Electronic Supplementary Material (ESI) for CrystEngComm.

Electronic Supplementary Information

Selective Formation of Ag Domains on MnO Nanooctapods for Potential Duel Imaging Probes

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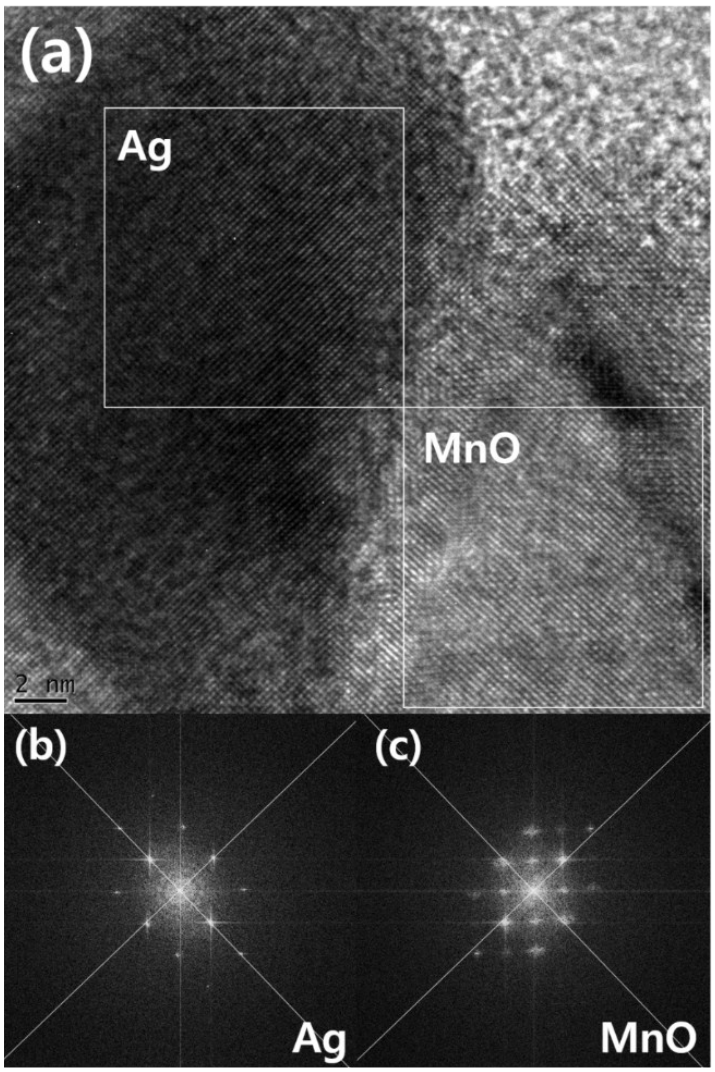

Fig. S1 (a) HRTEM image of an individual octapod MnO-Ag heterodimer. FFT images of the (b) Ag and (c) MnO domains, which were transformed from the squares in (a), respectively. Lines in (b) and (c) are the connections between (10) and $(\bar{1}0)$, and (01) and $(0\bar{1})$ faces, which clearly show that the two images are tilted by ~3°.

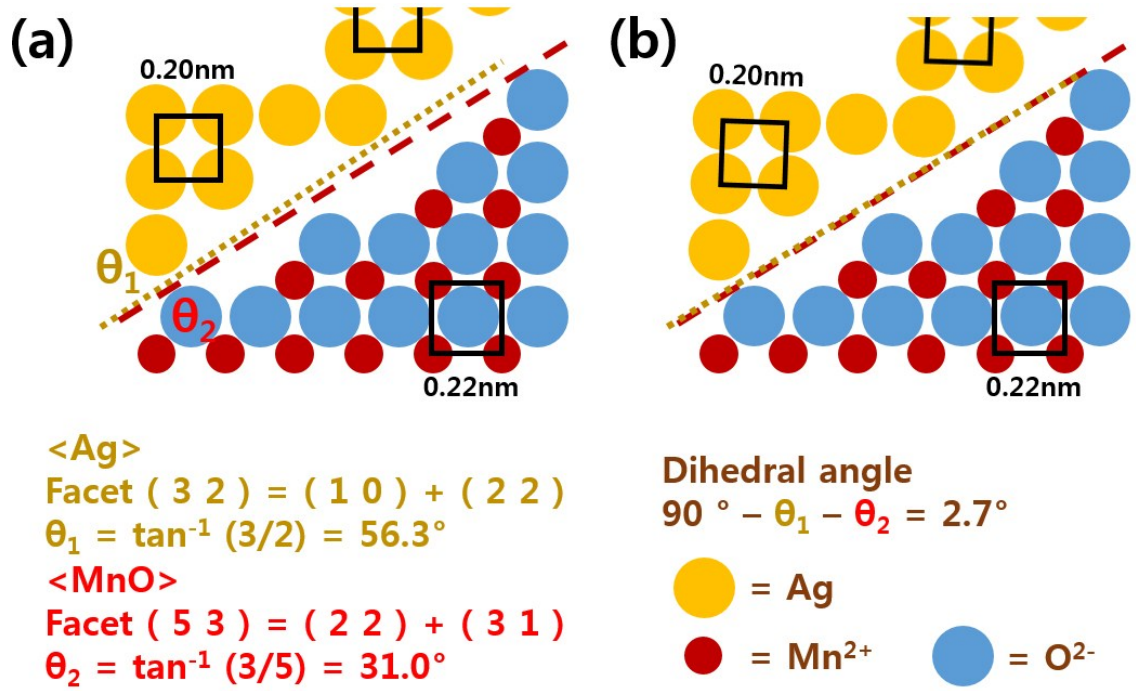

Fig. S2 An ideal 2-dimensional atomic model of the interface between MnO(53) and Ag(32) faces. (a) All atoms are aligned along the [01] axis. The dihedral angle between MnO(53) and Ag(32) faces is calculated to be 2.7°. (b) The [01] axis of the Ag domain is tilted by 2.7° with respect to that of the MnO domain.

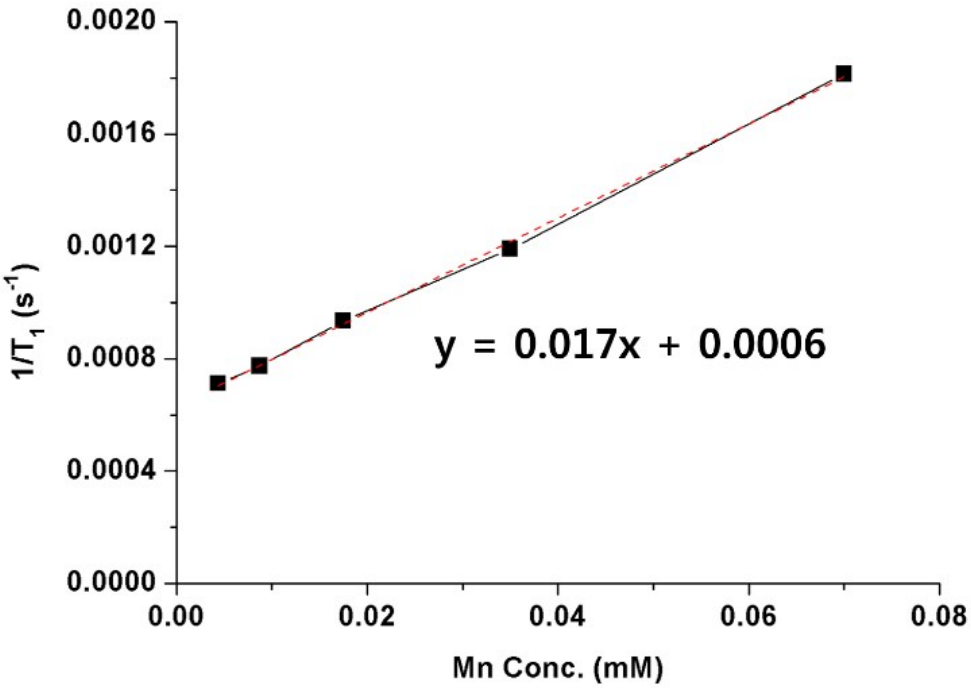

Fig. S3 A graph of the relaxivity measurement for PEGylated MnO octapod-Ag heterodimers. Values of inverse of the longitudinal relaxation time are linearly decreased when Mn concentrations are lowered. The slope of linear fit is $17 mM^{-1} ms^{-1}$.

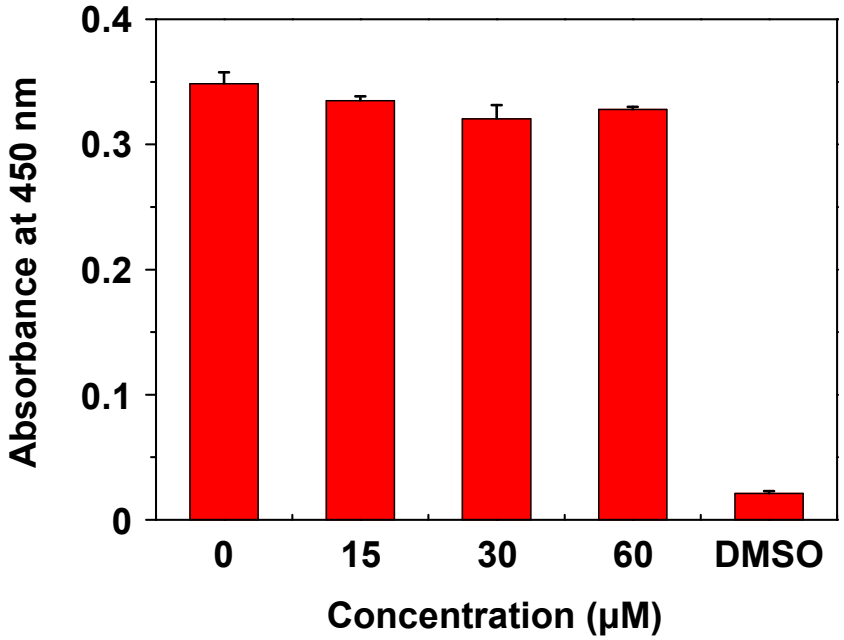

Fig. S4 Effect of MnO-Ag heterodimers on cell viability by the XTT assay method. DMSO (dimethyl sulfoxide) was used as a negative control. Human macrophage cells (U937) incubated with the MnO-Ag heterodimers exhibit a similar cell viability behaviour as untreated control cells.

In vitro MnO-Ag heterodimer toxicity study. To test in vitro toxicity of MnO-Ag heterodimers, XTT assays were employed. Briefly, human macrophage cells (U937) were seeded in 24-well plates (4×105 cells per well) and incubated in DMEM (Dulbecco's modified Eagle's medium) supplemented with 10% FBS (fetal bovine serum) and 1% penicillin–streptomycin (Invitrogen) with variable concentrations of MnO-Ag heterodimers for 48 h at 37 °C with 5% CO_2. 100 μL of a concentrated MnO-Ag heterodimer solution was added to macrophage cells in 500 μL of the cell medium. DMSO (dimethyl sulfoxide) was used as a negative control. After incubation, the cell medium was removed from the wells, followed by the addition of the XTT solution. The cells were incubated for 15 min and the absorbance was recorded at 450 nm, with a reference wavelength of 650 nm in a microplate reader (Biotech).