Electronic Supplementary Information for Dalton Transactions

Supporting Information

FerriNaphth: A Fluorescent Dosimeter for Redox Active Metals

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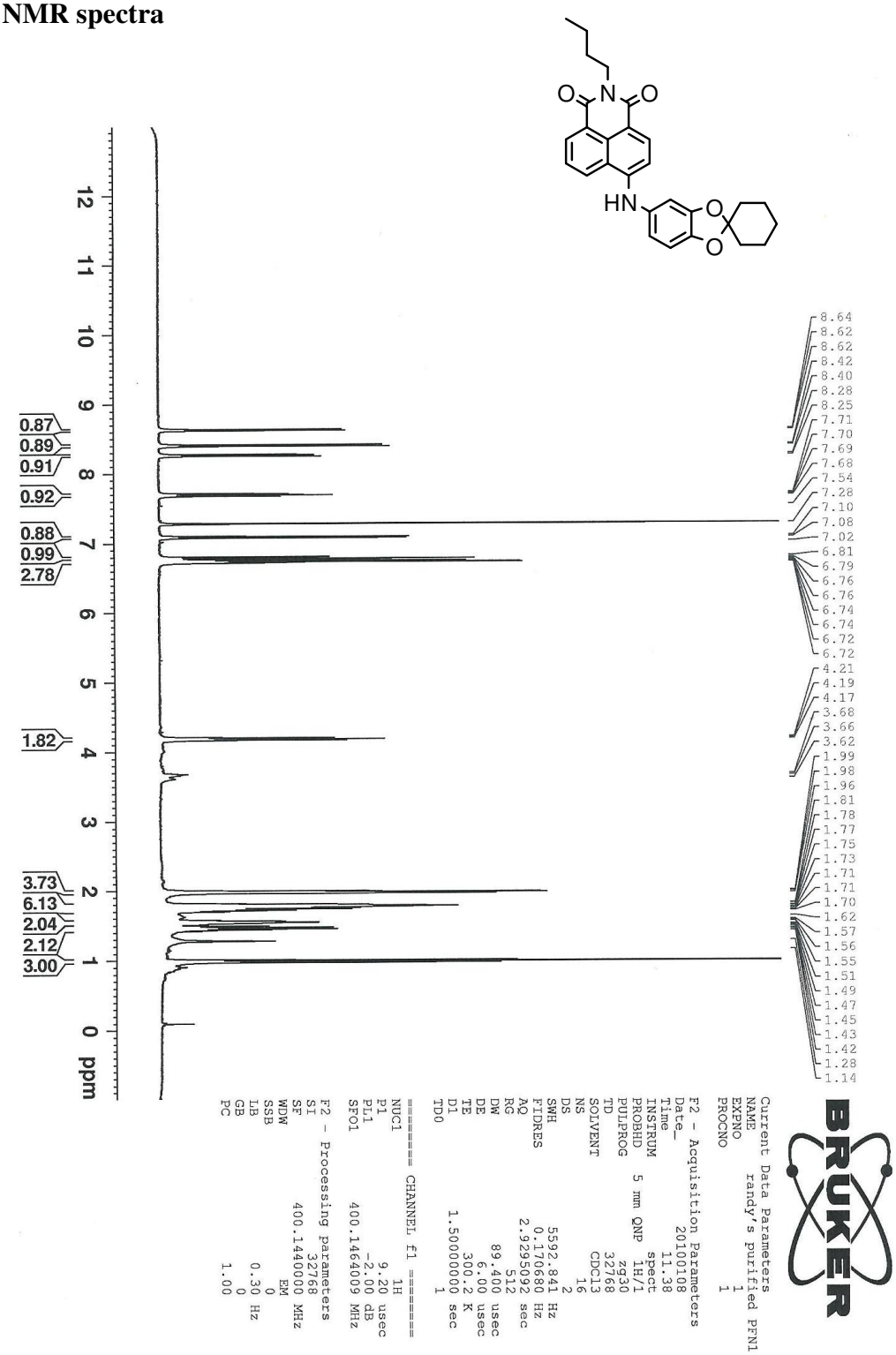
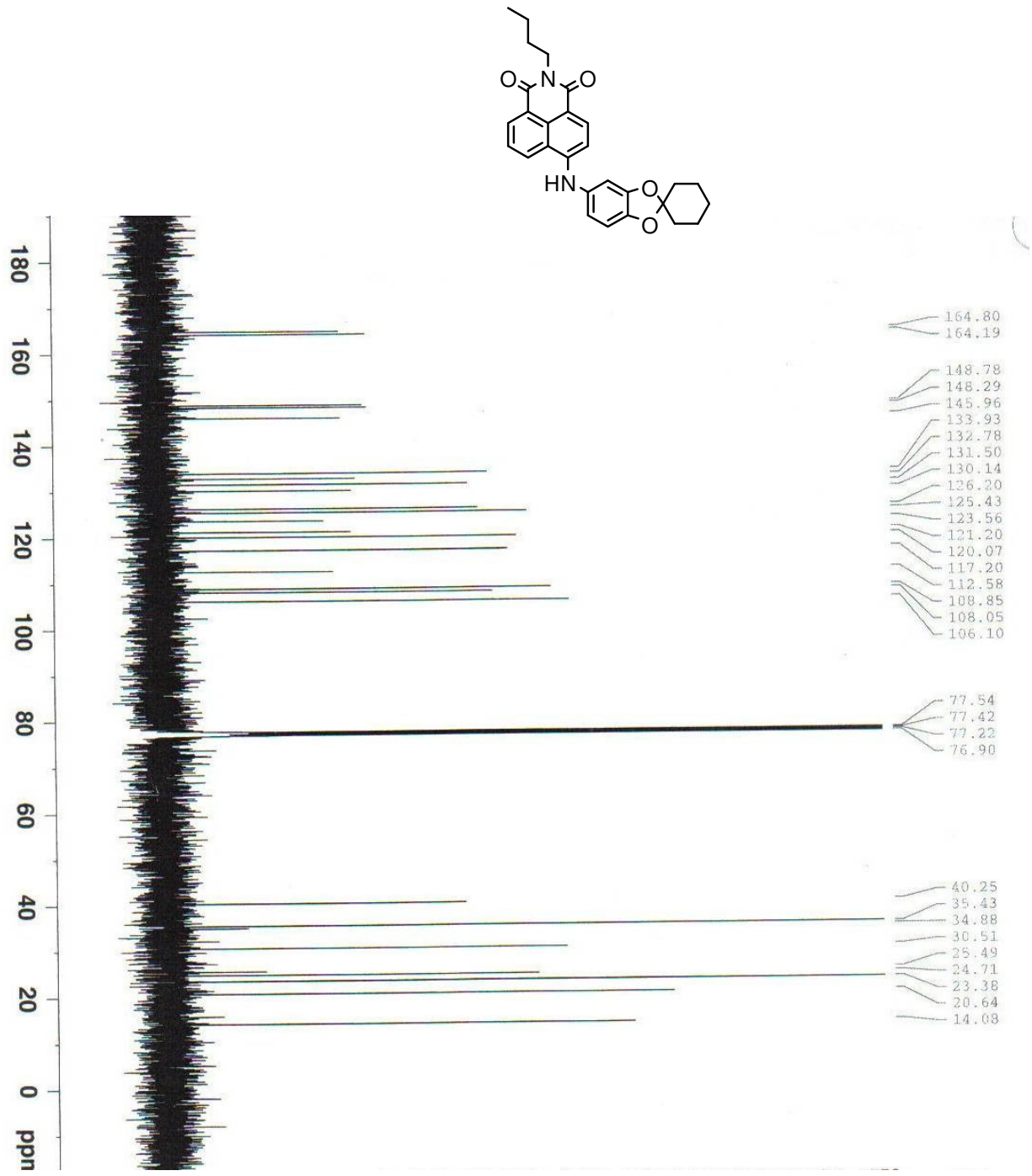
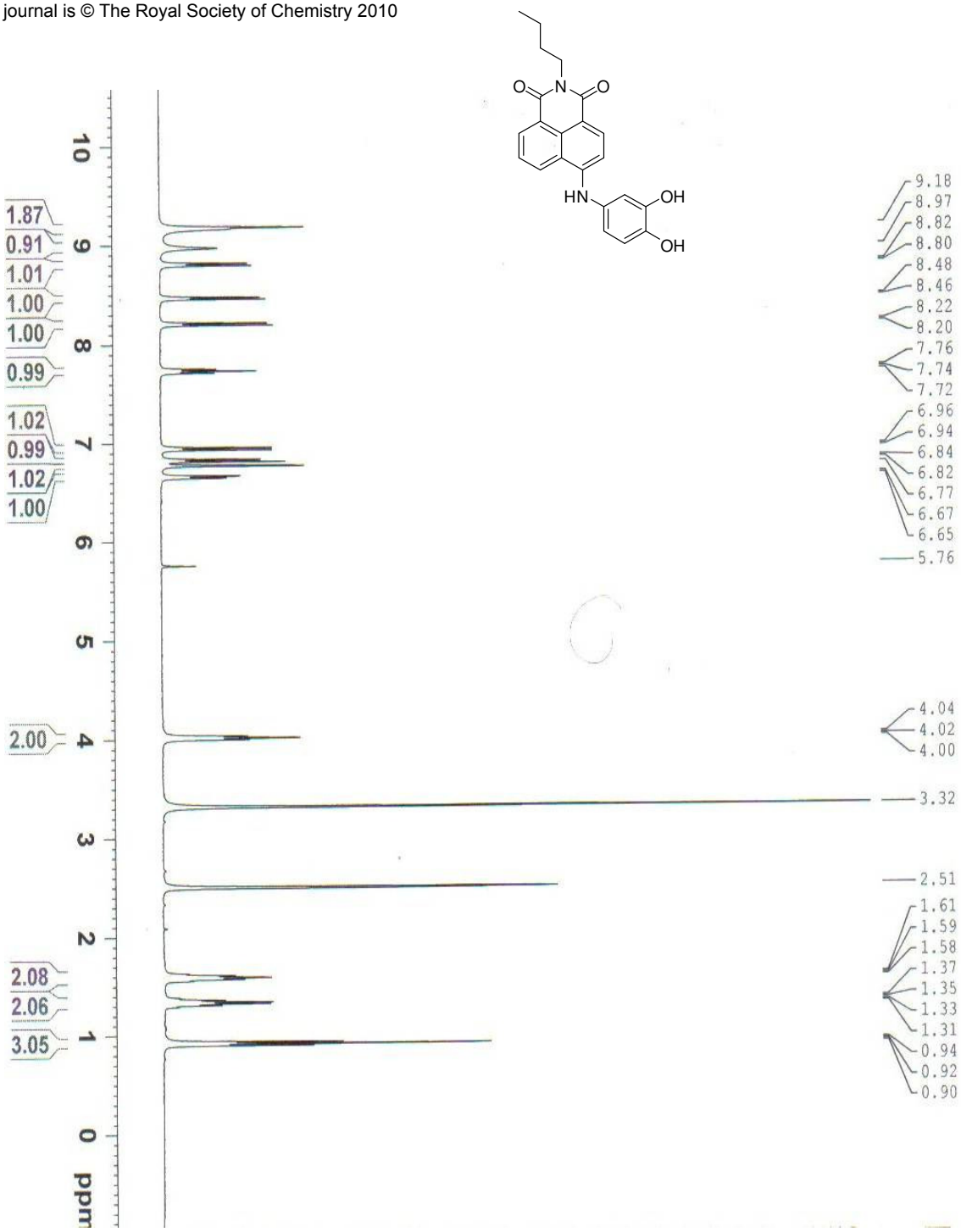
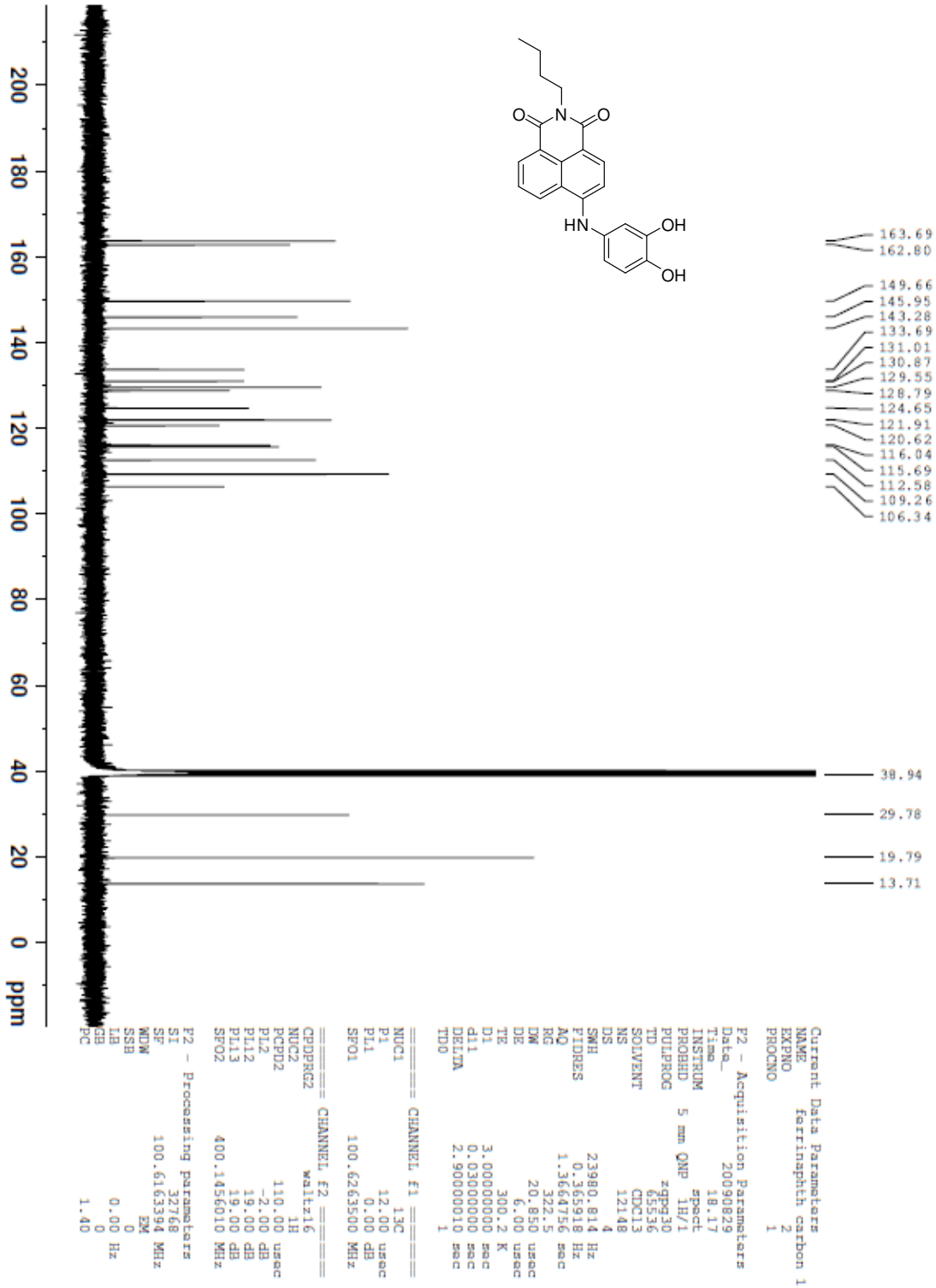
I. NMR spectra







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SOLVENT                              CDCl3
NS                                   1214
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DE                                    6.00 usec
TE                                   300.2 K
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d11                           0.03000000 sec
DELTA                         2.90000010 sec
TD0                                      1

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PL1                                  0.00 dB
SFO1                     100.6263500 MHz

======== CHANNEL f2 ========
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PL12                                19.00 dB
PL13                                19.00 dB
SFO2                     400.1456010 MHz

F2 - Processing parameters
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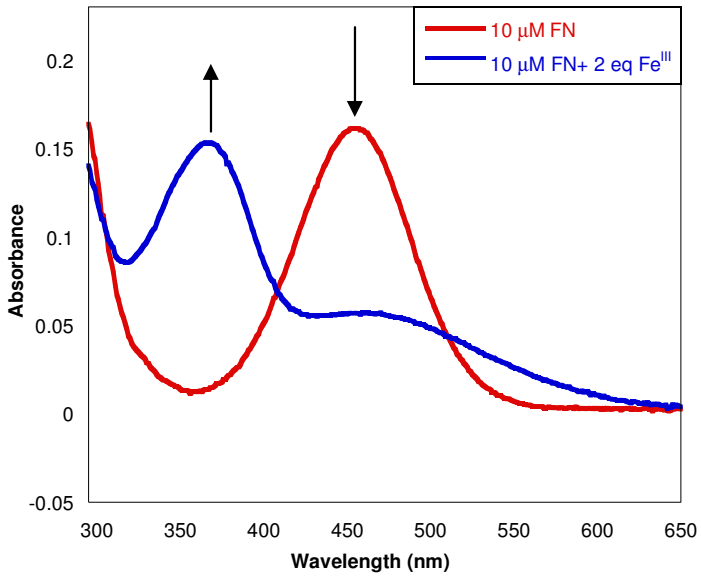

Figure S-1. Oxidation of FerriNaphth with Fe^{III} in methanol. The spectrum of a 10 μM solution of FerriNaphth in methanol was recorded followed by the addition of 2 equivalents of $Fe(NO_3)_3$. The solution was allowed to equilibrate for two minutes followed by the acquisition of spectra taken until there was no further change.

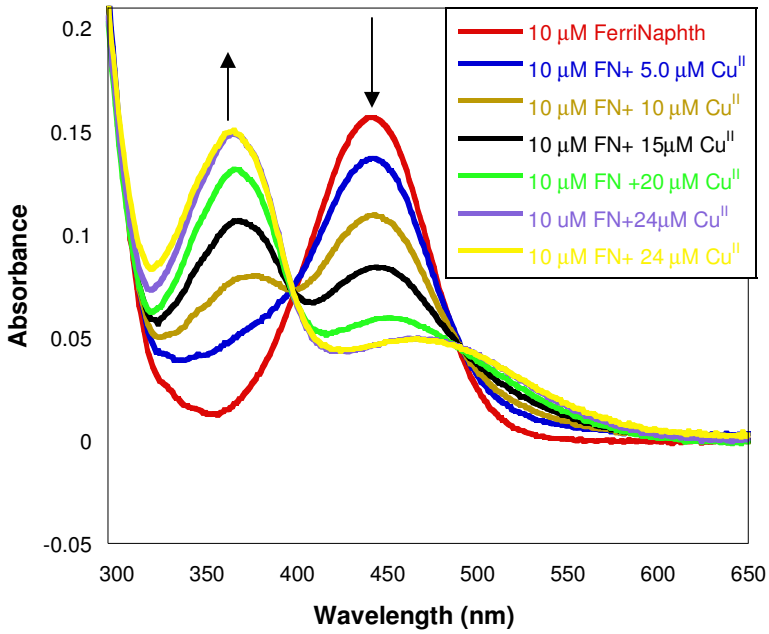

Figure S-2. Oxidation of FerriNaphth with incremental additions of $Cu(NO_3)_2$ in acetonitrile. Metal from a 10 mM stock solution was added to a 10 µM solution of FerriNaphth in 2.5 µM increments. Absorption measurements were recorded after no additional changes were observed following the addition of metal.

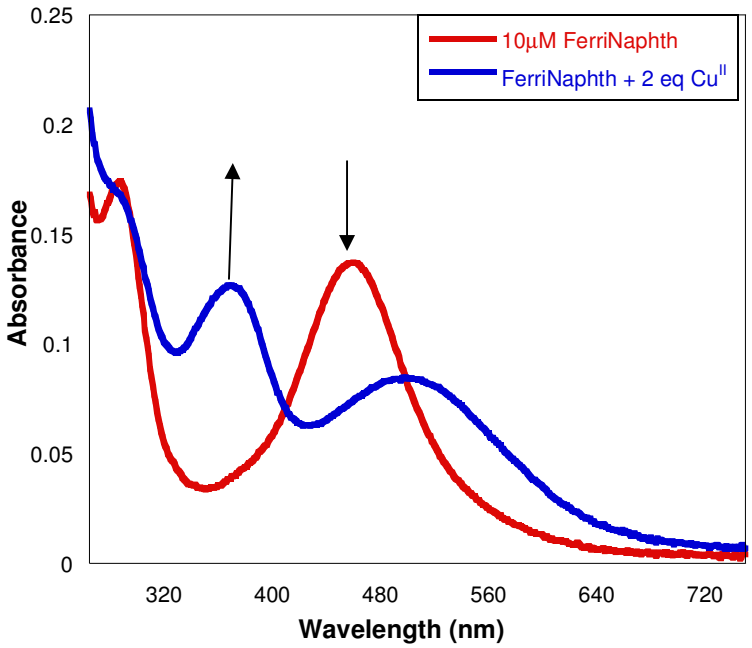

Figure S-3. Oxidation of FerriNaphth with Cu^{II} in methanol. The absorption of a 10 μM solution of FerriNaphth was measured followed by the addition of 2 equivalence of $Cu(NO_3)_2$ from a 10 mM stock solution in 60/40 $EtOH/CH_3CN$. The spectrum of the equilibrated mixture was taken after three minutes and subsequent measurements were taken to ensure no further changes.

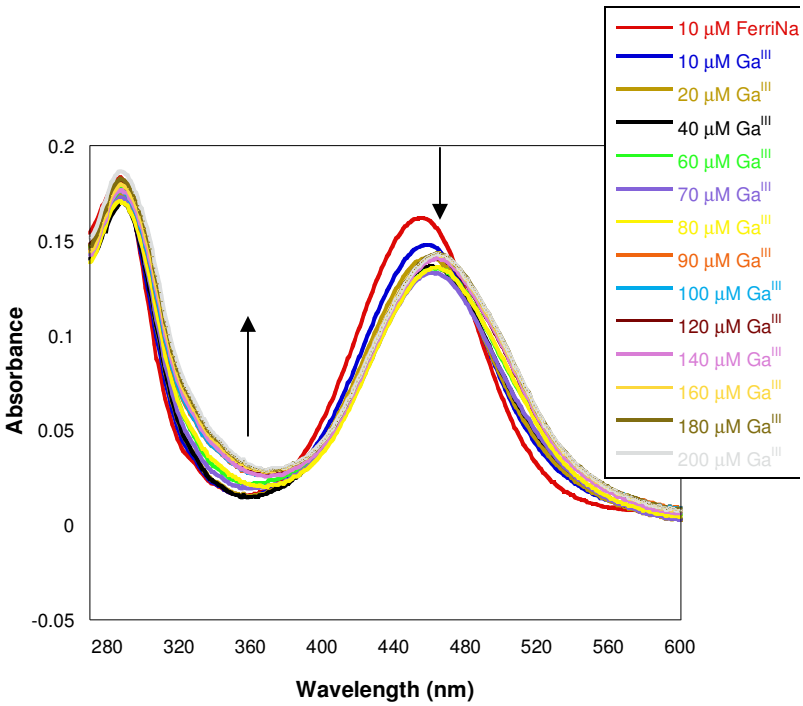

Figure S-4. UV-vis titration of 10 µM FerriNaphth with $Ga(NO_3)_3$ in methanol. Metal was added in 20 µM increments (6µL aliquots) from a 10 mM stock solution. Each spectrum was corrected for dilution by multiplying measured absorption by the inverse of the dilution factor.

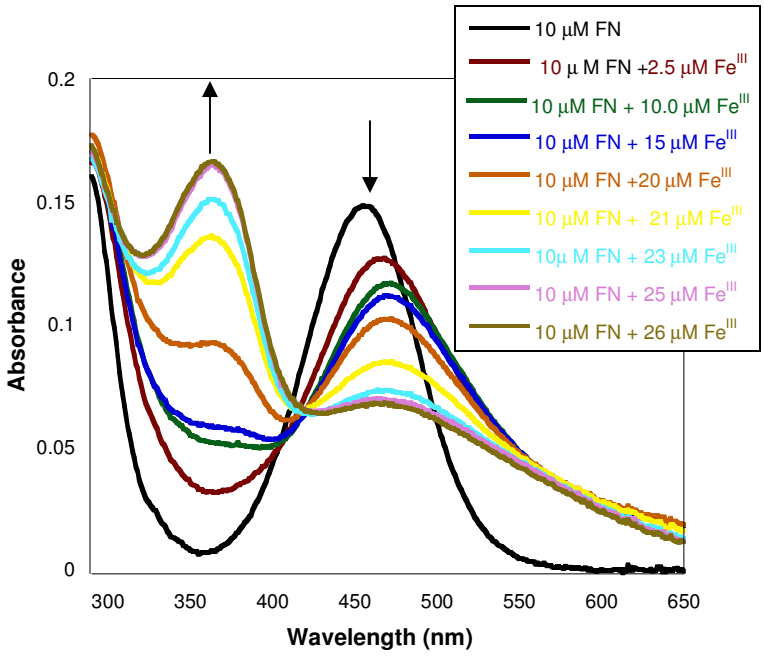

Figure S-5. Oxidation of FerriNaphth with incremental additions of $Fe(NO_3)_3$ in methanol. Iron from a 10 mM stock solution was added to a 10 µM solution of FerriNaphth in 2.5 µM increments up to 2 equivalents. An additional 0.6 equivalents were added incrementally to complete the oxidation. Absorption measurements were recorded after no additional changes were observed following the addition of metal.

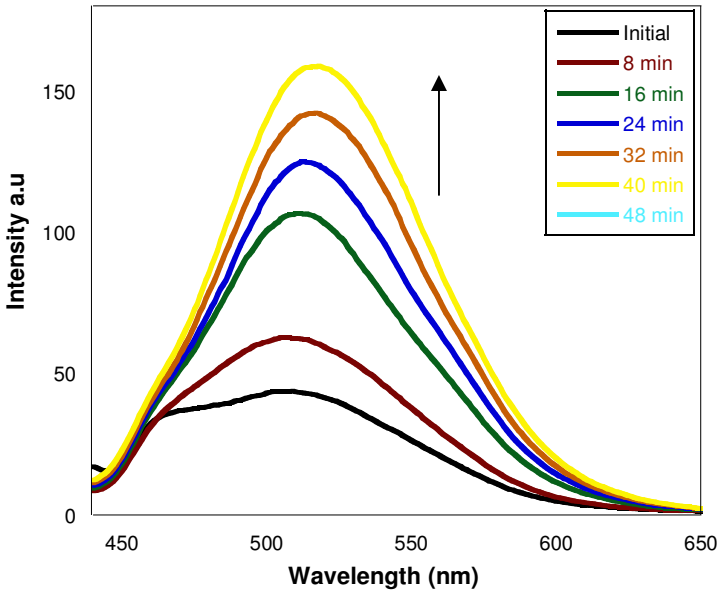

Figure S-6. Emission spectra of oxidation of 10 μM FerriNaphth in methanol with 2 equivalents of $Fe(NO_3)_3$. Spectra were recorded over a period of 48 min. Excitation was provided at 400 nm with an excitation slit width of 5.0 nm and an emission slit width of 10 nm.

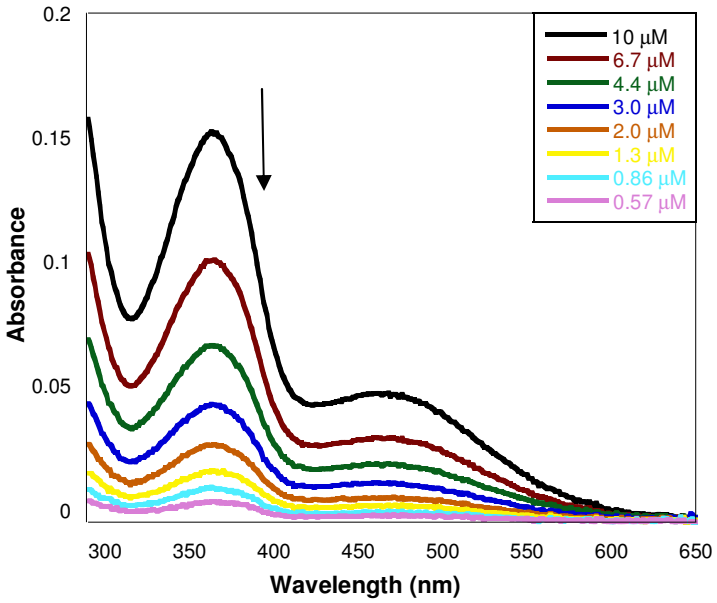

Figure S-7. Oxidation of 10 µM of FerriNaphth with 2 equivalents of $Fe(NO_3)_3$ at different concentrations of probe in acetonitrile.

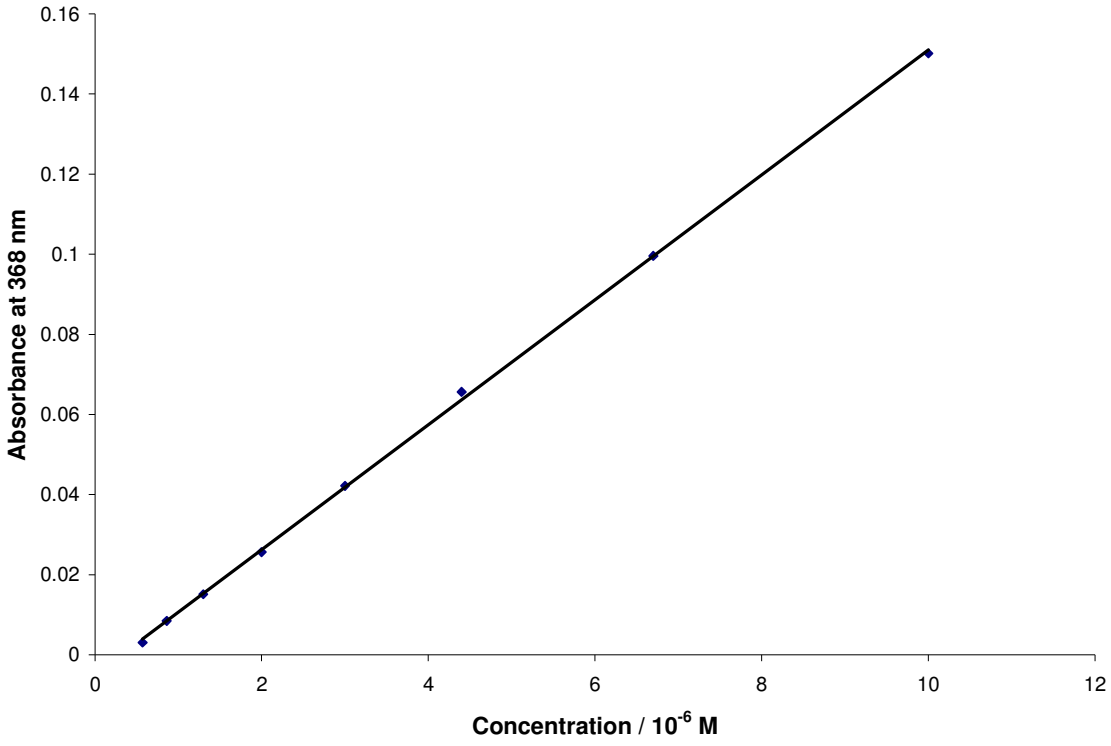

Figure S-8. Absorption of species formed at 368 nm, plotted as a function of concentration.

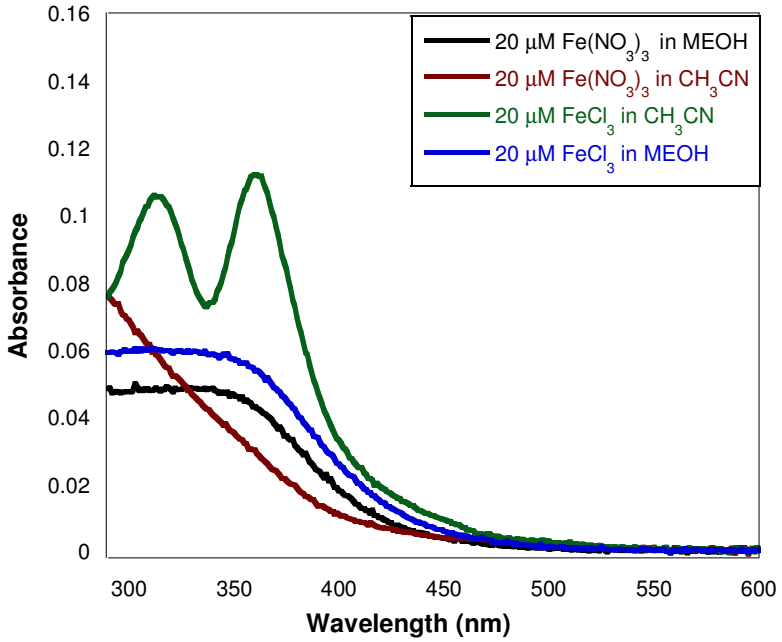

Figure S-9. Absorption spectra of 20 µM $Fe(NO_3)_3$ and 20 µM $FeCl_3$ in methanol and acetonitrile.