Electronic Supplementary Material (ESI) for Nanoscale

Hydrogen and seed co-mediated synthesis of FePt-Au Hybrid Nanoparticles

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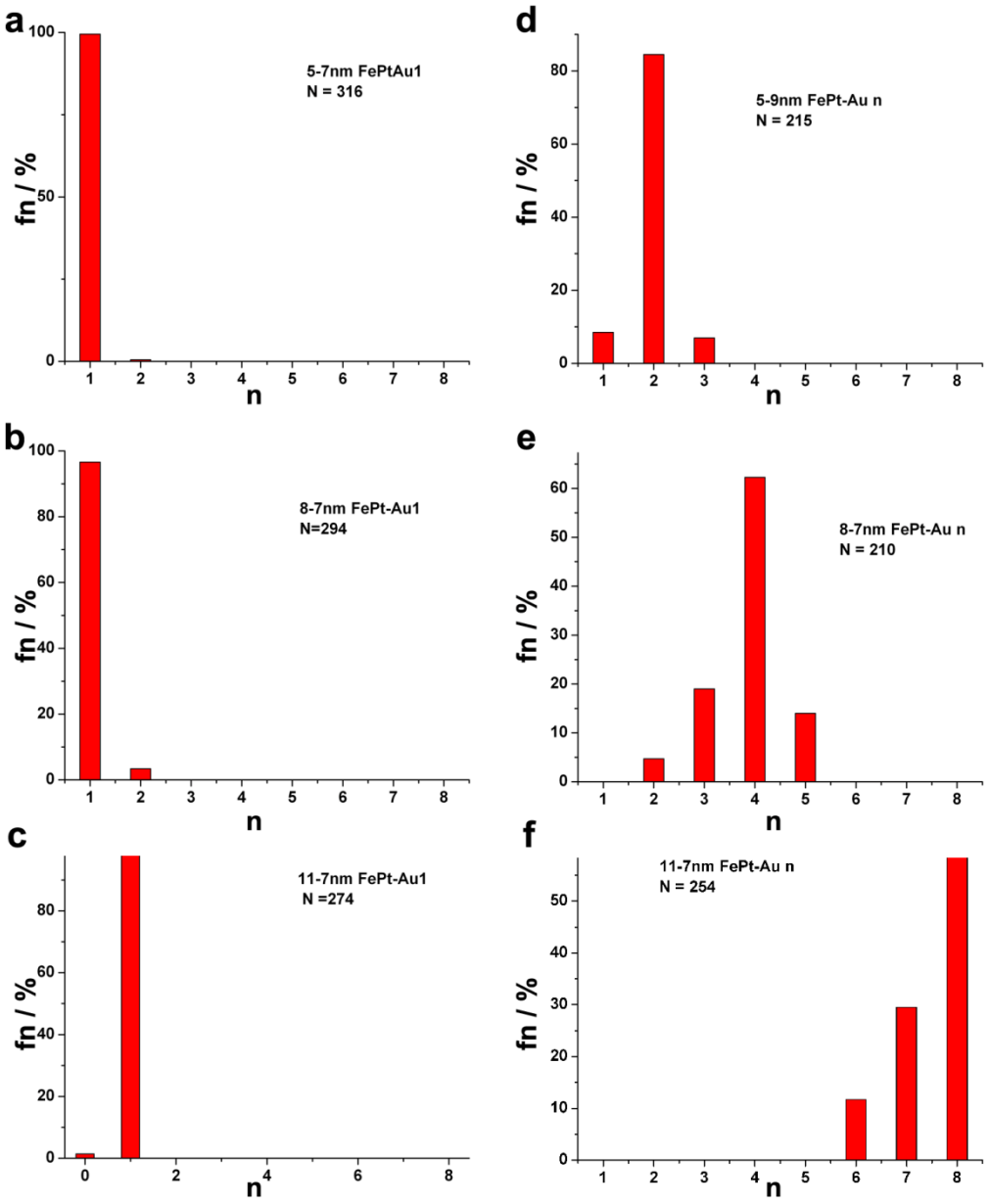

Fig. S1.Statistical analyses about the number "n" in all the $FePtAu_n$ HNPs.

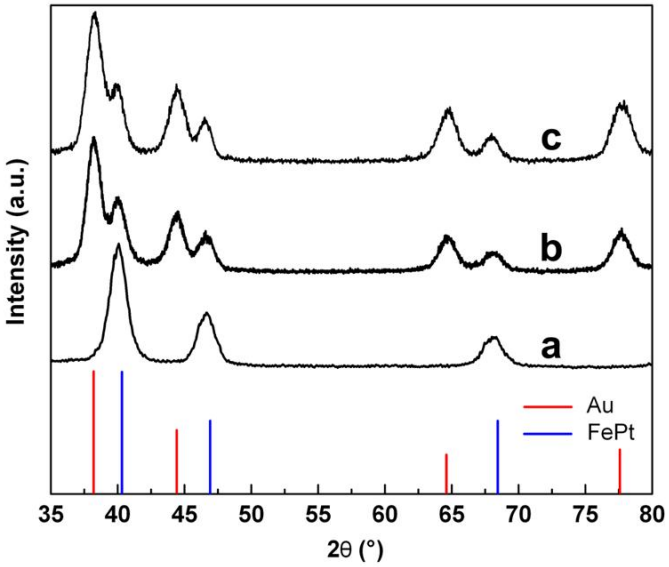

Fig. S2. XRD pattern of (a) 8 nm FePt seeds, and related (b) FePt-Au_1 and (c) FePt-Au_n HNPs.

	Fe:Pt		
Index	FePt seeds	FePt-Au_1	FePt-Au_n
11nm	31.5:68.5	32:68	33:67
8nm	27:73	29:71	28.5:71.5
5nm	35:65	37:63	37:63

Table. S1. ICP analysis of FePt-Au HNPs and FePt seeds (Fe:Pt stoichiometry)

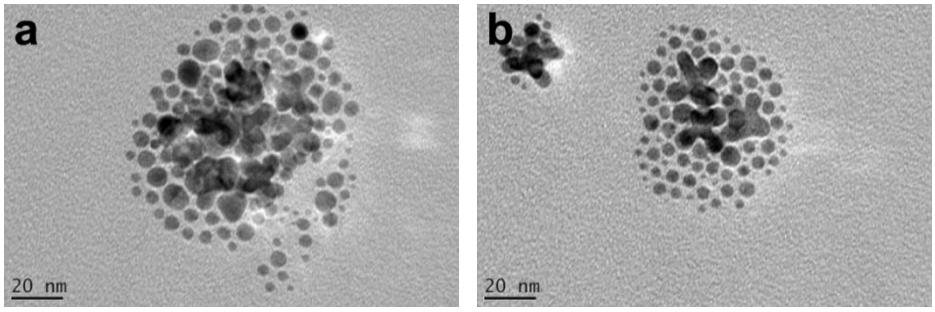

Fig. S3 TEM images of FePt-Au products using tert-butylamin-borane as reducing agent

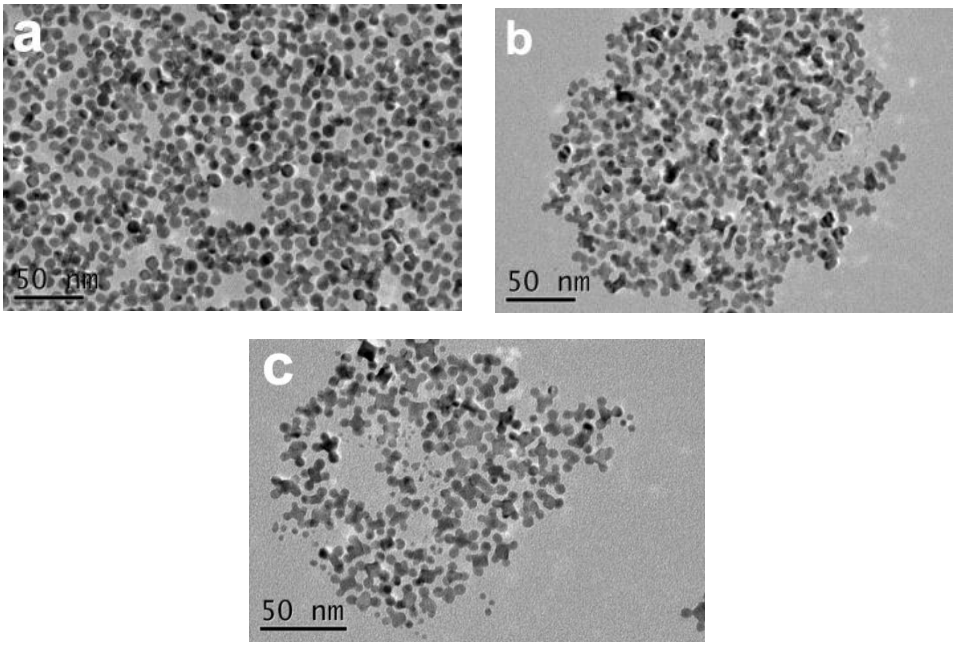

Fig. S4 FePtAun HNPs obtained when the surfactant was set as (a) pure OAm, (b) OA:OAm=1, and (c) OA:OAm=2

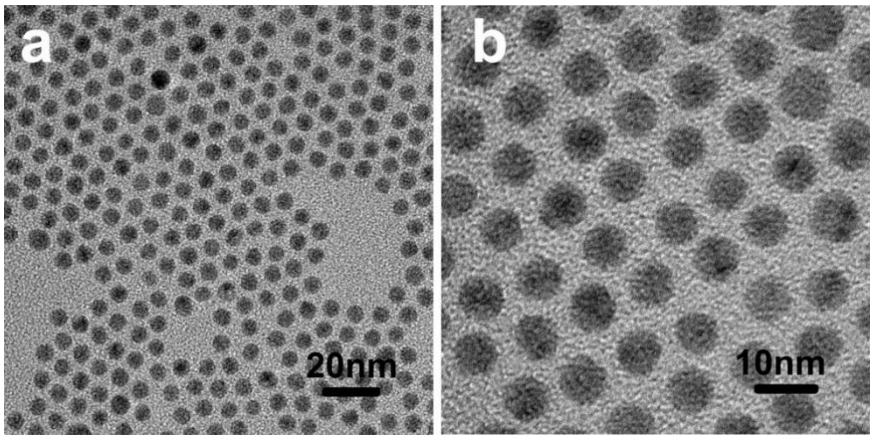

Fig. S5 TEM images of 7nm Au NPs.

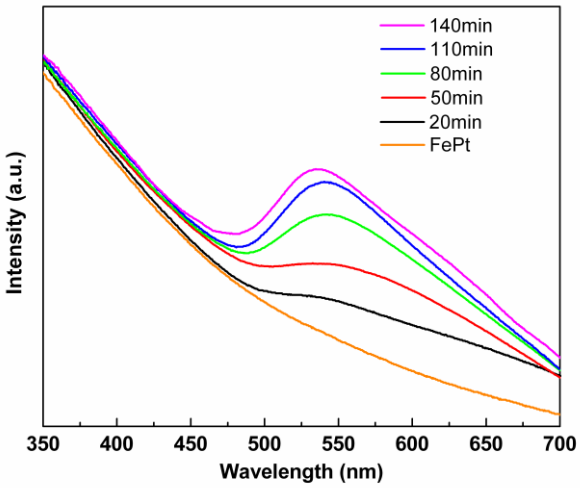

Fig. S6 UV-vis spectrum of FePt-Au_n HNPs based on 11nm FePt seeds during the growing process.

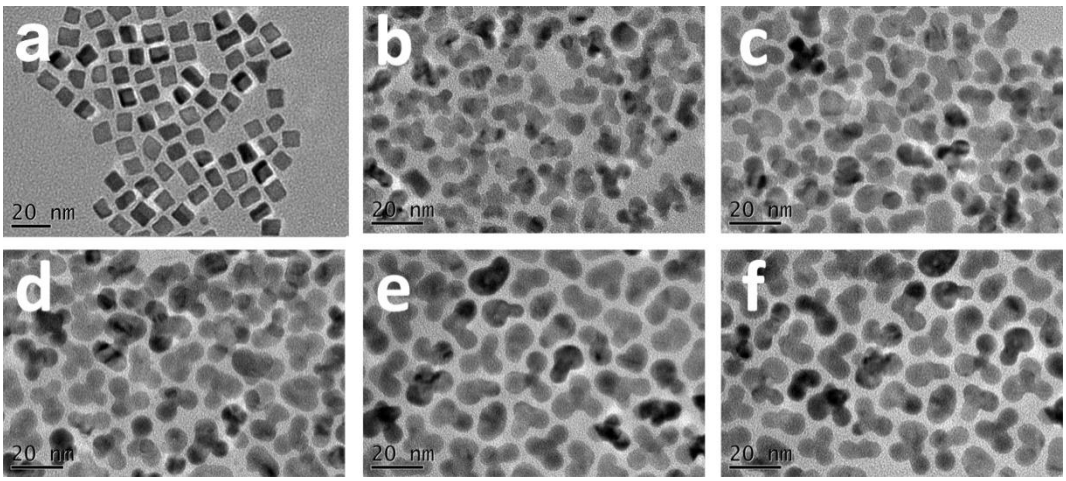

Fig. S7 TEM images of 8nmFePt-Au_n nanocrystals prepared using the standard procedure under Ar/H2 at 70℃, except for different periods of time: (a)0, (b)20, (c)50, (d)80, (e)110, (f)140min. scale bar=20nm

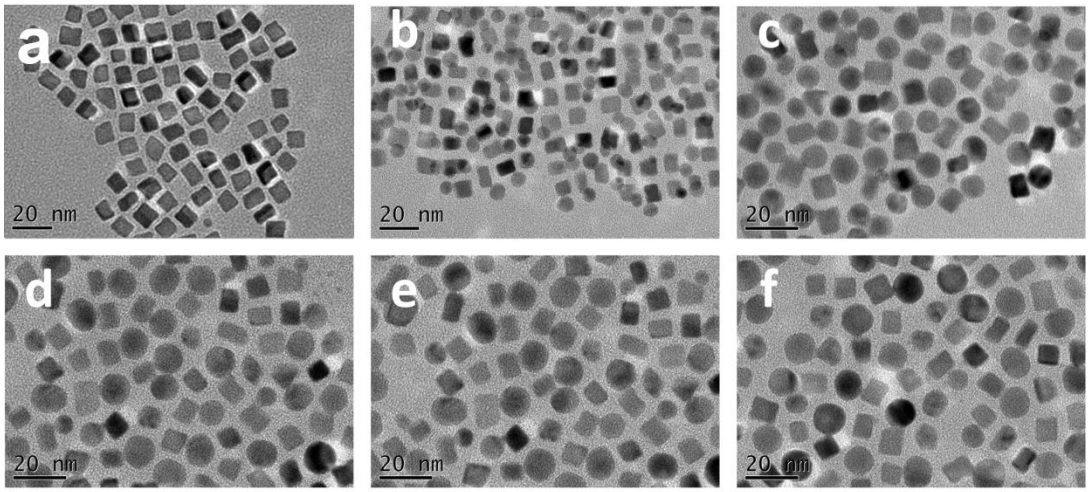

Fig. S8 TEM images of 8nmFePt-Au1 nanocrystals prepared using the standard procedure under Ar at 70℃, except for different periods of time: (a)0, (b)20, (c)50, (d)80, (e)110, (f)140min. scale bar=20nm

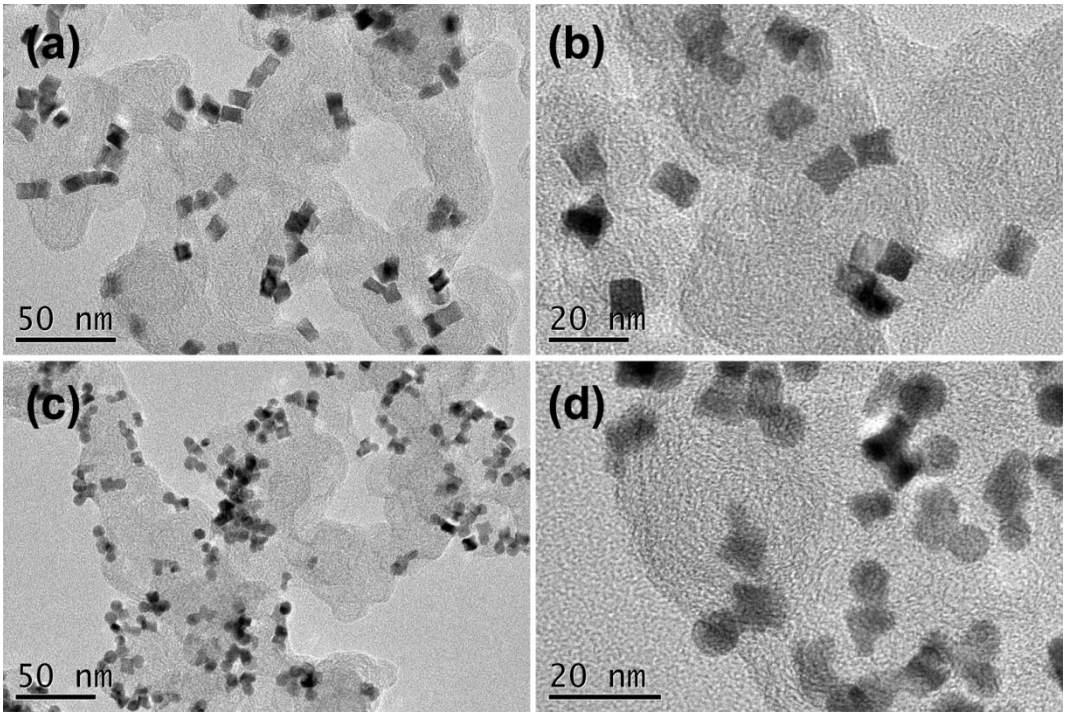

Fig. S9 TEM images of (a)(b)11nm FePt seeds
(c) (d) FePtAu1 HNPs deposited on Vulcan carbon.

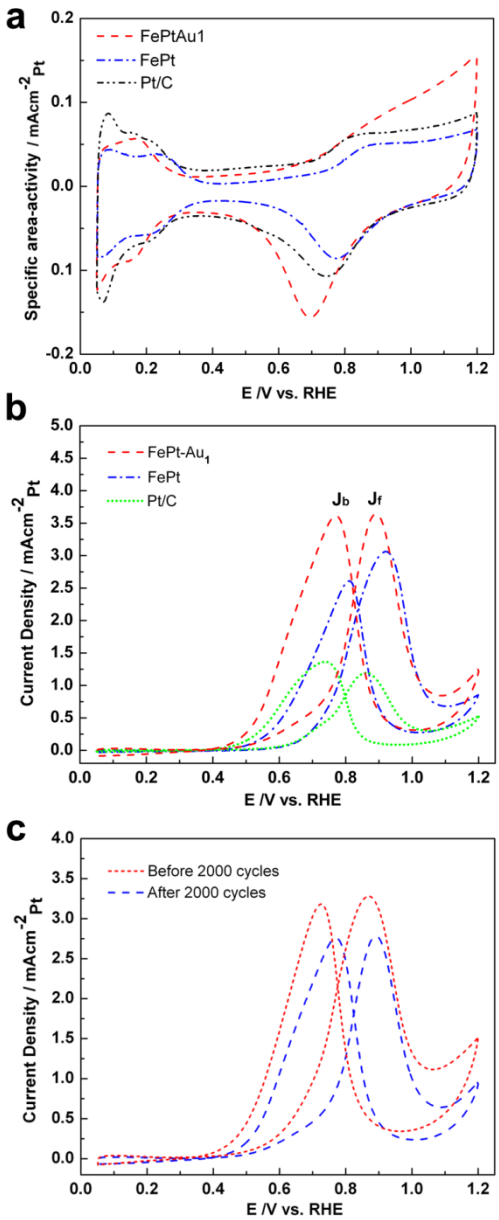

Fig. S10 (a) Cyclic voltammograms of FePtAu1, FePt and Pt/C in 0.5M HClO4, (b) Cyclic voltammograms of methanol oxidation on the above catalysts in 0.5M $HClO_4$ + 0.5M CH_3OH, (c) Cyclic voltammograms of methanol oxidation on FePtAu1 catalysts before and after 2000cycles. Scan rate: 50 mV/s.

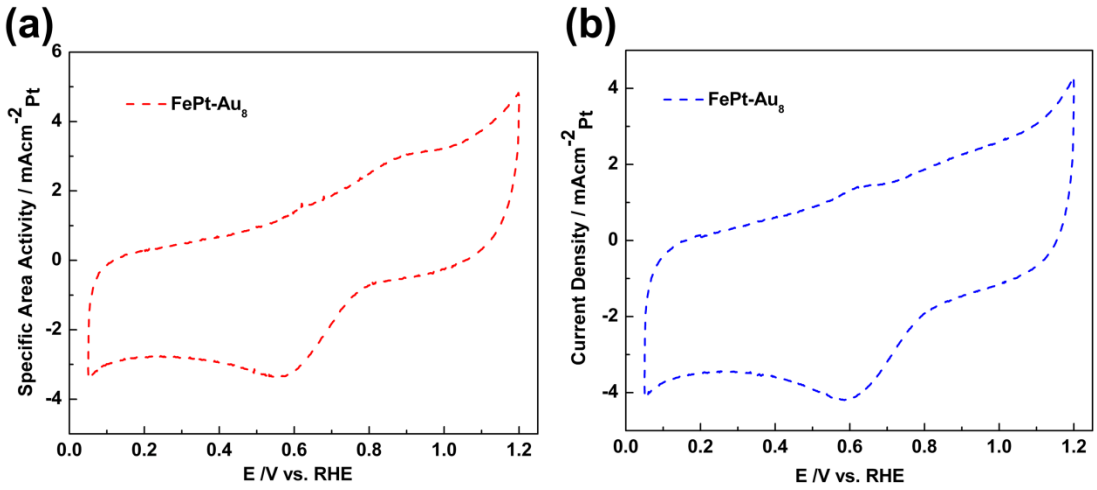

Fig. S11. (a) Cyclic voltammograms in N_2-saturated 0.5M $HClO_4$ and (b) Cyclic voltammograms of methanol oxidation in 0.5M $HClO_4$ and 0.5M CH_3OH on FePt-Au_8 catalysts. Scan rate: 50 mV/s.