

Supplementary Information

Metallopolymer precursor to ferromagnetic L1₀-CoPt nanoparticles: synthesis, characterization, nanopatterning study and potential application in data storage system

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Scherrer Analysis:Scherrer Equation: $D = 0.9\lambda/(\beta\cos2\theta)$

D: Particle diameter

 λ : Wavelength θ : Diffraction angle β : Full-width at half maximum in rad (FWHM)For Cu, $\lambda=0.154178$ nmHere, $D = 0.9 * 0.154178 / (0.04839 * \cos 41.0825) = 3.8$ nm**Table S1.** Original data for the PXRD pattern of as-prepared powder for CoPt NPs.

Pos. [°2Th.]	Height [cts]	FWHM [°2Th.]	d-spacing [Å]	Rel. Int. [%]
23.8773	31.60	0.0200	3.70063	33.02
32.9157	27.40	0.6610	2.71828	28.63
41.0825	95.69	0.4839	2.19026	100.00
47.1555	27.38	1.2590	1.91175	28.62
49.0624	7.85	0.4982	1.88622	8.20
53.6155	5.60	0.3066	1.70443	5.85
60.3920	7.50	0.4927	1.53039	7.83
68.9802	3.00	1.2000	1.37630	3.14
70.5237	10.40	1.1763	1.33816	10.87
83.6005	9.80	0.1912	1.15247	10.24
86.3451	7.66	0.0200	1.13388	8.01

Table S2. Diffraction peaks and 2 θ values for the PXRD pattern of as-prepared powder for CoPt NPs and corresponding values in the database (JCPDS no. 43-1358).

Diffraction peak	2 θ (measured in this work)	2 θ (reported in the database)	Diffraction peak	2 θ (measured in this work)	2 θ (reported in the database)
(001)	23.877	24.025	(112)	60.392	60.764
(110)	32.915	33.266	(220)	68.980	69.877
(111)	41.082	41.463	(202)	70.523	71.028
(200)	47.155	47.621	(331)	83.600	84.648
(002)	49.062	49.268	(113)	86.345	86.905
(201)	53.615	54.162			

Table S3. EDX results of as-prepared powder for CoPt NPs.

Element	Weight %	Atomic %	Uncert. %	Correction	k-Factor
C(K)	65.92	91.30	0.48	0.26	3.940
O(K)	2.36	2.45	0.04	0.49	1.974
Si(K)	0.00	0.00v	100.00	0.92	1.000
Co(K)	3.38	0.95	0.04	0.99	1.495
Cu(K)	16.23	4.24	0.13	0.99	1.667
Pt(L)	12.09	1.03	0.16	0.75	5.547

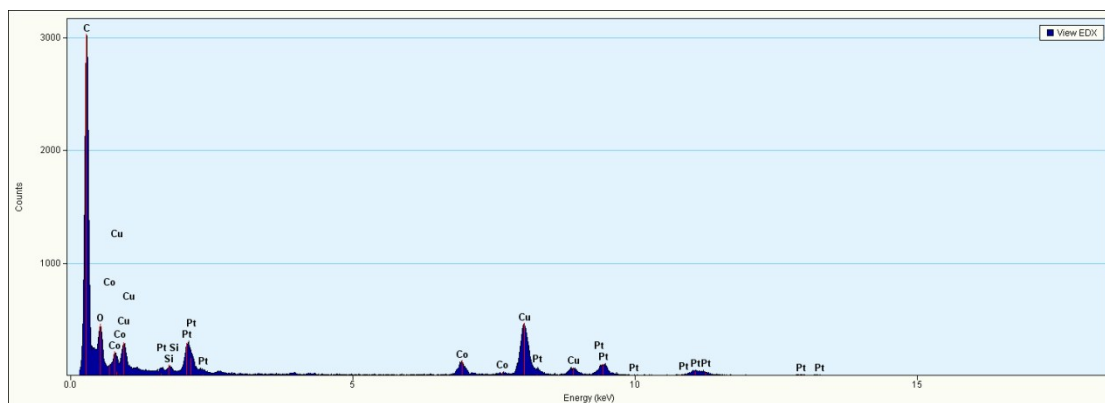


Figure S1. EDX spectrum of as-prepared powder for CoPt NPs.

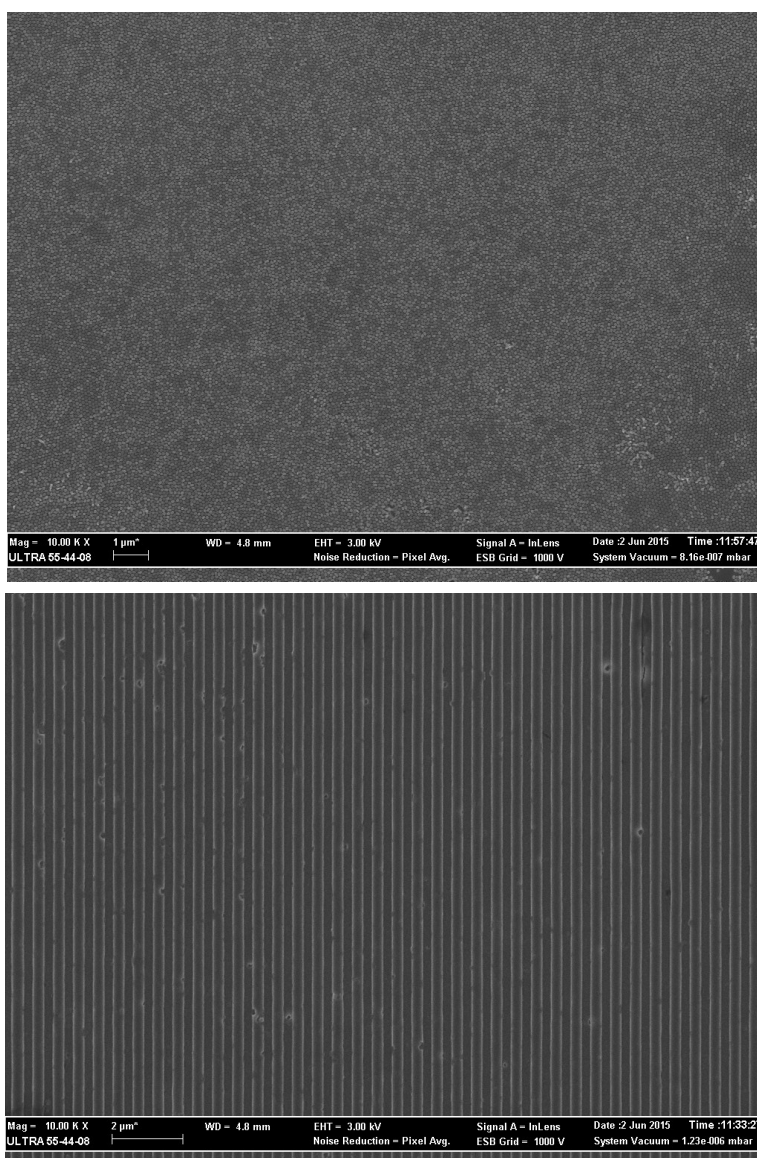


Figure S2. Zoom out SEM images of nanopatterned porphyrin-based CoPt-containing polymer and PS polymer blend through nanoimprint lithography: (up) nanodot patterns with periodicity of 100 nm which were fabricated by nanoimprinting with AAO template, (bottom) nanoline pattern with periodicity of 550 nm.