Electronic Supplementary Information

**Ag/TiO$_2$ and Ag/SiO$_2$ Composite Spheres: Synthesis, Characterization and Antibacterial Properties**

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CAPTIONS:

Fig. S1 SEM image of Ag/SiO$_2$ composite.

Fig. S2 XRD pattern of Ag/SiO$_2$ composite (the enlarged view of 2θ range from 5° to 35° in inset).

Fig. S3 XRD pattern of TiO$_2$ hollow spheres after calcined at 500 °C.

Fig. S4 EDX image of Ag/TiO$_2$ composite.

Fig. S5 TG curve of Ag$_2$CO$_3$·TiO$_2$·xH$_2$O.

Fig. S6 FT-IR spectra of (a) CaMg(CO$_3$)$_2$, (b) CaMg(CO$_3$)$_2$·xH$_2$O, (c) Ag$_2$CO$_3$·TiO$_2$·xH$_2$O and (d) Ag/TiO$_2$ composite.

Fig. S7 XRD patterns of samples obtained with different concentration of AgNO$_3$ solution.

Fig. S8 SEM images of samples obtained with different concentration of AgNO$_3$ solution: (a) 0.1 mol/L, (b) 0.3 mol/L and (c) 0.5 mol/L.

Fig. S9 EDX of Ag/TiO$_2$ composite obtained at different reaction time: (a) 4h and (b) 8 h.

Fig. S10 XRD patterns of Ag/TiO$_2$ composite obtained at different calcined temperature: (a) 400 °C, (b) 500 °C and (c) 600 °C.

Fig. S11 SEM images of Ag/TiO$_2$ composite obtained at different calcined temperature: (a) 400 °C, (b) 500 °C and (c) 600 °C.

Fig. S12 The relationship between antibacterial activity and concentration of Ag/TiO$_2$ composite.

Fig. S13 SEM images of Ag-NPs, SiO$_2$ and TiO$_2$ hollow spheres.
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