Supplementary information

Ag synchronously deposited and doped TiO$_2$ hybrid as ultrasensitive SERS substrate: A multi-function platform for SERS detection and photocatalytic degradation

Libin Yang,*a Qinqin Sang,a Juan Du,a Ming Yang,a Xiuling Li,a Yu Shen,a Xiaoxia Han,b Xin Jiang*a and Bing Zhao*b

*aCollege of Pharmacy, Jiamusi University, Jiamusi 154007, People’s Republic of China

bState Key Laboratory of Supramolecular Structure and Materials, Jilin University, Changchun 130012, People’s Republic of China

*Corresponding authors. E-mail: ylb76@163.com (L.B. Y.); jiangxin@jmsu.edu.cn (X. J.); zhaob@mail.jlu.edu.cn (B. Z.)
Fig. S1 Normal Raman spectrum (Bulk) of 1.0 mol/L of 4-MBA ethanol solution and SERS spectrum of 4-MBA adsorbed on Ag-TiO$_2$ from 1×10$^{-3}$ mol/L of 4-MBA ethanol solution.
Fig. S2 SERS spectra of CIP adsorbed on Ag-TiO$_2$ (A) and pure TiO$_2$ (B) substrates from different concentrations of CIP aqueous solution.
**Fig. S3** SERS spectra of CIP adsorbed on Ag-TiO$_2$ from 10 randomly selected points.
Fig. S4 UV-visible spectra of CIP aqueous solutions after the photocatalytic degradation with different UV-light irradiation times on 7%Ag-TiO$_2$ (A) and pure TiO$_2$ (B) and the plot of $C/C_0$ versus time on different photocatalysts (C).