Electronic Supplementary Material (ESI) for CrystEngComm.

Supplement Information

In situ SERS monitoring of photocatalyst by Au-decorated Fe_3O_4@TiO_2 nanocomposites: novel perspective and insight

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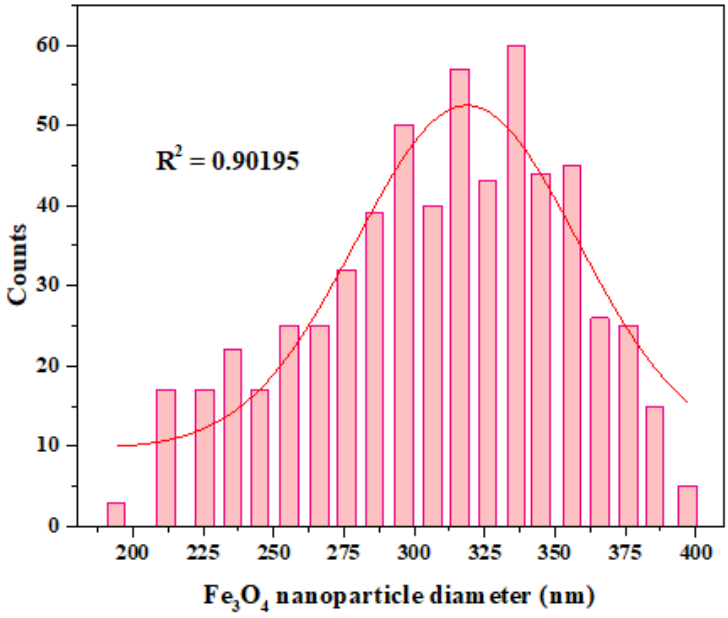

Fig. S1. The size distribution of the Fe_3O_4 NPs.

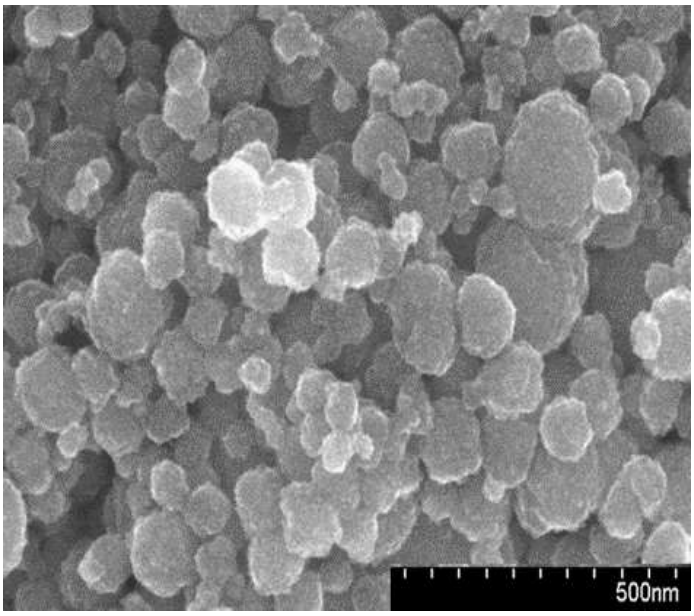

Fig. S2. UHR-SEM image of Fe_3O_4 NPs.

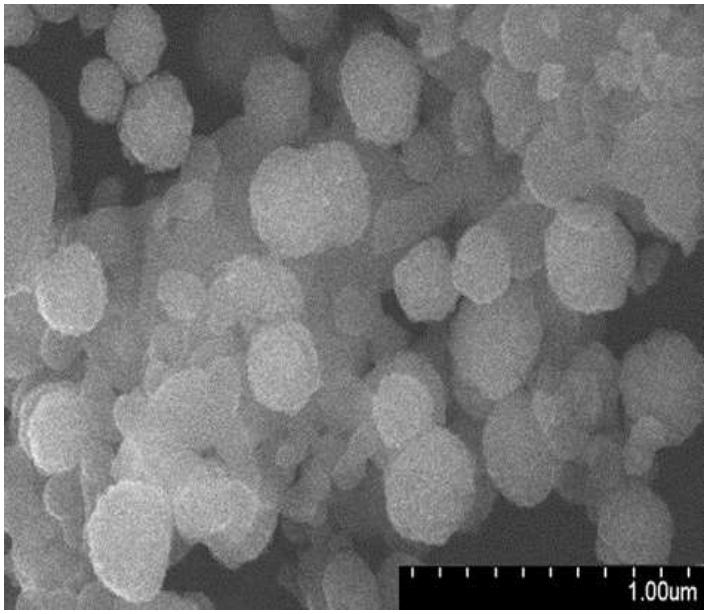

Fig. S3. UHR-SEM image of Fe_3O_4@TiO_2 NPs.

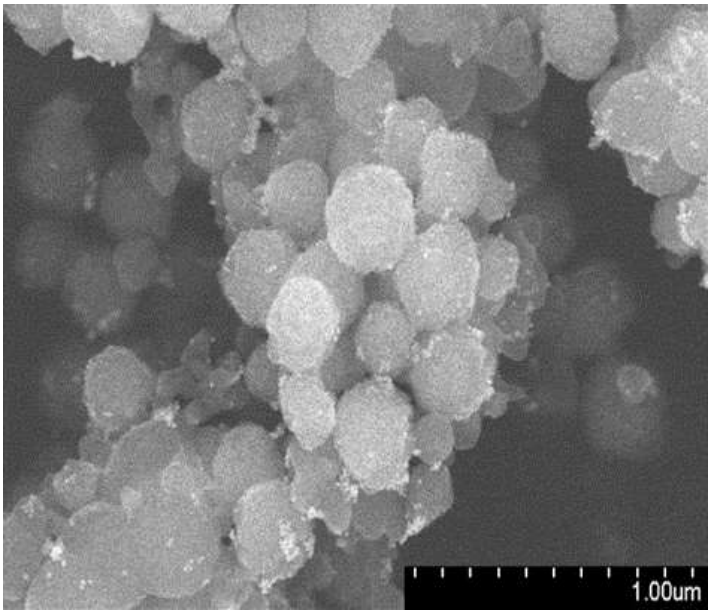

Fig. S4. UHR-SEM image of Fe_3O_4@TiO_2-Au NPs.

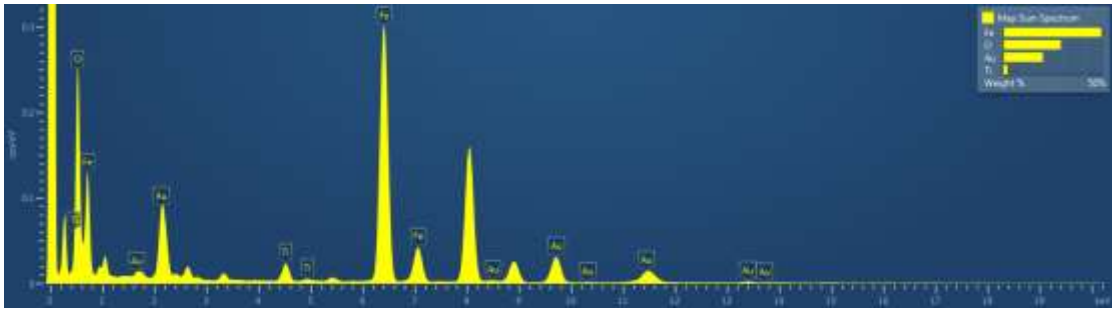

Fig. S5. EDS spectrum of Fe_3O_4@TiO_2-Au NP from Fig. 1C.

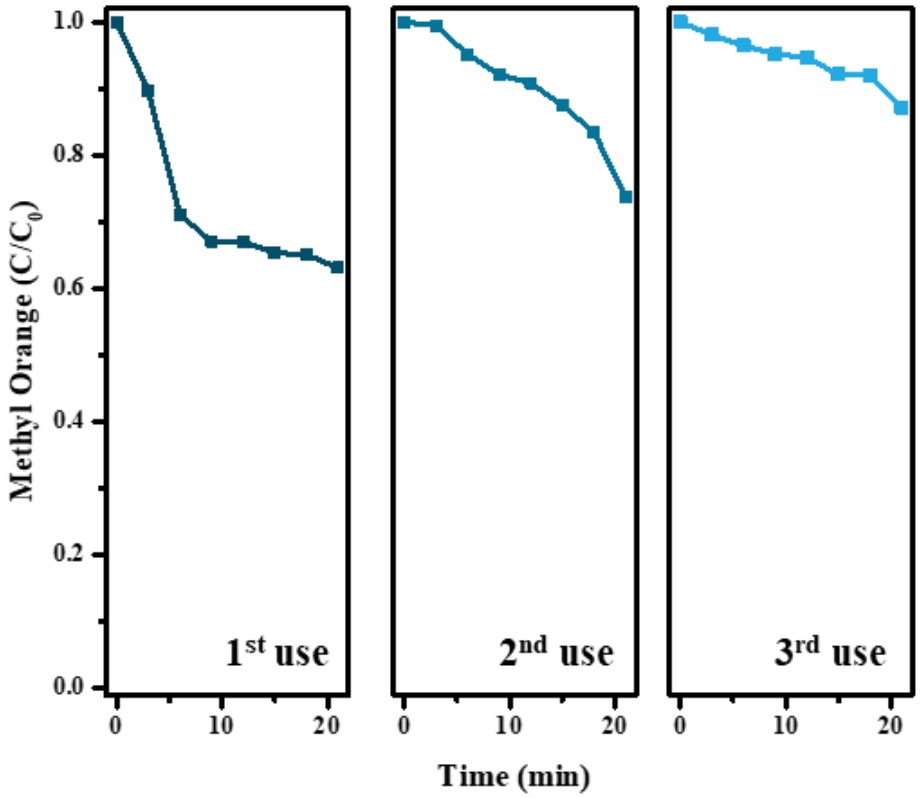

Fig. S6. Repeated photocatalytic degradation of MO by TiO_2 NPs. (TiO_2 NPs loading: 5.0 g/L; MO concentration: 5.0 x 10^{-5} M; $NaBH_4$ concentration: 0.2 M).

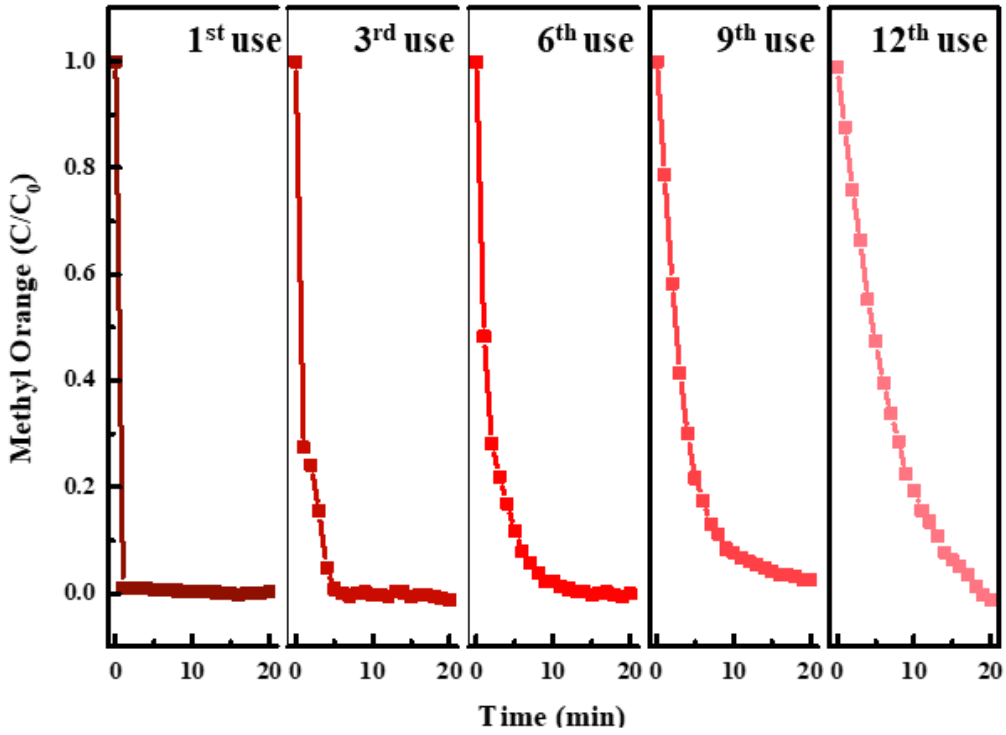

Fig. S7. Repeated photocatalytic degradation of MO by Fe_3O_4@TiO_2-Au NPs. (Fe_3O_4@TiO_2-Au NPs loading: 5.0 g/L; MO concentration: 5.0 x 10^{-5} M; $NaBH_4$ concentration: 0.2 M)

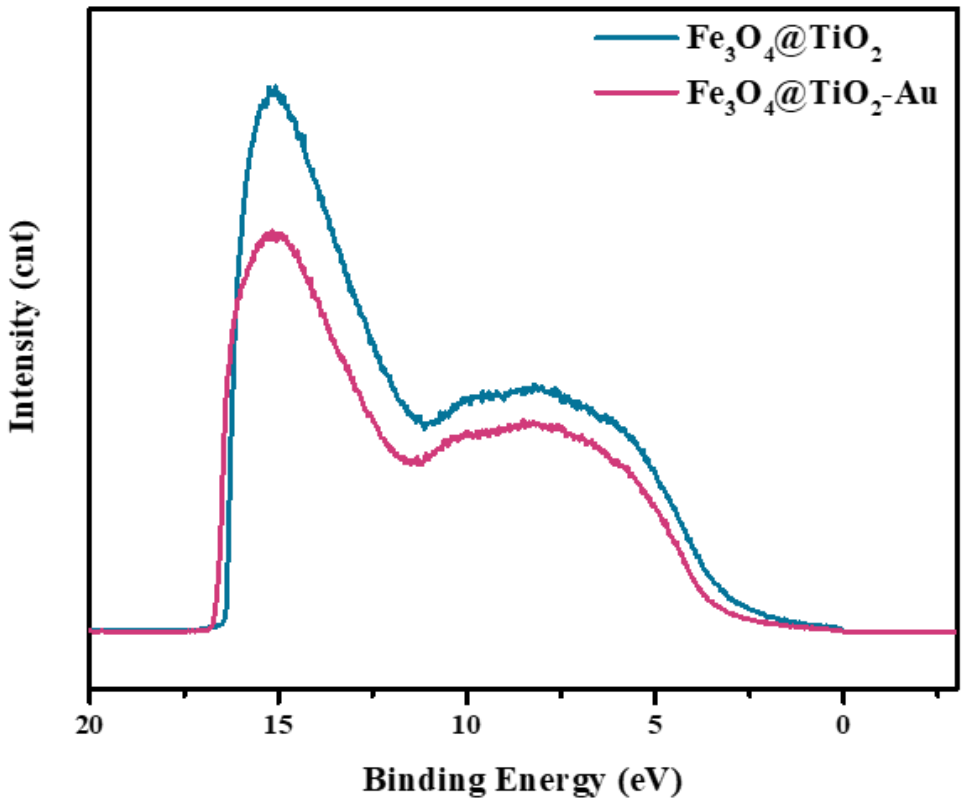

Fig. S8. UPS spectra of Fe_3O_4@TiO_2 NPs and Fe_3O_4@TiO_2-Au NPs.

Table S1. Band assignments of the SERS spectra of 4-MBA

Raman shift (cm^{-1})			Band assignments*
Au NPs	TiO_2 NPs Fe_3O_4@TiO_2 NPs	Fe_3O_4@TiO_2-Au NPs	
1072	1072	1072	In-plane ring breathing, ν(C-S), a_1
1132	1132	1132	δ(C-H), b_2
1178	1181	1181	δ(C-H), a_1
	1289	1289	δ(C-H), ν(C-C)
1584	1595	1590	$\nu(C\text{-}C)_{Ph}$

* ν, stretching; δ, deformation; Ph, phenyl ring

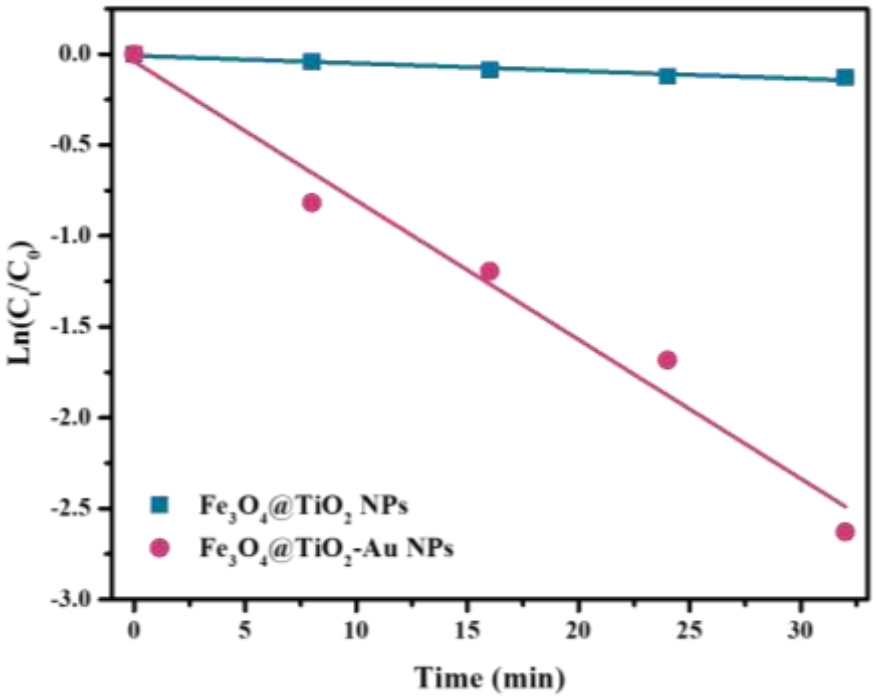

Fig. S9. Curves of the linear relationship between the concentration of MO and the reaction time according to the intensity changes of a band at 1392 cm^{-1}.