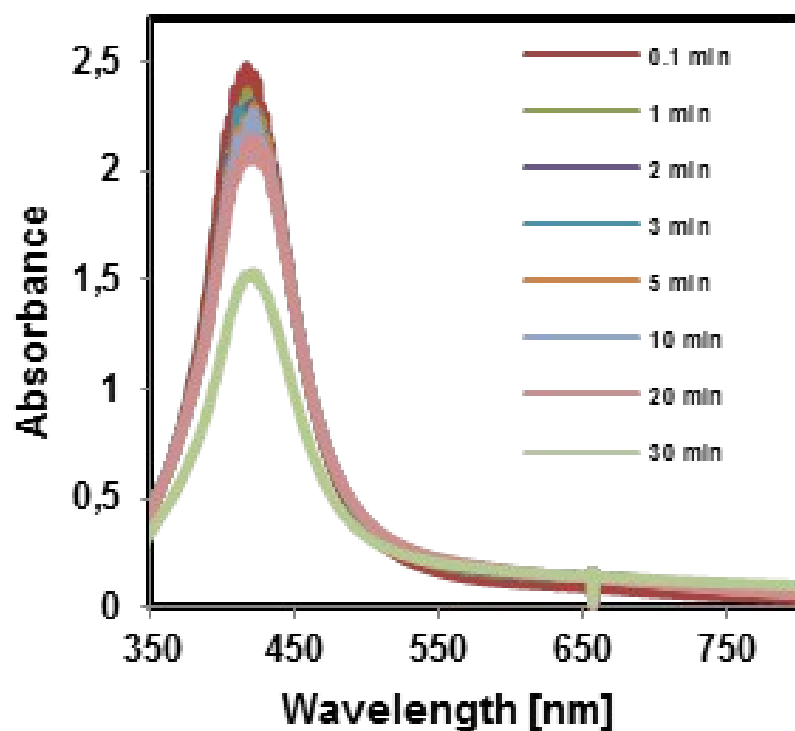
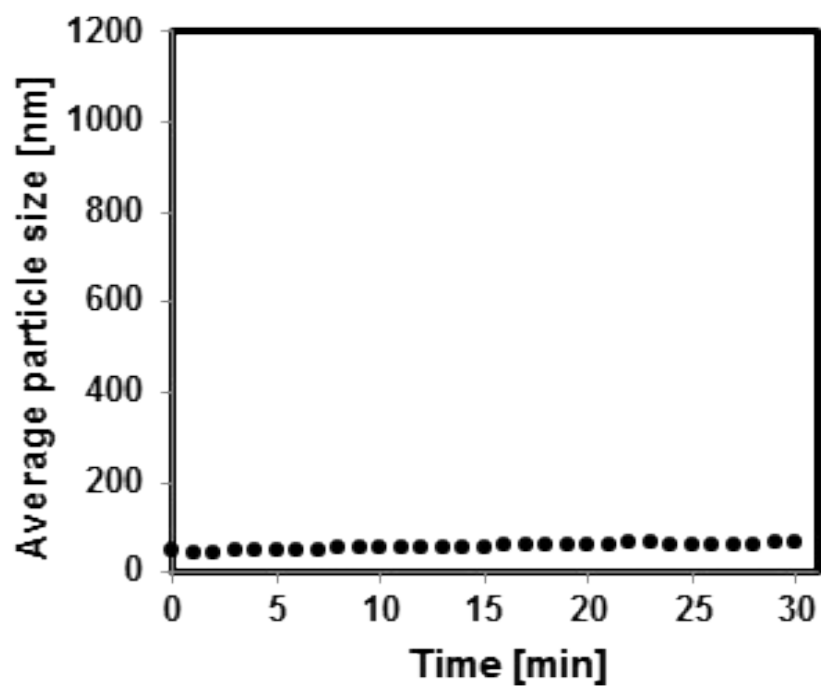


Figure S5. Time dependences of the average size of glucose Ag NPs and its UV/Vis absorption spectra recorded during 30 minutes after the addition of the 25 mM NaCl solution.

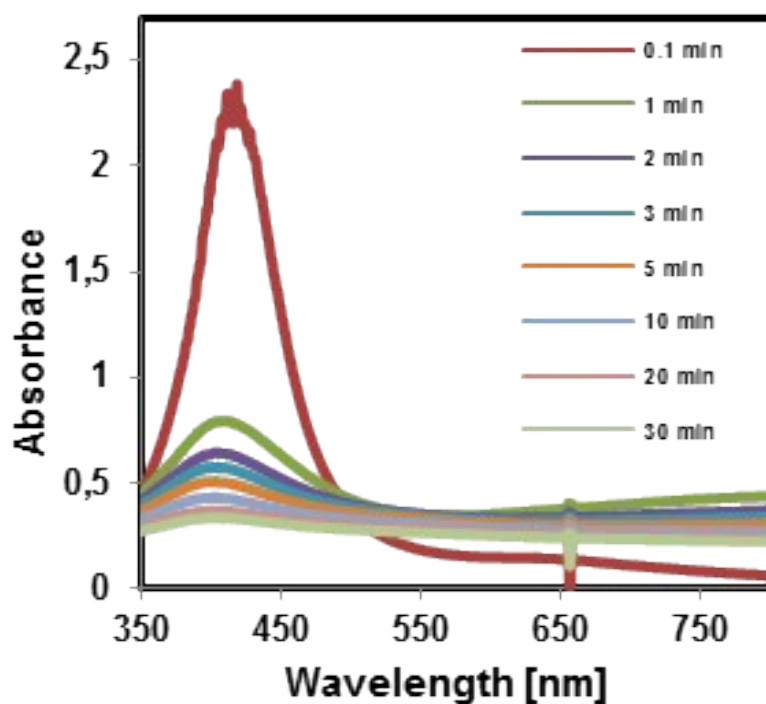
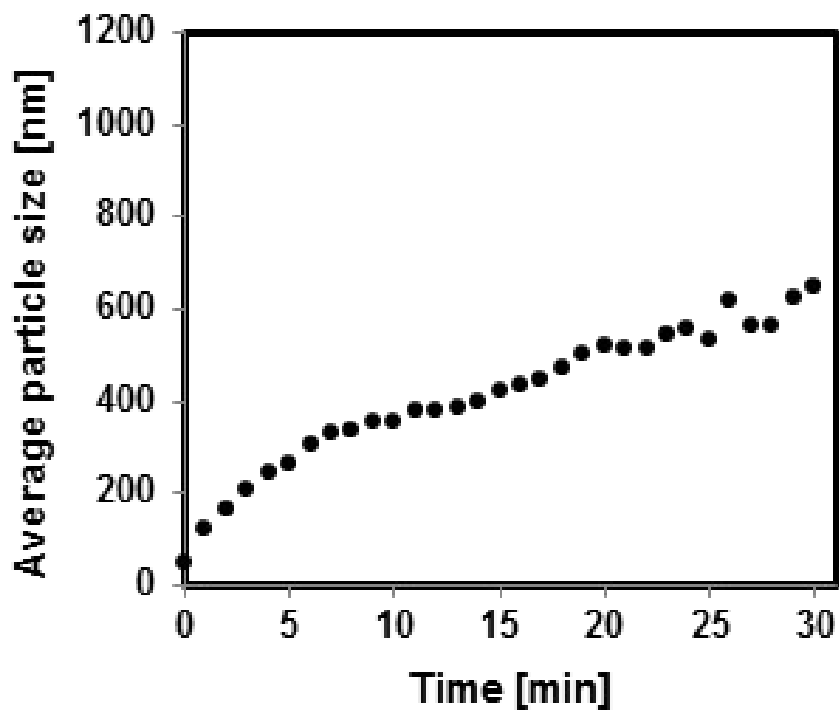


Figure S6. Time dependences of the average size of glucose Ag NPs and its UV/Vis absorption spectra recorded during 30 minutes after the addition of the 100 mM NaCl solution.

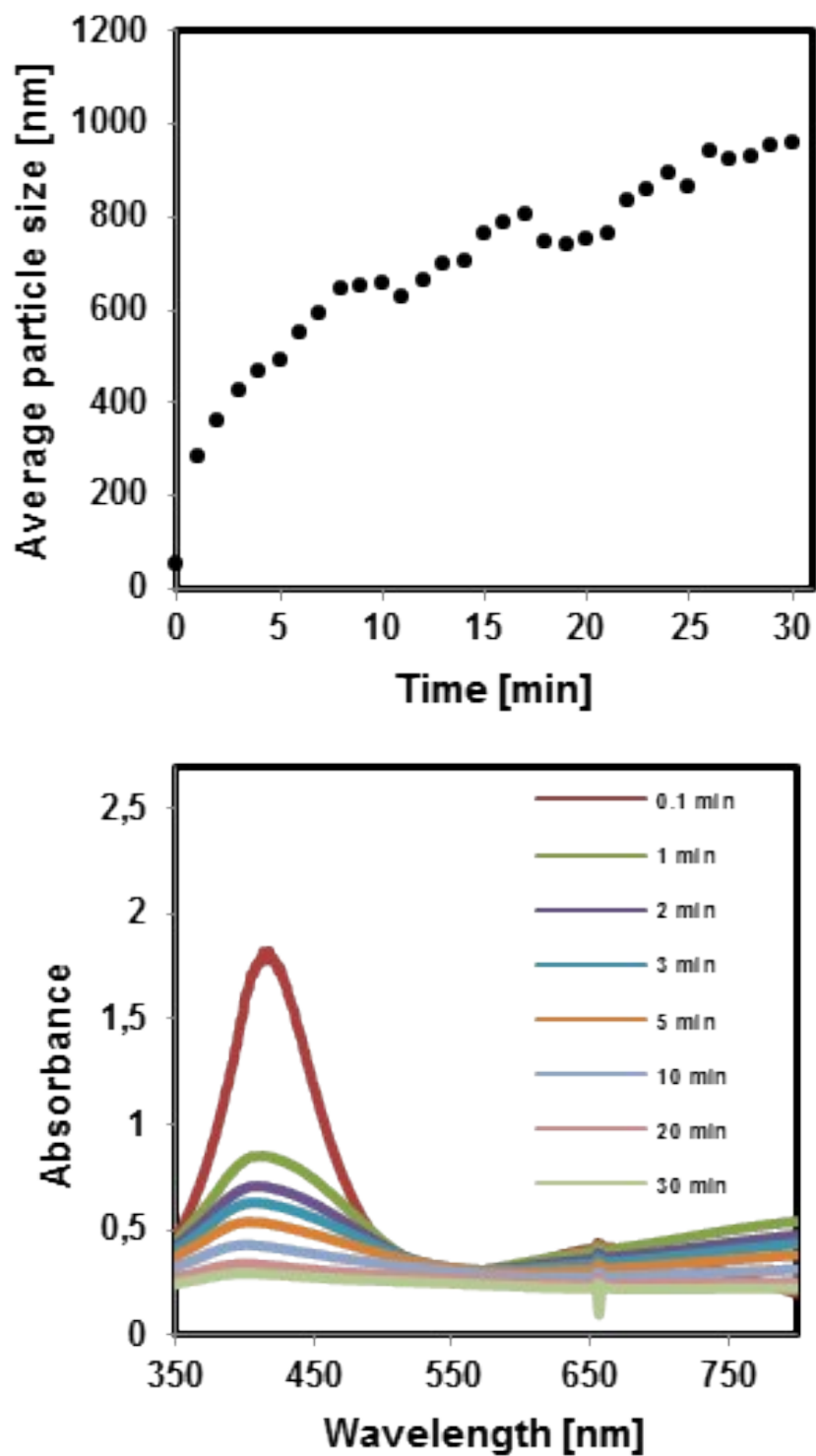


Figure S7. Time dependences of the average size of glucose Ag NPs and its UV/Vis absorption spectra recorded during 30 minutes after the addition of the 400 mM NaCl solution.