Electronic Supplementary Information for Dalton Transactions

Electronic Supplementary Information

Magnetically recyclable Ag-ferrite catalysts: general synthesis and support effects in the epoxidation of styrene

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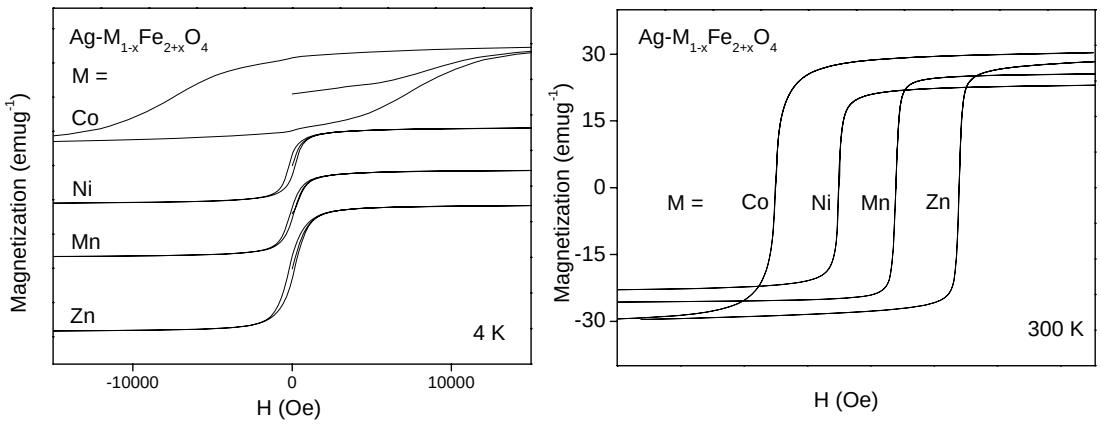

Fig. S1 Magnetization curves of as-prepared Ag-$M_{1-x}Fe_{2+x}O_4$ (M = Co, Ni, Mn, Zn) nanocomposites at 4 K and at 300 K

Table S1 Analysis results of the saturation magnetization values (Ms) for the as-synthesized Ag-$M_{1-x}Fe_{2+x}O_4$ (M = Co, Ni, Mn, Zn) nanocomposites.

samples ($emug^{-1}$)	[a]Ms $_{(nanocomposite)}$ ($emug^{-1}$)	[a]Ms $_{(normalized)}$ ($emug^{-1}$)	[a]Ms $_{(reference\ 30\text{-}33)}$ ($emug^{-1}$)
Ag-$Co_{0.79}Fe_{2.51}O_4$	30.6	82.9	65-88
Ag-$Ni_{0.81}Fe_{2.19}O_4$	23.2	63.4	40-56
Ag-$Mn_{0.42}Fe_{2.58}O_4$	25.6	64.1	63-80
Ag-$Zn_{0.60}Fe_{2.40}O_4$	29.6	76.8	45-80

[a]Ms $_{(nanocomposite)}$: Ms values of the as-synthesized Ag-$M_{1-x}Fe_{2+x}O_4$ nanocomposites; Ms $_{(normalized)}$: Ms values normalized to the corresponding ferrite contents in the Ag-$M_{1-x}Fe_{2+x}O_4$ nanocomposites; Ms $_{(reference)}$: Ms values found in the literature for the corresponding ferrites.

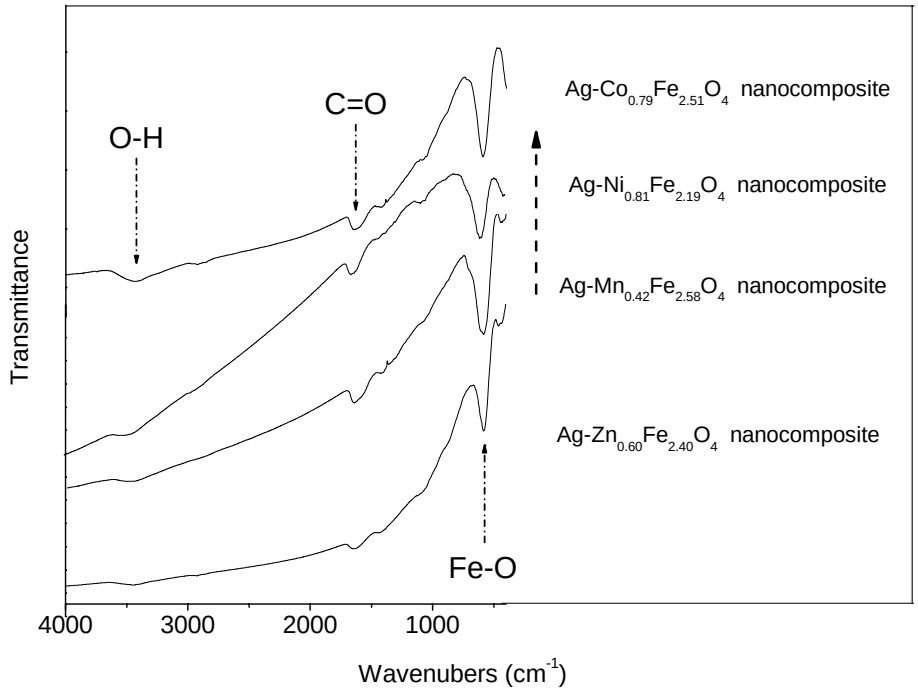

Fig. S2 IR spectra of the as-prepared Ag-$M_{1-x}Fe_{2+x}O_4$ (M = Co, Ni, Mn, Zn) nanocomposites. The absorptions at ~3470 cm^{-1} are attributed to O-H stretching vibrations of surface H_2O molecules.

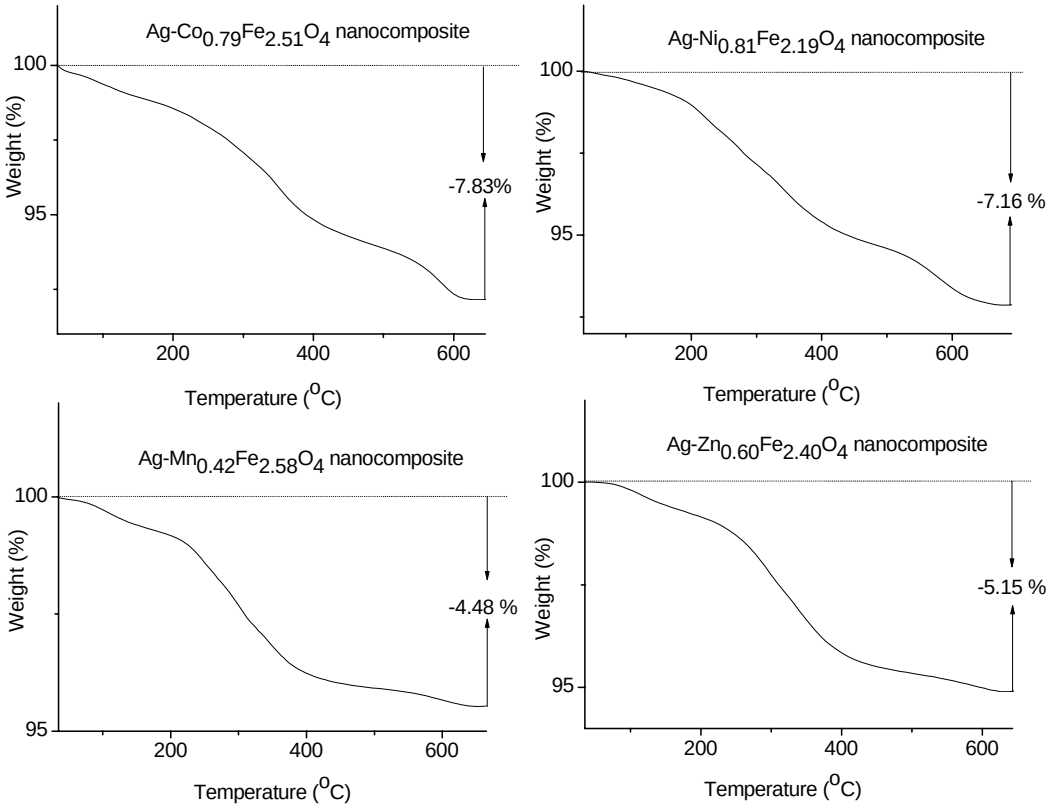

Fig. S3 TGA curves in N_2 of Ag-$M_{1-x}Fe_{2+x}O_4$ (M = Co, Ni, Mn, Zn) nanocomposites.

Table S2 ICP analysis results of atomic ratios of Ag to (M + Fe) in samples synthesized in the presence and absence of PVP for the Ag-$M_{1-x}Fe_{2+x}O_4$ (M = Co, Ni, Mn, Zn) nanocomposites.

Sample		Ag-Co-ferrite	Ag-Ni-ferrite	Ag-Mn-ferrite	Ag-Zn-ferrite
$n_{Ag} : n_{(M+Fe)}$	[a] PVP_{pres}	1.27	1.36	1.48	1.45
	PVP_{abs}	1.18	0.92	1.24	0.96

[a] PVP_{pre} = samples synthesized in the presence of PVP, PVP_{abs} = samples obtained in the absence of PVP.

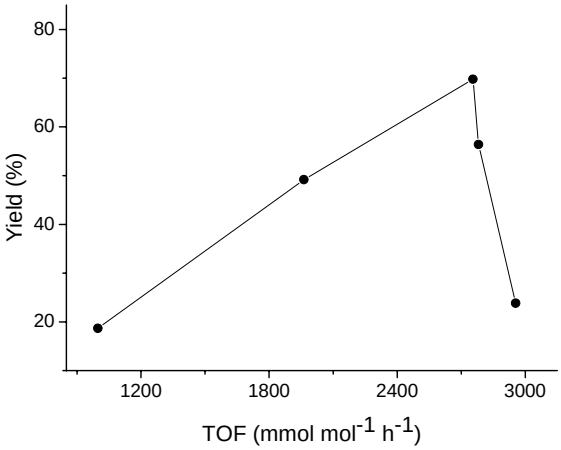

Fig. S4 The "volcano-curve" relationship between the activities and the yields of styrene oxide on the as-synthesized MRCs.

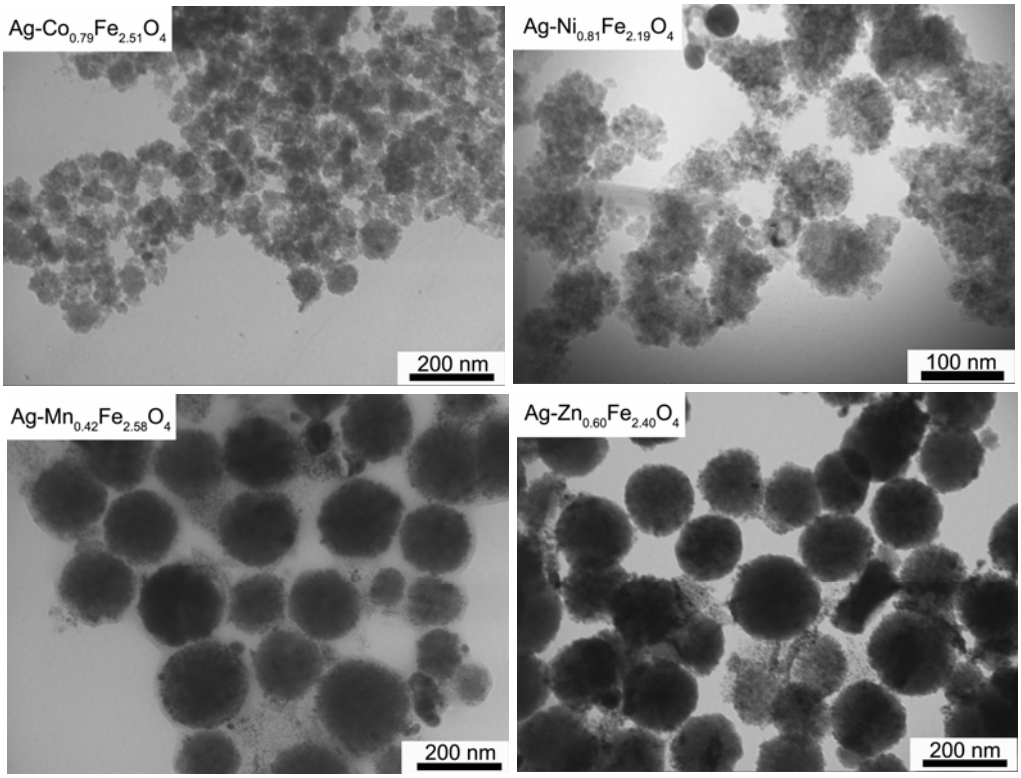

Fig. S5 TEM images of the MRCs after recycling tests.