

COMMUNICATION

Controlled manipulation of Fe₃O₄ nanoparticles in an oscillating magnetic field for fast ablation of microchannel occlusions

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Supplementary Materials

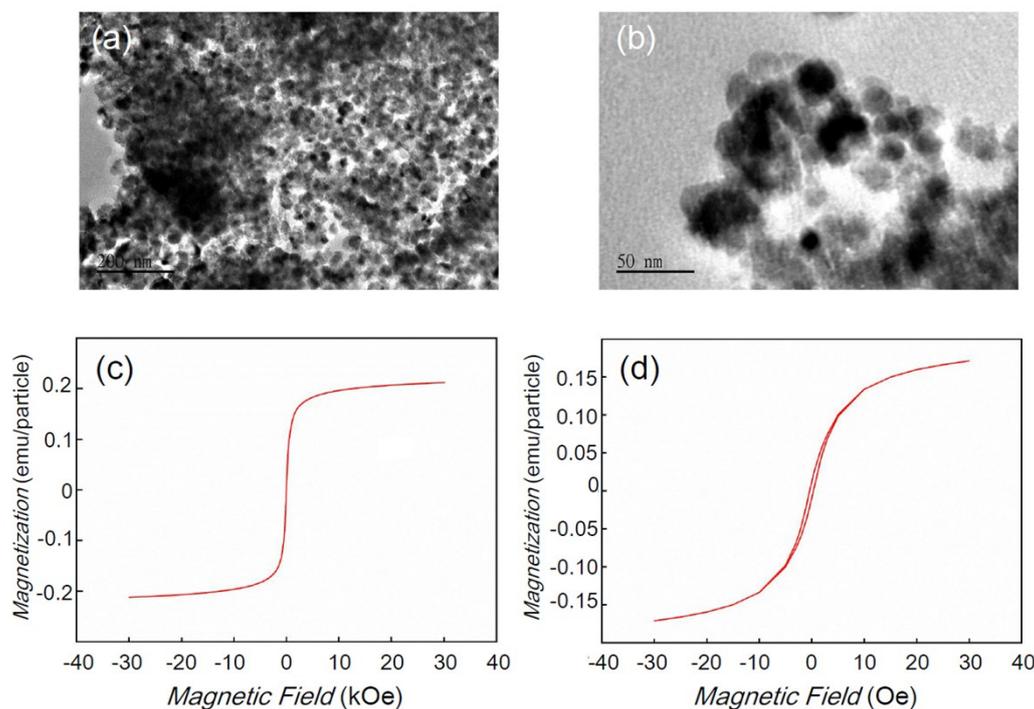


Figure S1. Bright field TEM pictures of the Fe₃O₄ nanoparticles at (a) 25000x and (b) 100,000x magnification. Magnetization vs magnetic field (M-H) curves of the nanoparticles at (c) room temperature and (d) low fields.

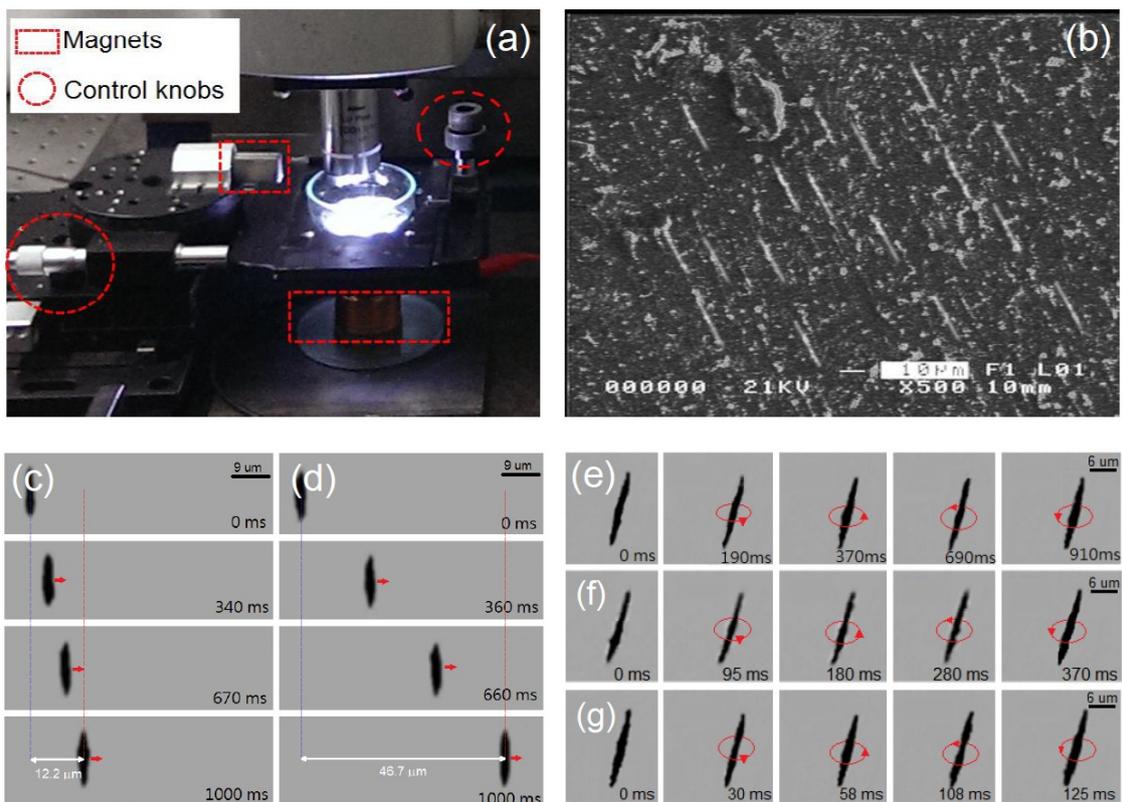


Figure S2. Optical tracking of Fe₃O₄ microrod. (a) Configuration of optical and magnetic setup. (b) Agglomerated Fe₃O₄ nanoparticles. (c)-(d) Enhanced images for calculation of linear speed. Dashed blue and red lines indicate the starting and ending positions for the calculation: (c) $dH/dx = 13 \times 10^5 \text{ A m}^{-1}$ and (d) $dH/dx = 21 \times 10^5 \text{ A m}^{-2}$. (e)-(g) Enhanced images for calculation of rotation speed: (e) $H = 470 \text{ A m}^{-1}$, (f) $H = 720 \text{ A m}^{-1}$, and (g) $H = 1100 \text{ A m}^{-1}$.

Video S1 Video of agglomeration and motion control of Fe₃O₄ nanoparticles in an oscillating magnetic field.

Video S1 Video of thrombus removal process at low magnification.

Video S3 Video of thrombus removal process at high magnification.