Electronic Supplementary Material (ESI) for CrystEngComm

Supporting Information

Facile synthesis of MnO_2-Ag hollow microspheres with sheet-like subunits and their catalytic properties

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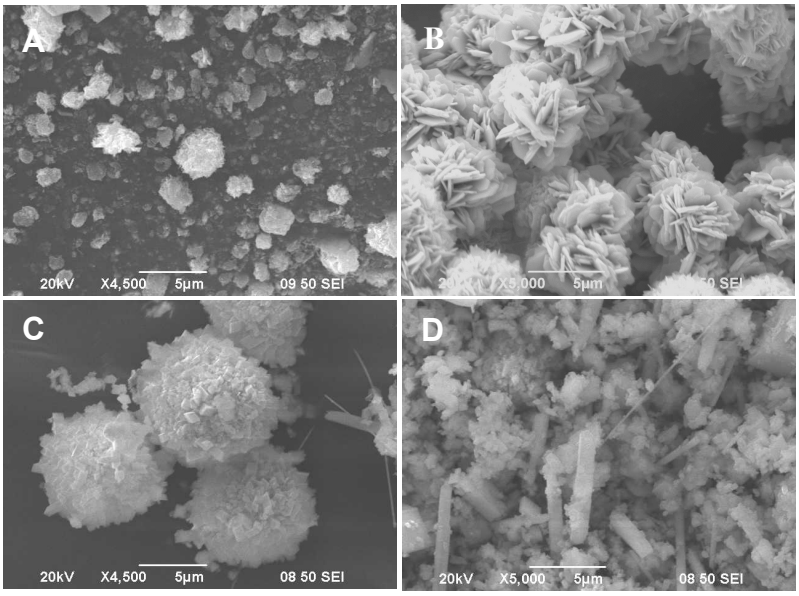

Fig. S1. SEM images of the products prepared at different reaction temperature: room temperature without hydrothermal treatment (A), 100 ºC (B), 160 ºC (C), and 200 ºC (D).

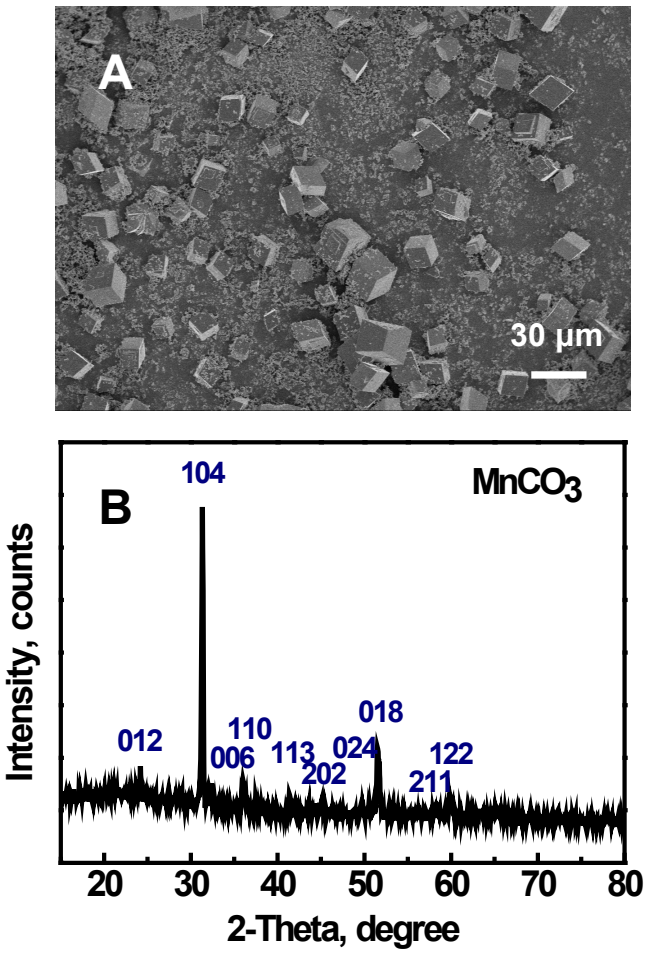

Fig. S2. (A) SEM image and XRD pattern (B) of the products prepared without $AgNO_3$.

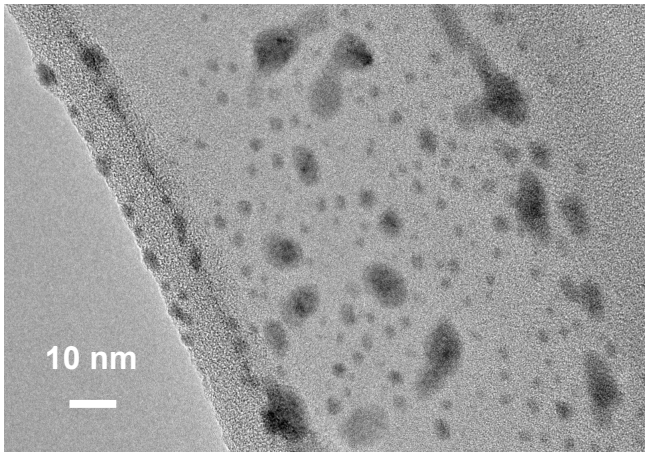

Fig. S3. TEM image of the product obtained at 130 ºC for 0.5 h.

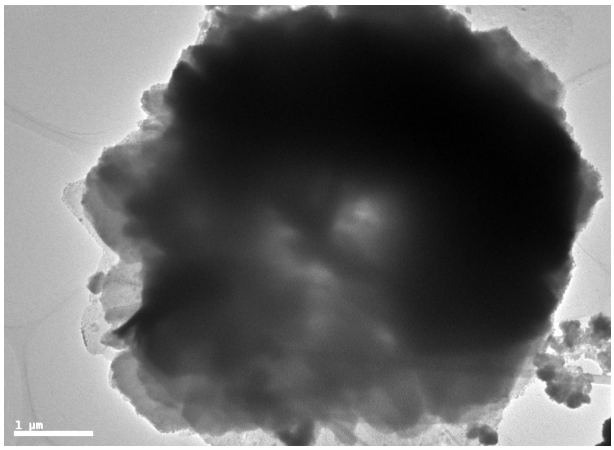

Fig. S4. High–magnification TEM image of the product obtained at 130 ºC for 2 h.

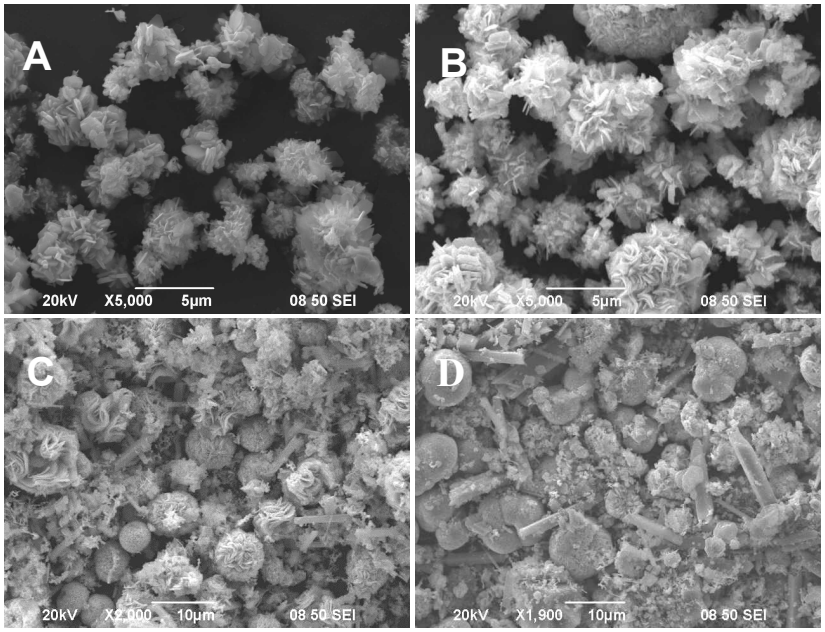

Fig. S5. SEM images of the products prepared at different reaction time: 1 h (A), 2 h (B), 5 h (C), and 10 h (D).

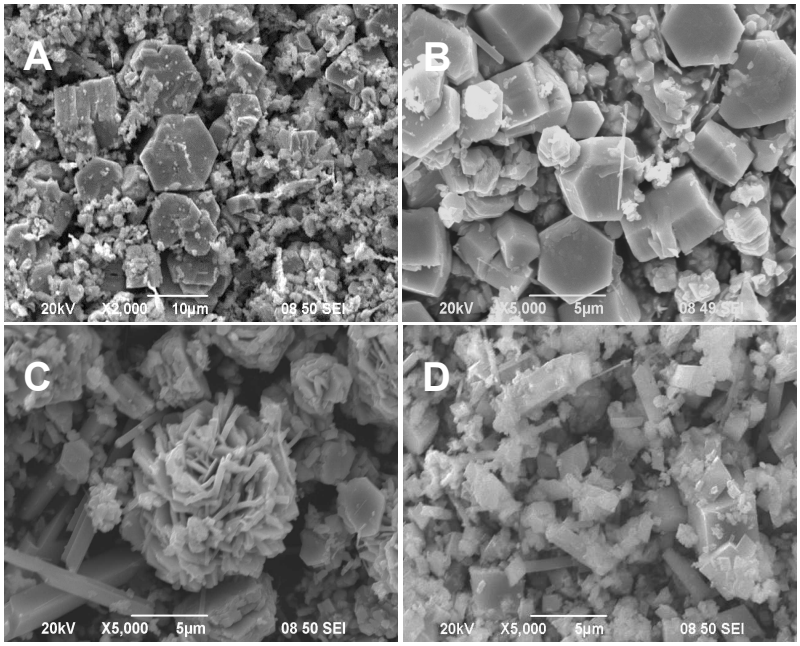

Fig. S6. SEM images of the products prepared with different amount of urea: 0.024 g (A), 0.144 g (B), 0.48 g (C), and 4.80 g (D).

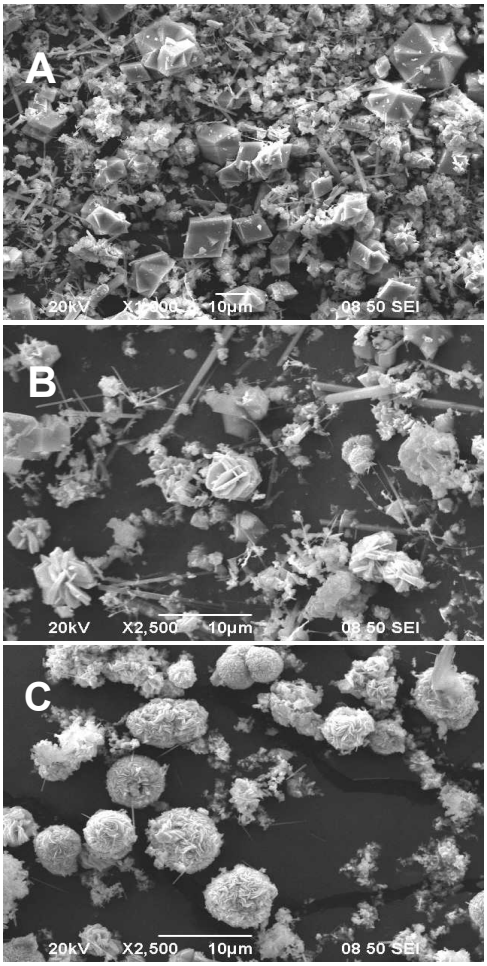

Fig. S7. SEM images of the products obtained with different molar ratios of Mn^{2+}/Ag^{+}: 2:1 (A), 1:1 (B), and 1:3 (C) at 130 ºC.

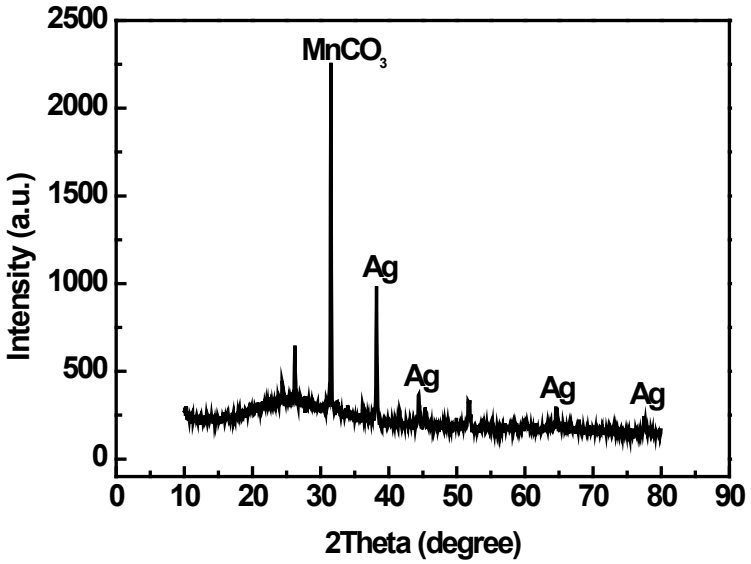

Fig. S8. X–ray diffraction pattern of the product using the molar ratio (Mn^{2+}/Ag^{+}) of 2:1.

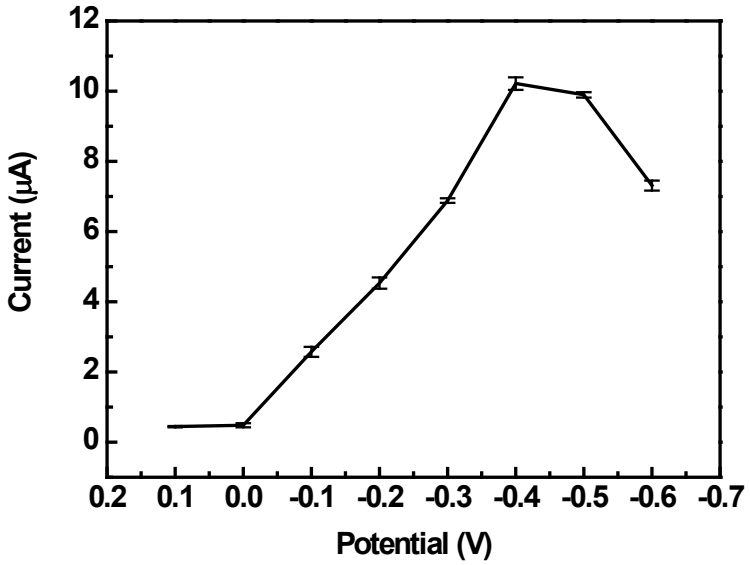

Fig. S9. Effects of the applied potentials on the steady-state responses of the MnO_2–Ag HMs modified CPE in a 25 mM phosphate solution (pH 7.0) containing 1.25 mM H_2O_2.

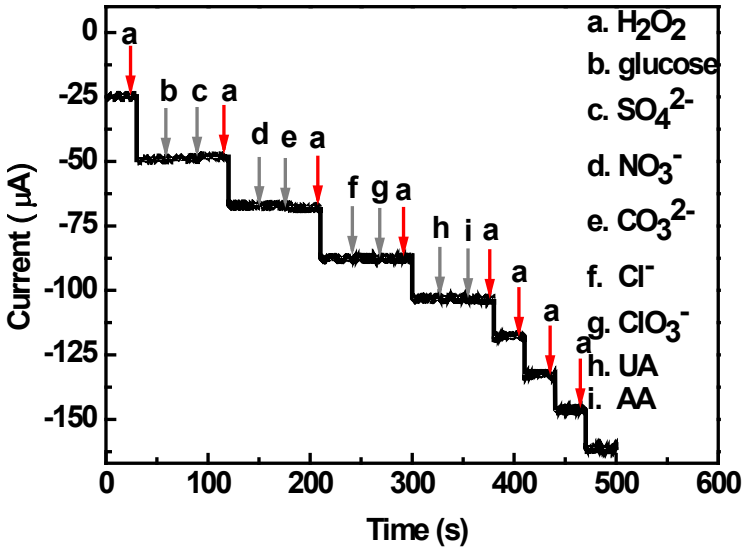

Fig. S10. Amperometric *i-t* curve of the MnO_2–Ag HMs modified CPE with successive addition of 1.0 mM H_2O_2, ClO_3^-, UA, and AA, as well as 10 mM glucose, SO_4^{2-}, NO_3^-, CO_3^{2-}, and Cl^- ions in a 25 mM phosphate solution (pH 7.0) at –0.4 V.

Table S1. Comparison of the MnO_2–Ag HMs sensor with other MnO_2 based H_2O_2 sensors.

Materials	Stability	Linear ranges	Detection limit/ μM	Refs.
MnO_2–Ag HMs/CPE	90% (4 weeks)	1.31 μM ~ 36.71 mM	1.31	Our work
β–MnO_2 nanorods	90% (30 days)	2.45 μM ~ 42.85 mM	2.45	1
Ag–MnO_2–MWCNTs	90% (3 days)	5.0 μM ~ 10.4 mM	1.7	2
MnO_2 microspheres	89.0% (4 weeks)	10.0 μM ~ 0.15 mM	2.0	3
MnO_2/graphene oxide	90% (4 weeks)	5 μM ~ 0.6 mM	0.8	4
MnO_2/carbon fiber	not detected	12 μM ~ 0.26 mM	5.4	5
MnO_2–mesoporous carbon	92% (1 month)	0.5 μM ~ 0.6 mM	0.07	6
MnO_2–VACNTs	92% (30 days)	1.2 μM ~ 1.8 mM	0.8	7

References

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