Supplementary Material (ESI) for Journal of Materials Chemistry

SUPPORTING INFORMATION

Facile synthesis of stable, water-soluble magnetic CoPt hollow nanostructures assited by multi-thiol ligands

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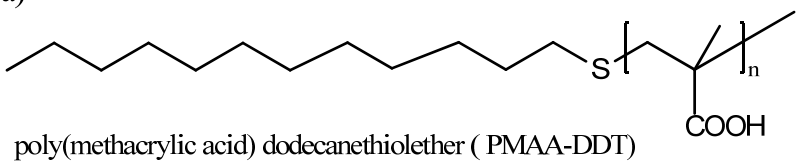
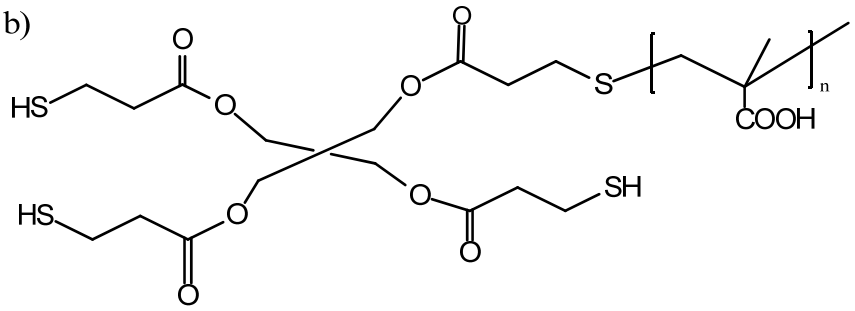
1. Structure of ligands

a)



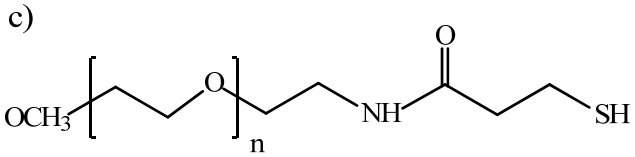
poly(methacrylic acid) dodecanethiolether (PMAA-DDT)

b)



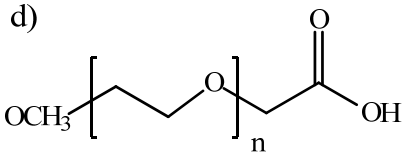
poly(methacrylic acid) pentaerythritol tetrakis (3-mercaptopropionate) (PMAA-PTMP)

c)



O-[2-(3-mercaptopropionylamino)ethyl]-*O′*-methylpolyethylene glycol (PEG-SH)

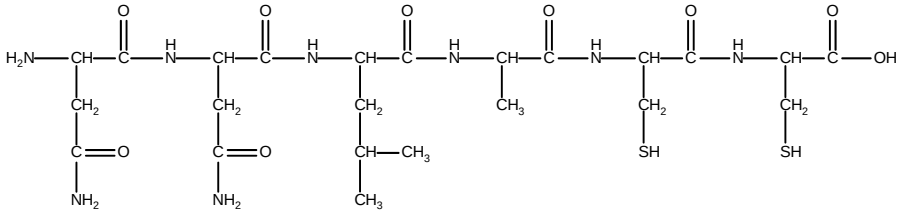
d)



methoxypolyethylene glycol acetic acid (PEG-COOH)

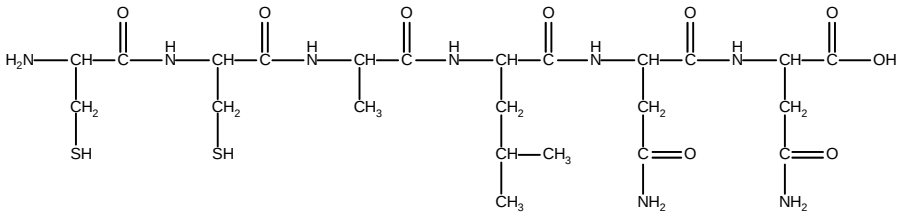
Figure S1: Structure of polymers

a)



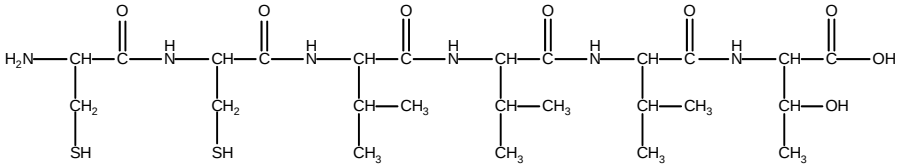
N N L A C C

b)



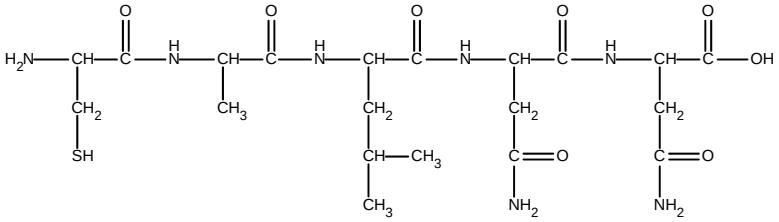
C C A L N N

c)



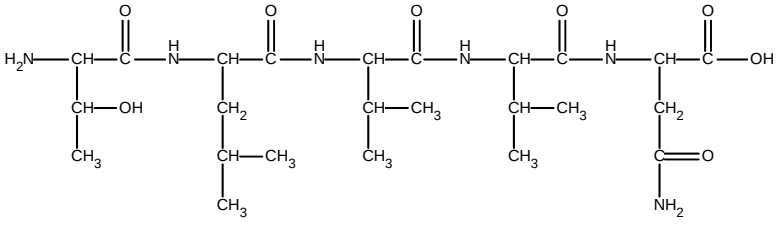
C C V V V T

d)



C A L N N

e)



T L V V N

Figure S2: Structure of peptides

2. Results

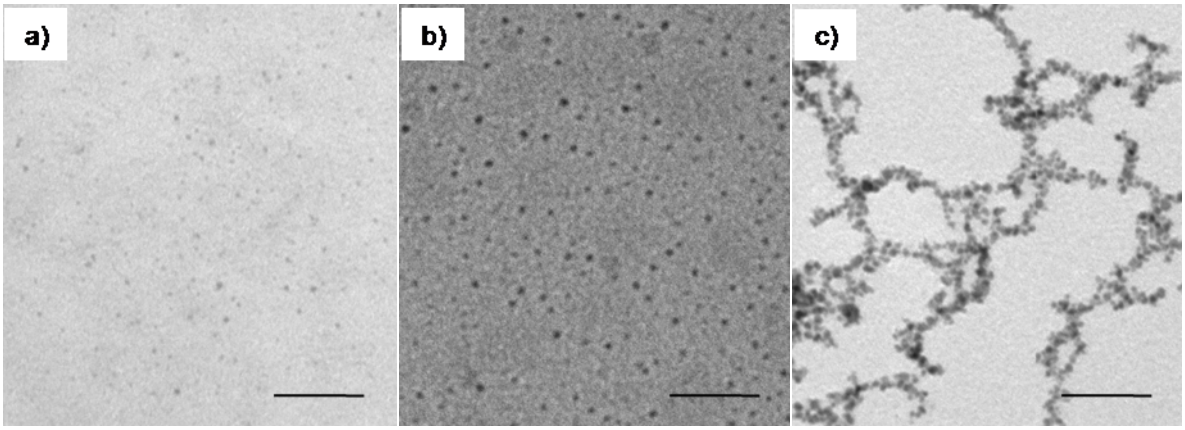


Figure S3: TEM images of CoPt NPs synthesised in the presence of 0.24 mM: a) PMAA-DDT, b) PEG-COOH and c) PEG-SH. Scale bar: 20 nm.

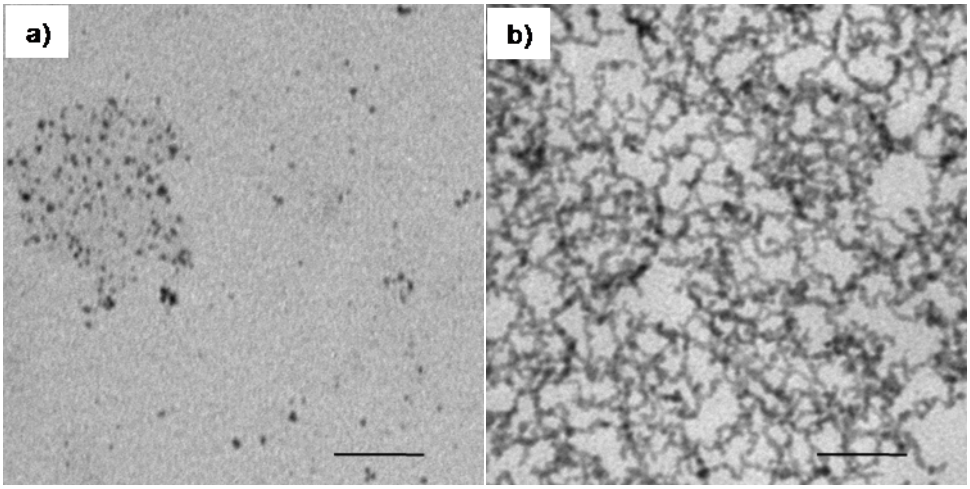


Figure S4: TEM images of the CoPt NPs synthesised in the presence of 0.24 mM PEG-SH and 0.12 mM: a) CALNN and b) TLVVN (b). Scale bar: 50 nm.

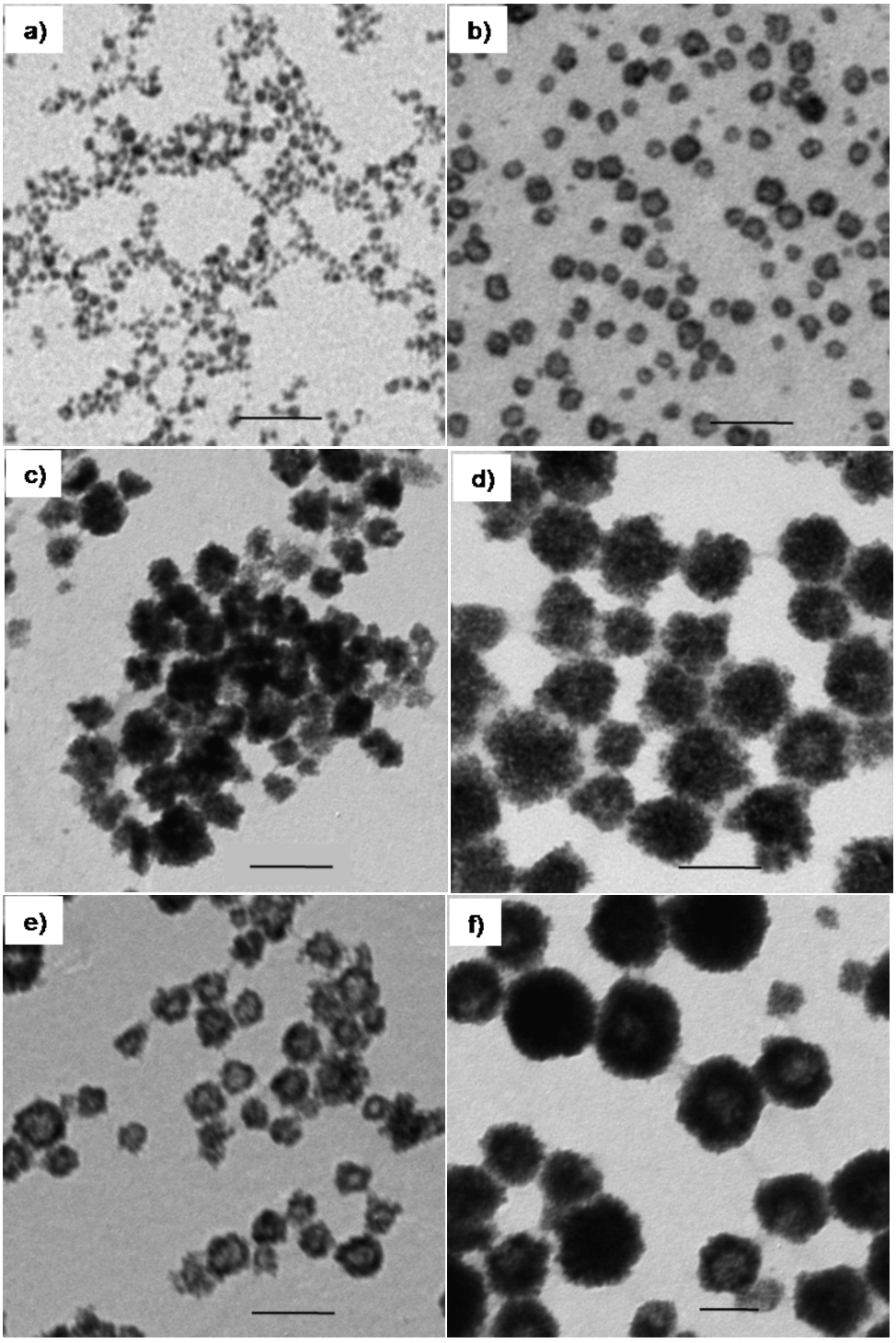


Figure S5: TEM images of CoPt hollow NPs synthesised in the presence of 0.24 mM PEG-SH (5,000 g/mol) and CCALNN: a) 0.06 mM, b) 0.24 mM, c) 0.60 mM and d) 0.96 mM; and 0.24 mM PEG-SH (20,000 g/mol) and CCALNN: e) 0.24 mM, f) 0.96 mM. Scale bar: 50 nm.

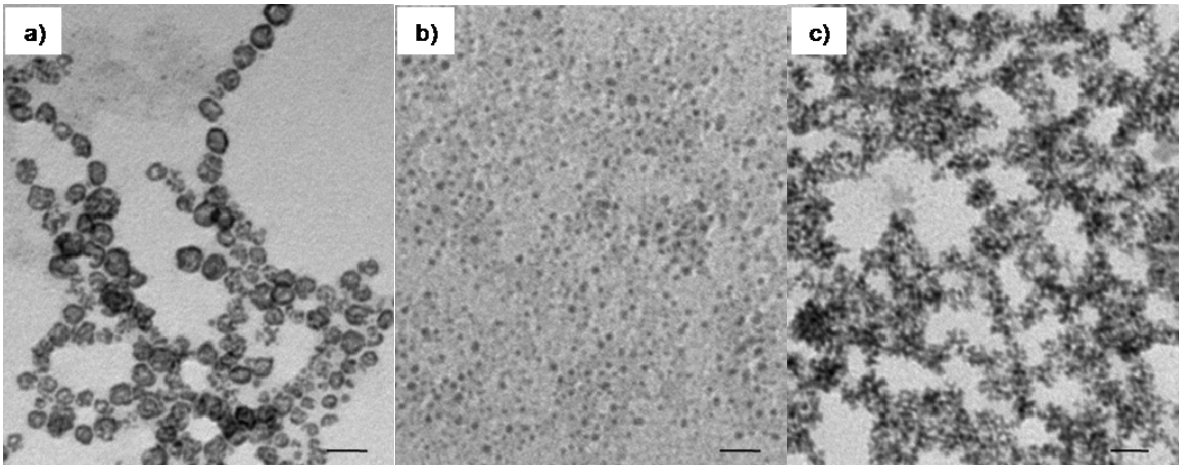


Figure S6: TEM images of NPs synthesised in the presence of 0.24 mM PEG-SH (5000 g/mol) and 0.12 mM CCALNN with different Co/Pt salt ratio: a) 3:1, b) 9:1 and c) only Pt salt. Scale bar: 20 nm.

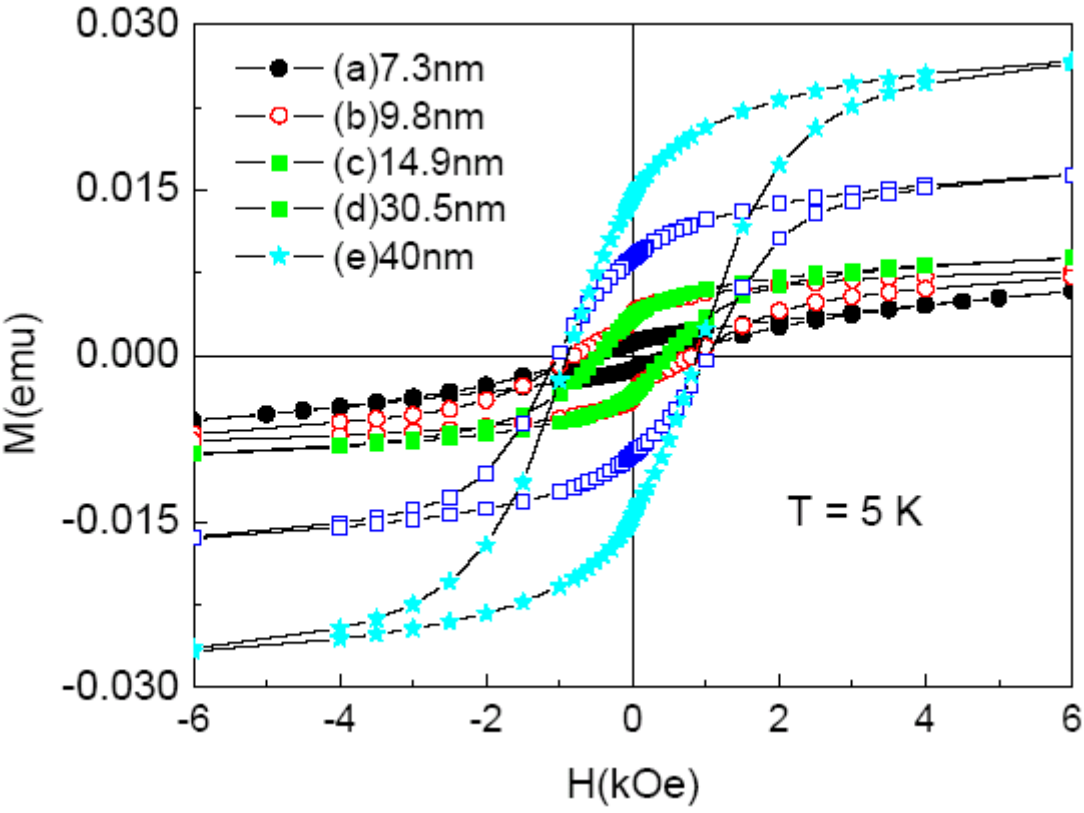


Figure S7: Hysteresis loops measured at 5 K of CoPt hollow nanostructures synthesis in the presence of mixture of 0.24 mM PEG-SH (5000 g/mol) and different CCALNN concentration: a) 0.06 mM, b) 0.12 mM, c) 0.24 mM, d) 0.60 mM and e) 0.96 mM.

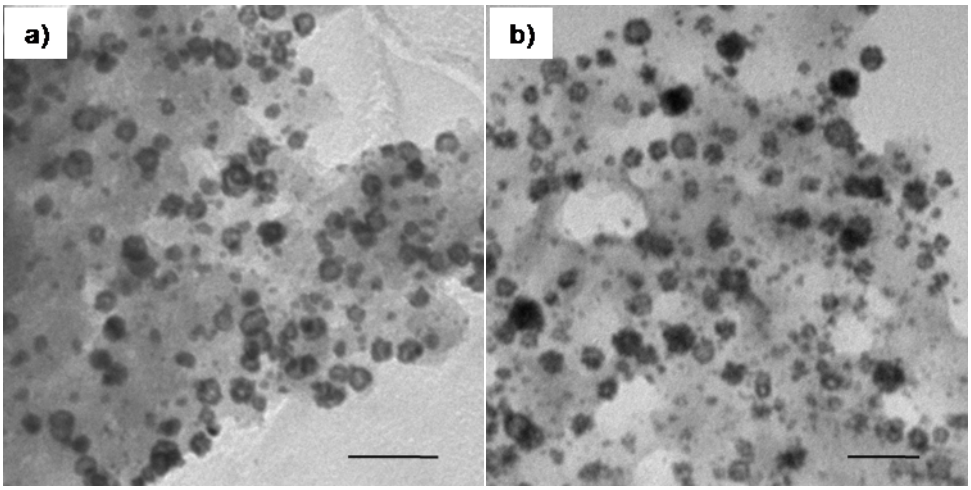


Figure S8: TEM images of: a) FePt and b) NiPt hollow nanostructures synthesised in the presence of 0.24 mM PEG-SH (5000 g/mol) and 0.12 mM CCALNN. Scale bar: 20 nm.