

Supporting information:

The Alignment of Barium Ferrite Nanoparticles from Their Suspensions in Electric and Magnetic Fields

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MF films from small BaFe particles: preparation procedure and properties

The whole preparation procedure was similar to that described in the main document, except that the suspension was prepared from small particles (no larger than 43 nm – Table S1). For this purpose the larger particles were magnetically separated from original suspension with a Frantz Isodynamic Magnetic Separator (S. G. Frantz Co. Inc.). The applied voltage was 40 V, which gives a magnetic field of 3.7 kOe. A total of 6 g of steel-wool filler was inserted into the separation column.

Table S1. Basic properties of the small particles

diameter (nm)	diameter (nm)/ fraction	thickness (nm)	M _{1T} (emu/g)	H _c (Oe)
6-43 (12±4)*	≤ 10 / 24% ≤ 20 / 98% > 30 / 2%	3	1.0	29

* average values in brackets, _{1T} measurement at magnetic field of 1 T

Table S2. Basic properties of the suspension from small particles

concentration (g/L)	zeta-potential (mV)	conductivity (μS/cm)
7	105	4

Table S3. Magnetic properties of the sintered MF films from small particles

OUT		IN	
Mr/Ms	Hc (Oe)	Mr/Ms	Hc (Oe)
0.67	3904	0.57	3933