Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Multifunctional Iron Oxide – Carbon Hybrid Microrods

Lu Zhu [a]*, Weijie Huang [b], Zachary S. Rinehart [a], Jason Tam [c] and Yiping Zhao [b]

[a] *College of Engineering, University of Georgia, Athens, GA 30602, USA*

[b] *Department of Physics and Astronomy, University of Georgia, Athens, GA 30602, USA*

[c] *cDepartment of Materials Science and Engineering, University of Toronto, Toronto, ON M5S 3E4, Canada.*

S1. Control synthesis.

0.7575 g $Fe(NO_3)_3 \cdot 9H_2O$ was thoroughly dissolved into 75 ml EG. Then the solution was transferred into a 100 ml Teflon-lined stainless steel autoclave and maintained at a temperature of 220 ^oC for 12 h. The black product was then washed twice with ethanol.

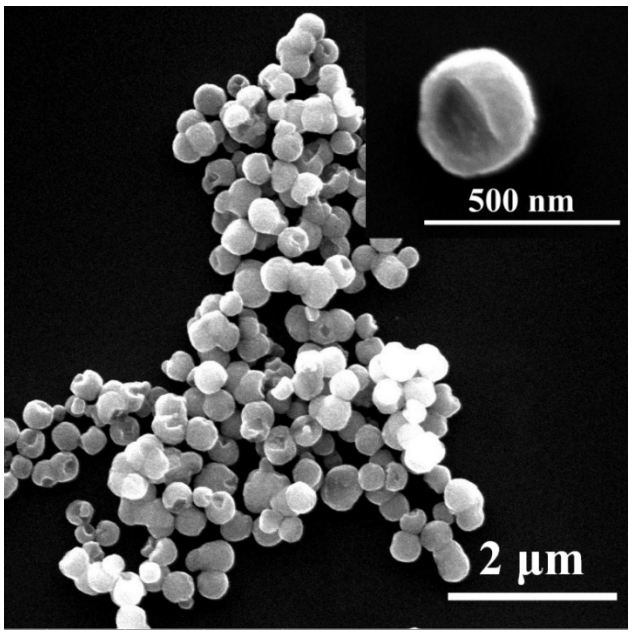


Figure S1. SEM image of the product synthesized without glucose.

S2. MB and MO solution concentrations: Calibration curve.

The calibration curves shown blow were used to compute the concentrations of MB and MO solutions through UV-Vis absorbance spectra. The absorbance of MB solution at λ_{max} = 644 nm and absorbance of MO solution at λ_{max} = 466 nm were used to estimate the concentrations of solutions from their calibration curves.

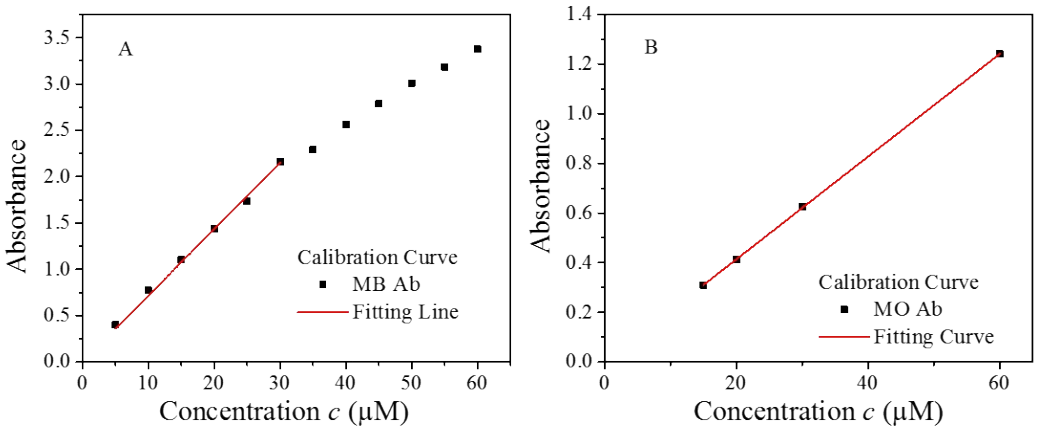


Figure S2. Concentration calibration curves of MB (A) and MO (B) solutions.

S3. Set-up of clot lysis experiments.

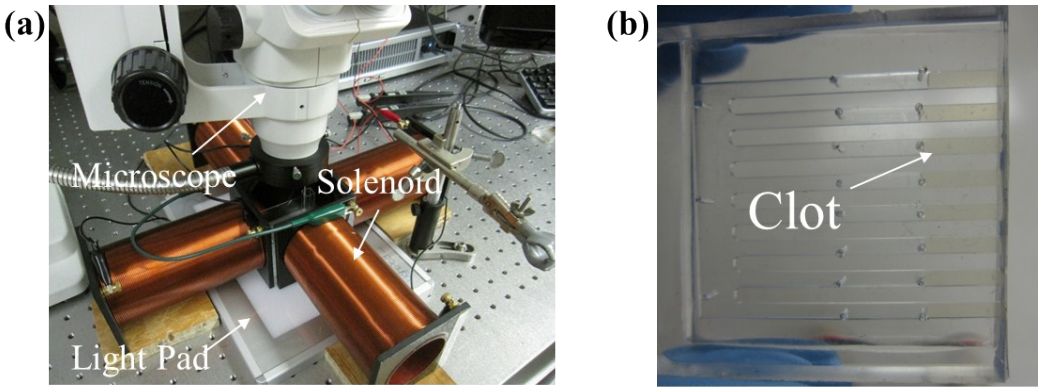
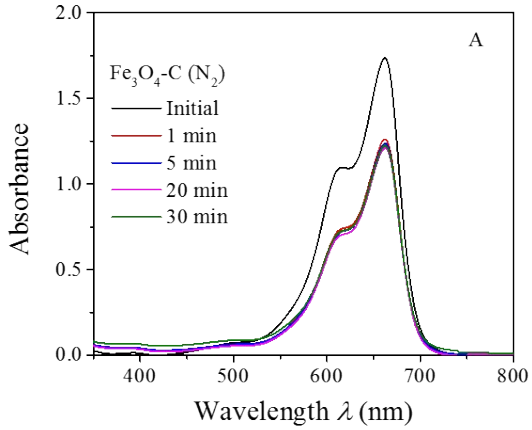
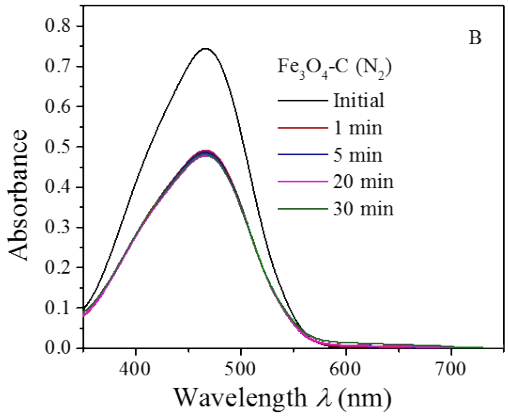
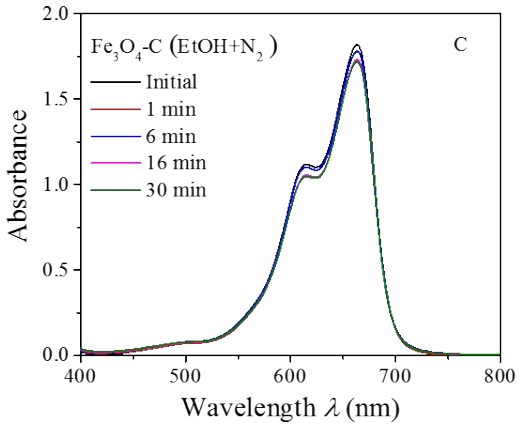


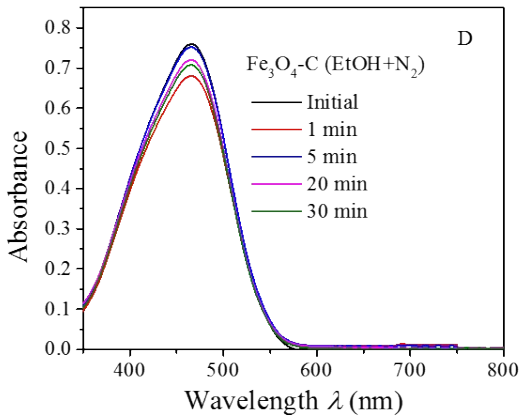
Figure S3. Experimental set-up of magnetic field (a) and PDMS channels with blood clots (b).

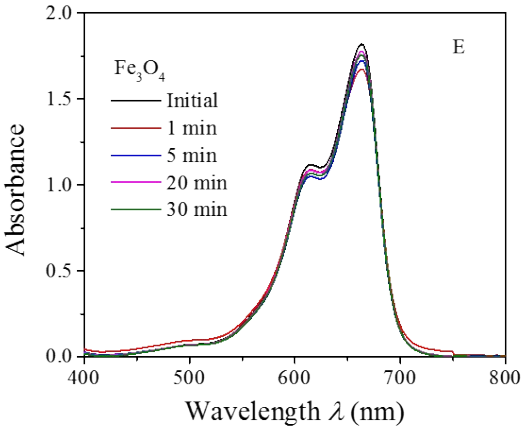
S4. Dye Absorption capability of different micro-rods.

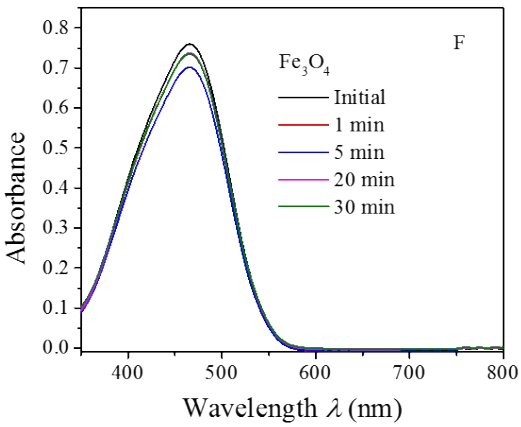

A
Fe_3O_4-C (N_2)
Initial
1 min
5 min
20 min
30 min
Absorbance
Wavelength λ (nm)


B
Fe_3O_4-C (N_2)
Initial
1 min
5 min
20 min
30 min
Absorbance
Wavelength λ (nm)


C
Fe_3O_4-C (EtOH+N_2)
Initial
1 min
6 min
16 min
30 min
Absorbance
Wavelength λ (nm)


D
Fe_3O_4-C (EtOH+N_2)
Initial
1 min
5 min
20 min
30 min
Absorbance
Wavelength λ (nm)


E
Fe_3O_4
Initial
1 min
5 min
20 min
30 min
Absorbance
Wavelength λ (nm)


F
Fe_3O_4
Initial
1 min
5 min
20 min
30 min
Absorbance
Wavelength λ (nm)

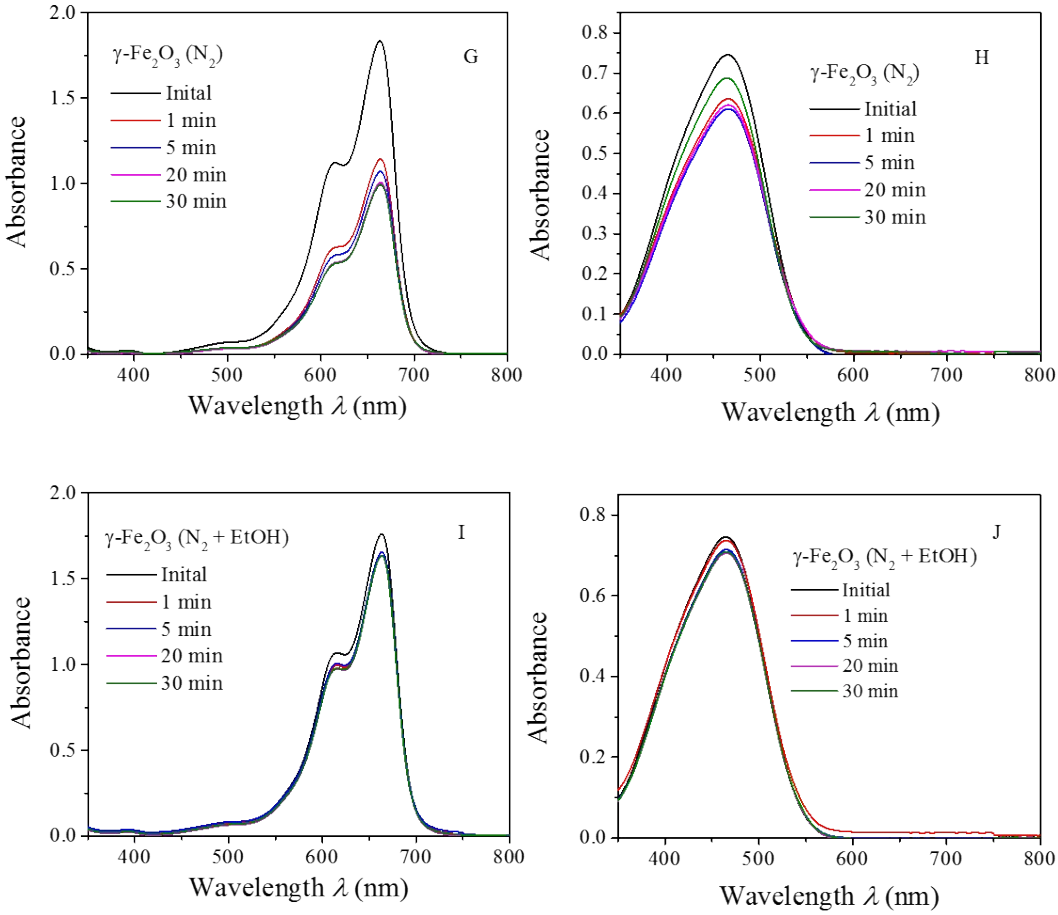


Figure S4. Time dependent absorbance spectra of methylene blue (MB) (left column) and methyl orange (MO) (right column) solutions with different iron oxide microrods.