

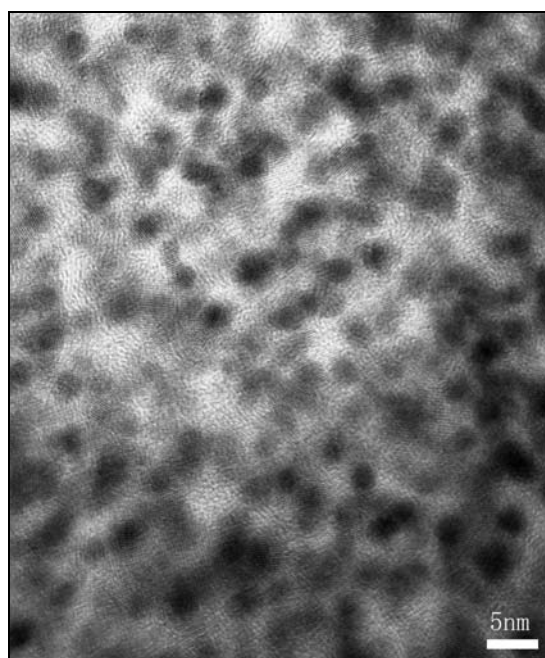
## Using Biofunctional Magnetic Nanoparticles to Capture Gram-negative Bacteria at A Ultra-Low Concentration

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### Supporting Information

*Synthesis of FePt--Van (2)*: The synthesis of FePt-Van is carried out by heterogeneous exchanging reaction between FePt@surfactant in hexane and bis(vancomycin) cystamide in DI water. To a 25ml round-bottomed flask equipped with magnetic stir, 1 mg bis(Vancomycin) cystamide, 10 ml DI water, and 4 ml hexane solution of FePt were added. The reaction was stirred vigorously to thoroughly mix the two phases. After 12 hours of reaction, the FePt--Van product accumulated in the aqueous solution. The aqueous phase was separated and washed twice with 10 ml of hexane. The brown FePt--Van solution was kept under N<sub>2</sub>.

*Synthesis of FePt--NH<sub>2</sub> (4)*: To a 25ml round-bottomed flask equipped with magnetic stir, 0.5mg of cystamine dihydrochloride, 10 ml of DI water, and 4 ml hexane solution of FePt were added. The reaction was stirred vigorously to thoroughly mix the two phases. After 12 hours of reaction, the aqueous phase containing FePt--NH<sub>2</sub> was separated and washed twice with 10 ml of hexane. The brown FePt--NH<sub>2</sub> solution was kept under N<sub>2</sub>.



**Fig. 1.** Hi-Res TEM of **2**