

Electronic Supplementary Material (ESI) for New Journal of Chemistry.

This journal is © The Royal Society of Chemistry and the Centre National de la Recherche Scientifique 2016

Supporting Information

Fabrication of $\text{Fe}_3\text{O}_4@\text{SiO}_2@\text{Ag}$ magnetic-plasmonic nanospindles as highly efficient SERS active substrates for label-free detection of pesticides

Qinye He,^{a,b,c} Aiwu Zhao,^{*a,b,c} Lei Li,^{a,b,c} Henghui Sun,^{a,c} Dapeng Wang,^{a,b,c} Hongyan Guo,^{a,b,c} Mei Sun,^{a,c} Ping Chen^{a,c}

^a Institute of Intelligent Machines, Chinese Academy of Sciences, Hefei, 230031, P. R. China.

E-mail: awzhao@iim.ac.cn; Fax: +86-551-65592420; Tel: +86-551-65593360

^b Department of Chemistry, University of Science and Technology of China, Hefei, 230026, Anhui, P. R. China

^c State Key Laboratory of Transducer Technology, Chinese Academy of Sciences, Hefei, 230031, P. R. China

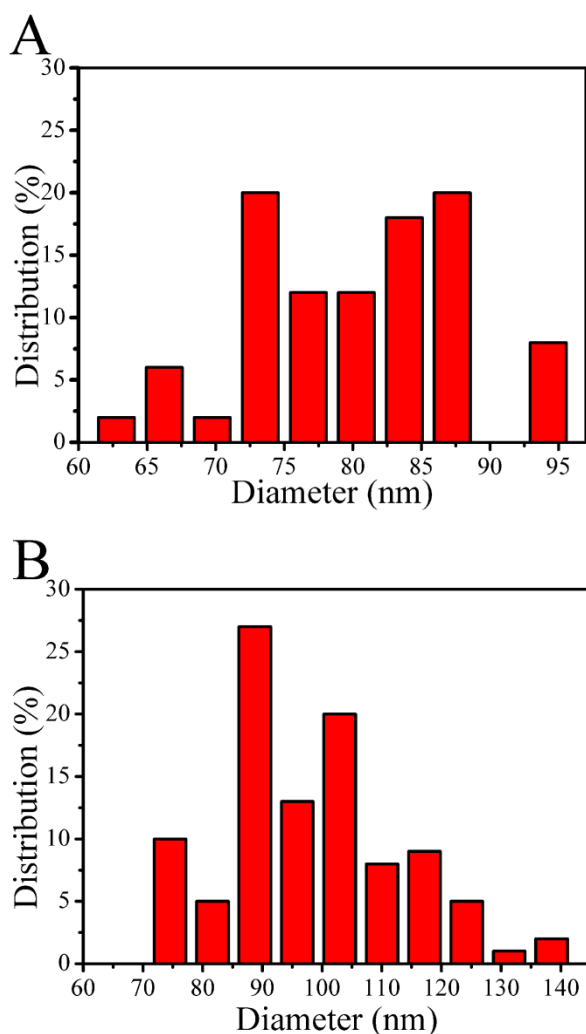


Figure S1. Lateral size distributions of the $\beta\text{-FeOOH}$ (A) and the $\beta\text{-FeOOH}@\text{SiO}_2$ nanospindles (B).

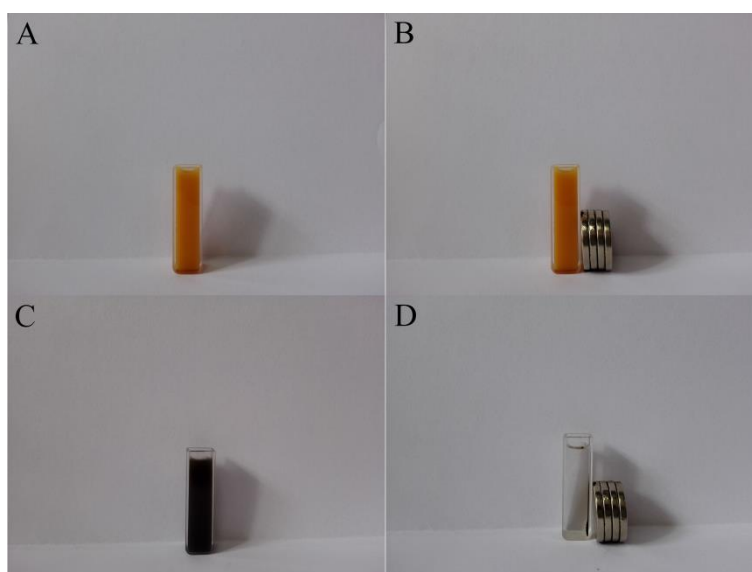


Figure S2. Optical images of the β -FeOOH@SiO₂ suspension solution (A-B) and the Fe₃O₄@SiO₂ suspension solution (C-D) without an external magnetic field and in an external magnetic field.

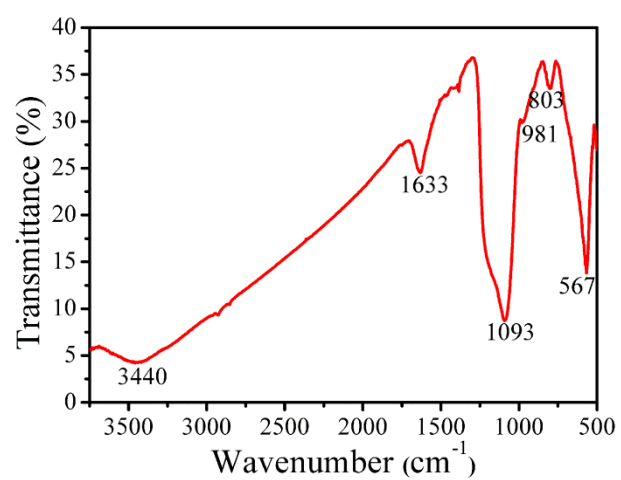


Figure S3. IR spectra of the Fe₃O₄@SiO₂ nanospindles.

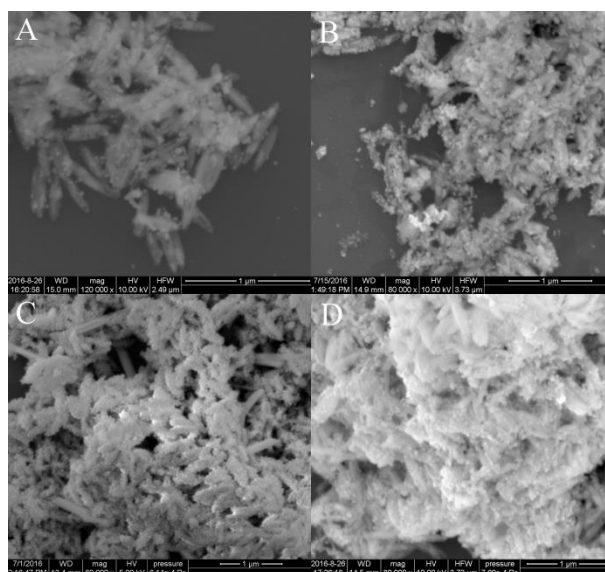


Figure S4. SEM images of the $\text{Fe}_3\text{O}_4@\text{SiO}_2@\text{Ag}$ nanopindles fabricated at various concentrations of AgNO_3 from (A)10mM, (B)20mM, (C)40mM to (D)80mM.

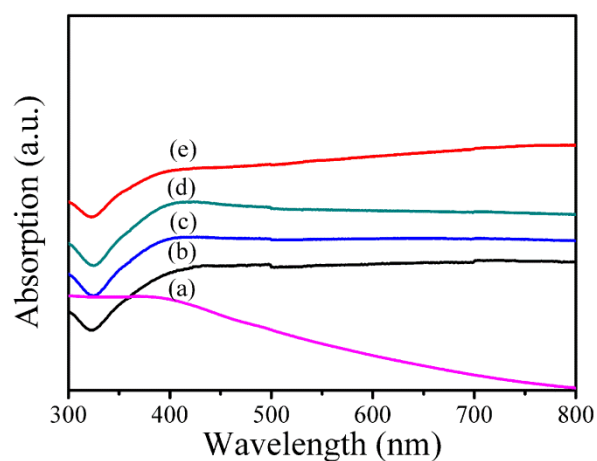


Figure S5. UV-vis spectra of (a) $\text{Fe}_3\text{O}_4@\text{SiO}_2$ nanopindles and $\text{Fe}_3\text{O}_4@\text{SiO}_2$ nanopindles prepared with following concentrations of AgNO_3 : (b) 10 mM; (c) 20 mM; (d) 40 mM; (e) 80 mM.



Figure S6. Optical images of the zeta potential of $\text{Fe}_3\text{O}_4@\text{SiO}_2$ nanopindles in ultrapure water.