

## SUPPLEMENTARY MATERIALS

# Core-shell Magnetic Nanoparticles for highly sensitive Magnetoelastic Immunosensor

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### Hysteresis loop of $\text{Fe}_3\text{O}_4$ NPs

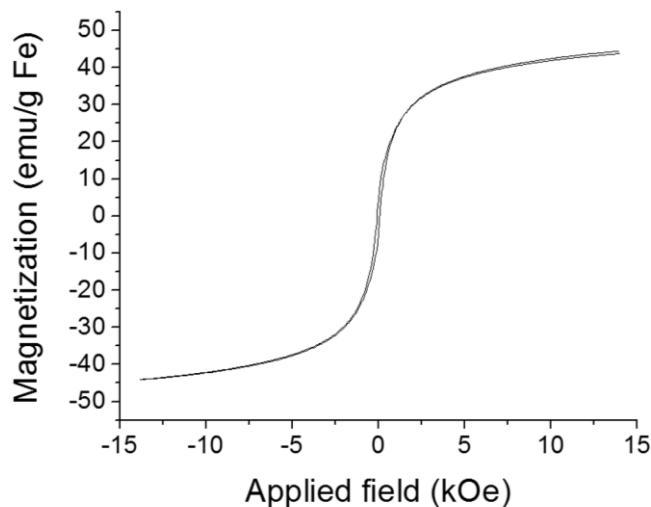


Figure S1. Room-temperature M-H curve of the magnetite samples [supplied by the nanoparticles manufacturer (Ocean Nano Tech, LLC)] measured by cycling the external magnetic field between  $-14000$  Oe and  $14000$  Oe. This magnetization curve shows a very small hysteresis behavior for the samples and exhibits small values of coercive field and remnant magnetization. This indicates that the nanoparticles can safely be considered as superparamagnetic.