

# Supporting Information

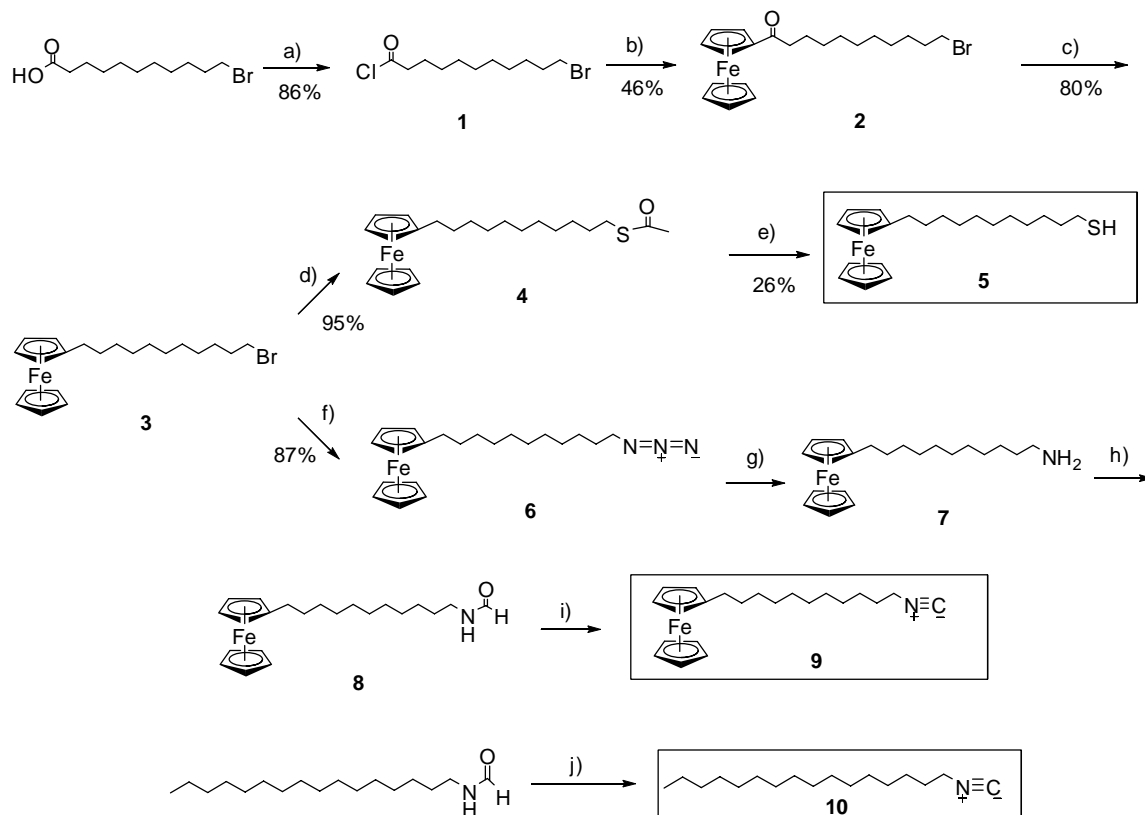
## A Comprehensive Investigation of Self-Assembled Monolayer Formation on Ferromagnetic Thin Film Surfaces

*Paul G. Hoertz, Jeremy R. Niskala, Peng Dai, Hayden T. Black, and Wei You\**

Department of Chemistry, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

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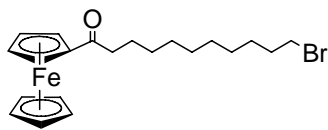
## Synthesis



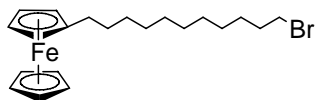
**Scheme 1:** Syntheses of compound 5, 9, and 10. a)  $\text{SOCl}_3$ , r.t.; b) ferrocene,  $\text{AlCl}_3$ ,  $\text{CH}_2\text{Cl}_2$ , r.t.; c)  $\text{AlCl}_3$ ,  $\text{NaBH}_4$ , THF,  $0^\circ\text{C}$ ; d) potassium thiolacetate, THF,  $75^\circ\text{C}$  1 hour, r.t. overnight; e)  $\text{NaOH}$ , EtOH,  $85^\circ\text{C}$ ; f)  $\text{NaN}_3$ , DMF, r.t.; g)  $\text{LiAlH}_4$ , ether, r.t.; h) ethyl formate, r.t.; i)  $\text{POCl}_3$ , DIEA, THF, r.t.; j)  $\text{POCl}_3$ , TEA, THF,  $0^\circ\text{C}$ .

**General Methods.** Unless otherwise noted, all starting materials were obtained from commercial sources and used without further purification. All reactions were conducted under nitrogen atmosphere in flame dried glassware. Tetrahydrofuran (THF) was distilled over sodium/benzophenone ketyl under nitrogen, and methylene chloride ( $\text{CH}_2\text{Cl}_2$ ) was dried using Innovative Technology, Inc.'s PureSolv purification column. Triethylamine (TEA) and diisopropylethylamine (DIEA) were distilled over calcium hydride under nitrogen prior to use. Anhydrous toluene and anhydrous diethyl ether were obtained from commercial sources and used without further drying. NMR spectra were recorded at 300

or 400 MHz on Bruker AMX-300 or ADVANCE-400 spectrometers, respectively. Mass spectra were performed by the University of North Carolina at Chapel Hill mass spectrometry facility.

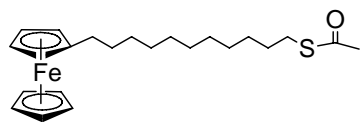


**(11-Bromoundecanoyl)ferrocene (2).** To a flask equipped with a vacuum distillation apparatus was added 11-bromoundecanoic acid (25 g, 94 mmol) and thionyl chloride (13.7 mL, 188.5 mmol). This solution was stirred overnight at room temperature. The following day, 11-Bromoundecanoyl chloride (**1**) was distilled (129°C at 0.285 torr) to give 23.0 g (86% yield) of a colorless oil. Separately, ferrocene (15.07 g, 81 mmol) and  $\text{AlCl}_3$  (10.69 g, 81 mmol) were dissolved into 100 mL anhydrous  $\text{CH}_2\text{Cl}_2$  and cooled to 0°C. A solution of compound **1** (23.0 g, 81 mmol) in 40 mL dry  $\text{CH}_2\text{Cl}_2$  was then added drop wise over 1 hour. The mixture was warmed to room temperature and stirred for 12 hours. The resulting mixture was poured into water and extracted with ethyl acetate. The combined organic extracts were washed with brine, dried ( $\text{Na}_2\text{SO}_4$ ), concentrated, and purified over a silica plug (hexane:  $\text{CH}_2\text{Cl}_2$ ; 20:1). The reaction produced a yellow solid in 46% yield.  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ):  $\delta$  (ppm): 1.30 (m, 12H,  $\text{CH}_2$ ), 1.67 (m, 2H,  $\text{CH}_2$ ), 1.84 (p, 2H,  $J = 7.2$  Hz,  $\text{CH}_2$ ), 2.69 (t, 2H,  $J = 7.5$  Hz,  $\text{CH}_2$ ), 3.41 (t, 2H,  $J = 6.84$  Hz,  $\text{CH}_2$ ), 4.19 (s, 5H, H(Cp)), 4.49 (t, 2H,  $J_{ab}=J_{ac}= 1.75$  Hz, H(Cp)), and 4.78 (t, 2H, H(Cp)).

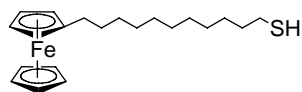


**(11-Bromoundecyl)ferrocene (3).** A mixture of **2** (16.15 g, 37.3 mmol),  $\text{AlCl}_3$  (8.36 g, 63.4 mmol), and dry THF (200 mL) was cooled to 0°C. A solution of  $\text{NaBH}_4$  (6.35 g, 167.9 mmol) in 40 mL dry THF was then added drop wise over 30 minutes. After stirring for 2 hours, the solution was slowly quenched with 50 mL of  $\text{H}_2\text{O}$ . The resulting mixture was poured into water and extracted with ethyl acetate. The combined organic extracts were washed with brine, dried ( $\text{Na}_2\text{SO}_4$ ), concentrated, and

purified over a silica plug (hexane: CH<sub>2</sub>Cl<sub>2</sub>; 20:1). The reaction yielded red crystals in 80% yield. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>): δ (ppm): 1.28 (m, 12H, CH<sub>2</sub>), 1.45 (m, 4H, CH<sub>2</sub>), 1.85 (p, 2H, *J* = 7.48 Hz, CH<sub>2</sub>), 2.31 (t, 2H, *J* = 7.94 Hz, CH<sub>2</sub>), 3.41 (t, 2H, *J* = 6.86 Hz, CH<sub>2</sub>), 4.03 (d, 2H, *J* = 1.57 Hz, H(Cp)), 4.05 (d, 2H, *J* = 1.48 Hz, H(Cp)), and 4.09 (s, 5H, H(Cp)).

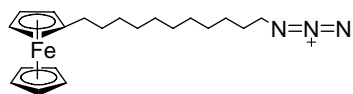


**(11-Acetylthiolundecyl)ferrocene (4).** To a flask was added **3** (8.0 g, 19.1 mmol), potassium thioacetate (2.73 g, 23.9 mmol), and dry THF (100 mL). The solution was brought to reflux for 1 hour, and then allowed to cool to room temperature overnight. The resulting mixture was poured into water and extracted with ethyl acetate. The combined organic extracts were washed with brine, dried (Na<sub>2</sub>SO<sub>4</sub>), concentrated, and purified via column chromatography over silica gel (10:1; hexane:CH<sub>2</sub>Cl<sub>2</sub>). The reaction yielded red crystals (95 % yield). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>): δ (ppm): 1.27 (m, 14H, CH<sub>2</sub>-), 1.52 (m, 4H, CH<sub>2</sub>), 2.30 (t, 2H, CH<sub>2</sub>), 2.32 (s, 3H, -S-CO-CH<sub>3</sub>), 2.86 (t, 2H, CH<sub>2</sub>), 4.03 (d, 2H, *J* = 1.60 Hz, H(Cp)), 4.05 (d, 2H, *J* = 1.49 Hz, H(Cp)), and 4.09 (s, 5H, H(Cp)).

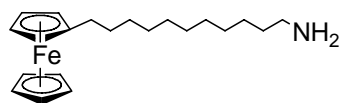


**(11-Thiolundecyl)ferrocene (5).** A mixture of **4** (7.48 g, 18.1 mmol), NaOH (32.7 mL of 1M solution), and ethanol (200 mL) was refluxed overnight. The mixture was then poured into water and extracted with ethyl acetate. The combined organic extracts were washed with brine, dried (Na<sub>2</sub>SO<sub>4</sub>), concentrated, and purified via column chromatography over silica gel (10:1; hexane:CH<sub>2</sub>Cl<sub>2</sub>). The reaction produced red crystals (26% yield) with the major side product being the disulfide analog. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>): δ (ppm): 1.27 (m, 14H, CH<sub>2</sub>), 1.50 (m, 2H, CH<sub>2</sub>), 1.60 (m, 2H, CH<sub>2</sub>), 2.31 (t, 2H, *J* = 7.91 Hz, CH<sub>2</sub>), 2.52 (q, 2H, *J* = 7.18 Hz, CH<sub>2</sub>), 4.03 (d, 2H, *J* = 1.50 Hz, H(Cp)), 4.05 (d, 2H, *J* = 1.36, H(Cp)), and 4.09 (s, 5H, H(Cp)). <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ (ppm): 24.64, 28.37, 29.07,

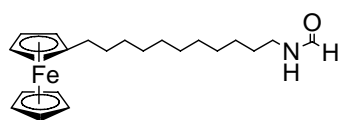
29.51, 29.58, 29.65, 31.11, 34.05, 66.96, 68.04, 68.43, and 89.59. MS:  $m/z$  calcd for  $[M]^+$  ( $C_{21}H_{32}FeS$ ): 372.16; found: 372.2.



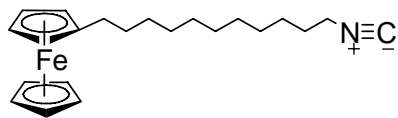
**(11-Azidoundecyl)ferrocene (6).** To a round bottomed flask was added **3** (2.30 g, 5.5 mmol) and DMF (60 mL). Once dissolved,  $NaN_3$  (415 mg, 6.10 mmol) was added and the resulting mixture was allowed to stir overnight at room temperature. The mixture was then poured into water and extracted with ethyl acetate. The combined organic extracts were washed with brine, dried ( $Na_2SO_4$ ), concentrated, and purified over a silica plug (hexanes) yielding a red oil.  $^1H$  NMR (400 MHz,  $CDCl_3$ ):  $\delta$  (ppm): 1.28 (m, 14H,  $CH_2$ ), 1.48 (m, 2H,  $CH_2$ ), 1.58 (p, 2H,  $J = 7.6$  Hz,  $CH_2$ ), 2.29 (t, 2H,  $J = 7.6$  Hz,  $CH_2$ ), 3.25 (t, 2H,  $J = 7.2$  Hz,  $CH_2$ ), 4.05 (s, 2H, H(Cp)), 4.08 (s, 2H, H(Cp)), 4.11 (s, 5H, H(Cp)).



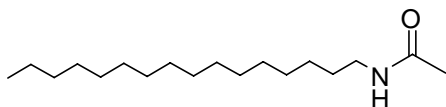
**(11-Aminoundecyl)ferrocene (7).** To a flask was added  $LiAlH_4$  (400 mg, 10.5 mmol) and 40 mL anhydrous diethyl ether. Separately, a solution of **6** (1.8 g, 4.77 mmol) and diethyl ether (50 mL) was prepared. This solution was added dropwise to the reducing solution over 1.5 hours. The reaction was quenched with 20 mL of 5mM NaOH. The mixture was then poured into water and extracted with ethyl acetate. The combined organic extracts were washed with brine, dried ( $Na_2SO_4$ ), concentrated, and purified over a silica plug (hexane).  $^1H$  NMR (400 MHz,  $CDCl_3$ ):  $\delta$  (ppm): 1.25 (m, 14H,  $CH_2$ ), 1.45 (m, 4H,  $CH_2$ ), 2.29 (t, 2H,  $J = 8.0$  Hz,  $CH_2$ ), 3.28 (q, 2H,  $J = 6.8$  Hz,  $CH_2$ ), 4.02 (s, 2H, H(Cp)), 4.04 (s, 2H, H(Cp)), 4.07 (s, 5H, H(Cp)), 8.15 (s, 2H,  $NH_2$ ).



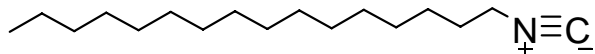
**(11-Formamidylundecyl)ferrocene (8).** Molecule **8** was prepared according to previously reported literature procedures.<sup>1</sup> <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):  $\delta$  (ppm): 1.27 (m, 14H, CH<sub>2</sub>), 1.43 (m, 2H, CH<sub>2</sub>), 1.49 (m, 2H, CH<sub>2</sub>), 2.30 (t, 2H,  $J = 7.8$  Hz, CH<sub>2</sub>), 2.67 (t, 2H,  $J = 7.0$  Hz, CH<sub>2</sub>), 4.03 (d, 2H,  $J = 2.0$  Hz, H(Cp)), 4.04 (d, 2H,  $J = 1.6$  Hz, H(Cp)), 4.08 (s, 5H, H(Cp)).



**(11-Isocyanoundecyl)ferrocene (9).** A mixture of **8** (1.5 g, 4.02 mmol), DIEA (5.0 mL, 28.14 mmol), and dry THF (20 mL) were stirred at room temperature. To this was added POCl<sub>3</sub> (0.42 mL, 4.42 mmol) drop wise at 0°C over 30 minutes. The mixture was allowed to stir for 2 hours then was poured into water and extracted with ethyl acetate. The combined organic extracts were washed with brine, dried (Na<sub>2</sub>SO<sub>4</sub>), concentrated, and purified over a silica plug resulting in orange crystals. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>):  $\delta$  (ppm): 1.28 (m, 12H, CH<sub>2</sub>), 1.46 (m, 4H, CH<sub>2</sub>), 1.68 (m, 2H, CH<sub>2</sub>), 2.31 (t, 2H,  $J = 8.0$  Hz, CH<sub>2</sub>), 3.38 (m, 2H, CH<sub>2</sub>), 4.03 (d, 2H,  $J = 1.42$  Hz, H(Cp)), 4.05 (d, 2H,  $J = 1.28$  Hz, H(Cp)), and 4.09 (s, 5H, H(Cp)). <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>):  $\delta$  (ppm): 26.33, 28.70, 29.13, 29.36, 29.49, 29.54, 29.59, 29.63, 31.11, 41.56, 66.96, 68.04, 68.43, and 89.56. MS:  $m/z$  calcd for [M]<sup>+</sup> (C<sub>22</sub>H<sub>31</sub>FeN): 365.18; found: 365.2.



**1-Formamidylhexadecane (10).** Molecule **10** was prepared according to previously reported literature procedures by heating a solution of hexadecylamine (4 g) and ethyl formate (40 mL).<sup>1</sup> The reaction solution was concentrated and the product was purified via column chromatography over silica gel (1:1 ethyl acetate:hexanes). Following chromatography, the collected fractions were rotovapped yielding a white solid (3.56 g, 83.5%).



**1-Isocyanoheptadecane (11).** To a dry flask was added N-hexadecylformamide (2.0 g, 7.42 mmol), THF (33mL), and triethylamine (5.21 mL, 37.1 mmol). The solution was cooled to 0°C and POCl<sub>3</sub> (0.77 mL, 8.16 mmol) was added drop wise over 80 minutes. The mixture was allowed to stir for 2 hours then was poured into water and extracted with ethyl acetate. The combined organic extracts were washed with brine, dried (Na<sub>2</sub>SO<sub>4</sub>), concentrated, and purified over a silica plug (hexane) resulting in light yellow oil. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>): δ (ppm): 0.88 (t, 3H, *J* = 6.95, CH<sub>3</sub>), 1.25 (m, 24H, CH<sub>2</sub>), 1.43 (m, 2H, CH<sub>2</sub>), 1.67 (m, 2H, CH<sub>2</sub>), 3.38 (m, 2H, CH<sub>2</sub>). <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ (ppm): 14.07, 22.67, 26.33, 28.70, 29.14, 29.34, 29.49, 29.58, 29.64, 29.67, 31.91, and 41.54.

### Characterization of SAMs on ferromagnetic surfaces

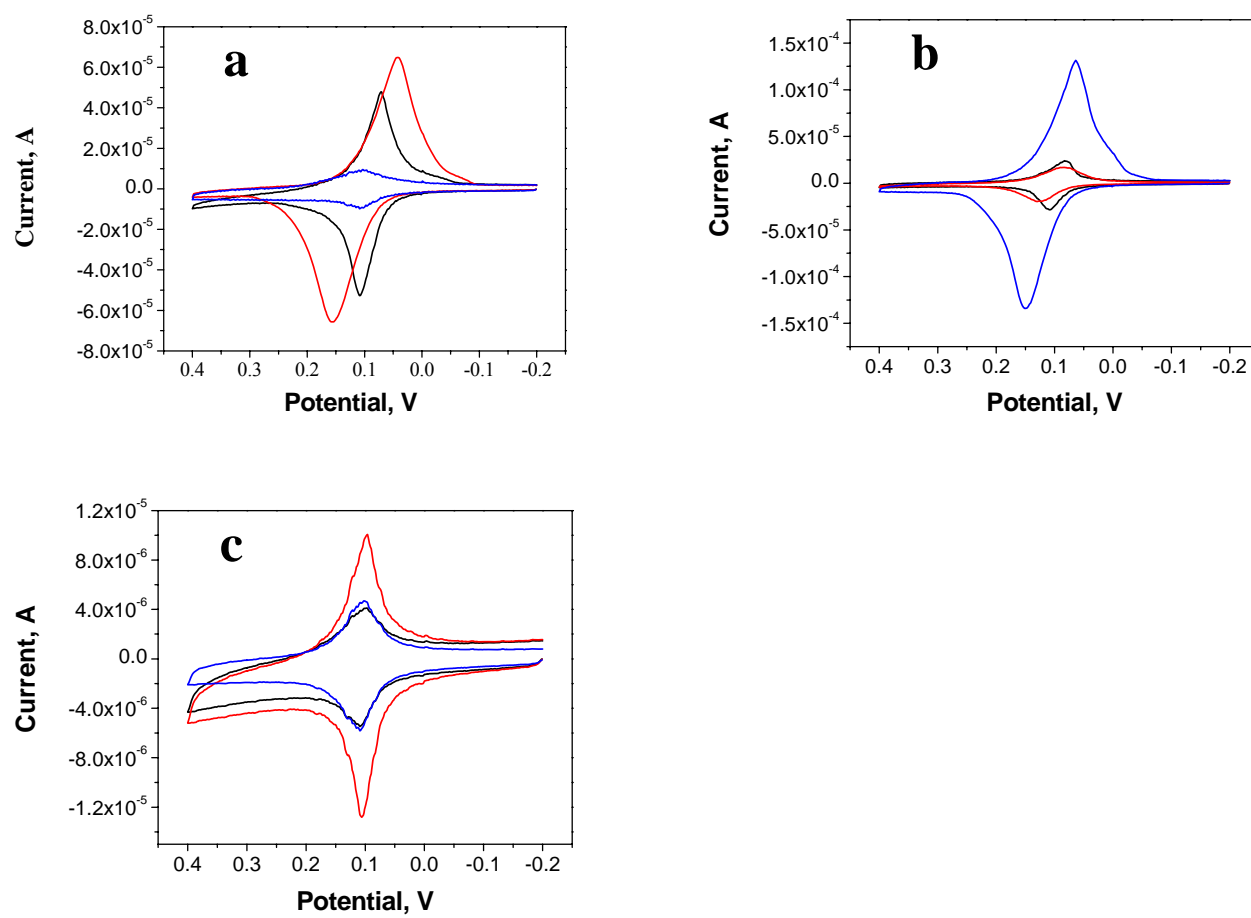
Attempts were made to probe the presence of pinholes in SAM layers on magnetic surfaces by performing cyclic voltammetry in the presence of a solution-phase redox couple. The first attempts were made using the familiar K<sub>3</sub>[Fe(CN)<sub>6</sub>] (aq) system. However, the cyclic voltammograms were consistent with surface-based redox phenomena and showed no signs of the reversible Fe<sup>III/II</sup> redox wave.<sup>2</sup> The second set of experiments was performed using 5 mM methyl viologen (PF<sub>6</sub> salt) in 0.1 M tetrabutylammonium hexafluorophosphate in acetonitrile (after 15 minute argon purge).<sup>3</sup> Comparison of the cyclic voltammograms for HDT/Ni and HDT/Co with that for bare surfaces showed similar current densities and similar peak-to-peak separations for the oxidative and reductive waves. The area of the electrode exposed to the solution was more hydrophilic after the CV experiment as evidenced by a dramatic lowering of the contact angle of a water droplet (~100-110° to ~70°). By submerging the entire electrode in the methyl viologen solution for 10-15 minutes, it became obvious that significant etching of the metal electrodes occurs in the presence of methyl viologen. Presumably, electron transfer to a good electron acceptor like methyl viologen oxidizes the metal leading to SAM loss, enlargement of

existing pinholes, and/or formation of new pinholes. In the final series of experiments, the redox couple was changed to ferrocene in 0.1 M tetrabutylammonium hexafluorophosphate/THF in order to avoid immediate exposure to an electron acceptor. CVs performed for bare surfaces in the absence of SAMs showed large oxidative currents for ferrocene that are presumably due to *in situ* oxidation of the metal surface or the native oxide by  $\text{Fe}^{\text{III}}(\text{Cp})_2$  (Figure S1a). CVs performed for glovebox HDT SAMs on Co, for example, in the presence of ferrocene showed relatively lower currents (Figure S1b). This result is consistent with incomplete blocking behavior of the HDT SAM and that the presence of the SAM only minimizes oxidation of the metal or native oxide by  $\text{Fe}^{\text{III}}(\text{Cp})_2$ . The fact that the presence of SAM allows for passage of non-zero currents to ferrocene suggests the presence of pinholes in the SAM layer. Moreover, for HDT/Ni (glovebox) the contact angle of the surface exposed to cyclic voltammetry in the presence of ferrocene decreases from 110° to 88°. This suggests that the SAM coverage decreases during electrochemical evaluation, creating pinholes *in situ*, and compromising meaningful interpretation and reliability of the data.

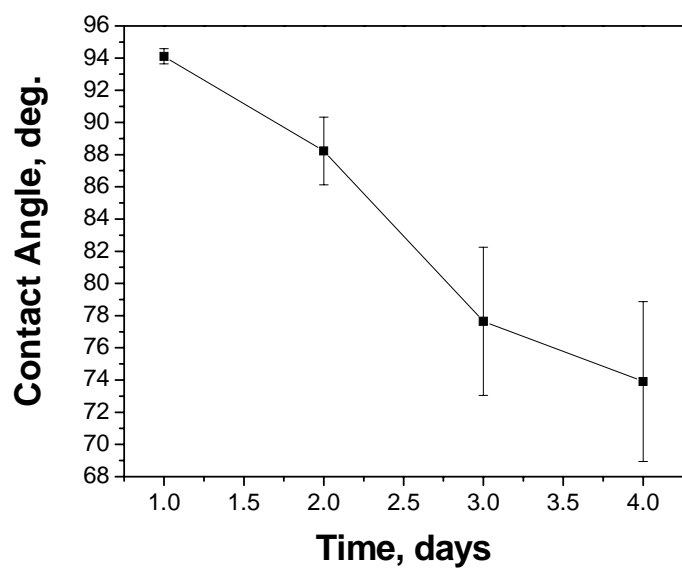
Spectroscopic ellipsometry measurements were attempted to determine the thickness of hexadecanethiol on Ni, Co, and Fe. Spectra were obtained from 300-1000 nm at 65, 70, and 75° incident angles using a V-VASE variable angle spectroscopic ellipsometer (J.A. Woolam). Two sets of samples varying in complexity were attempted: M/Ti/SiO<sub>x</sub>/Si and M/glass. Difficulties arose for both sample types when trying to fit the spectral curves using experimentally-determined or literature refractive indices for the film components along with film thicknesses experimentally determined by QCM analysis. Reliable and reasonable SAM thicknesses were extremely difficult to attain unlike with SAMs/Au, similar to previous ellipsometric studies for SAMs on oxidizable surfaces like Cu and Ag.<sup>4</sup>

One concern with the electroreduction procedure is the introduction of water into the SAM solution which may affect SAM formation on oxidizable surfaces. Control experiments performed with Ni in the glovebox showed that argon-purged HDT solutions (1 mM and 10 mM) containing 0.1 – 0.6 mM water gave identical contact angles as those prepared in the absence of water.

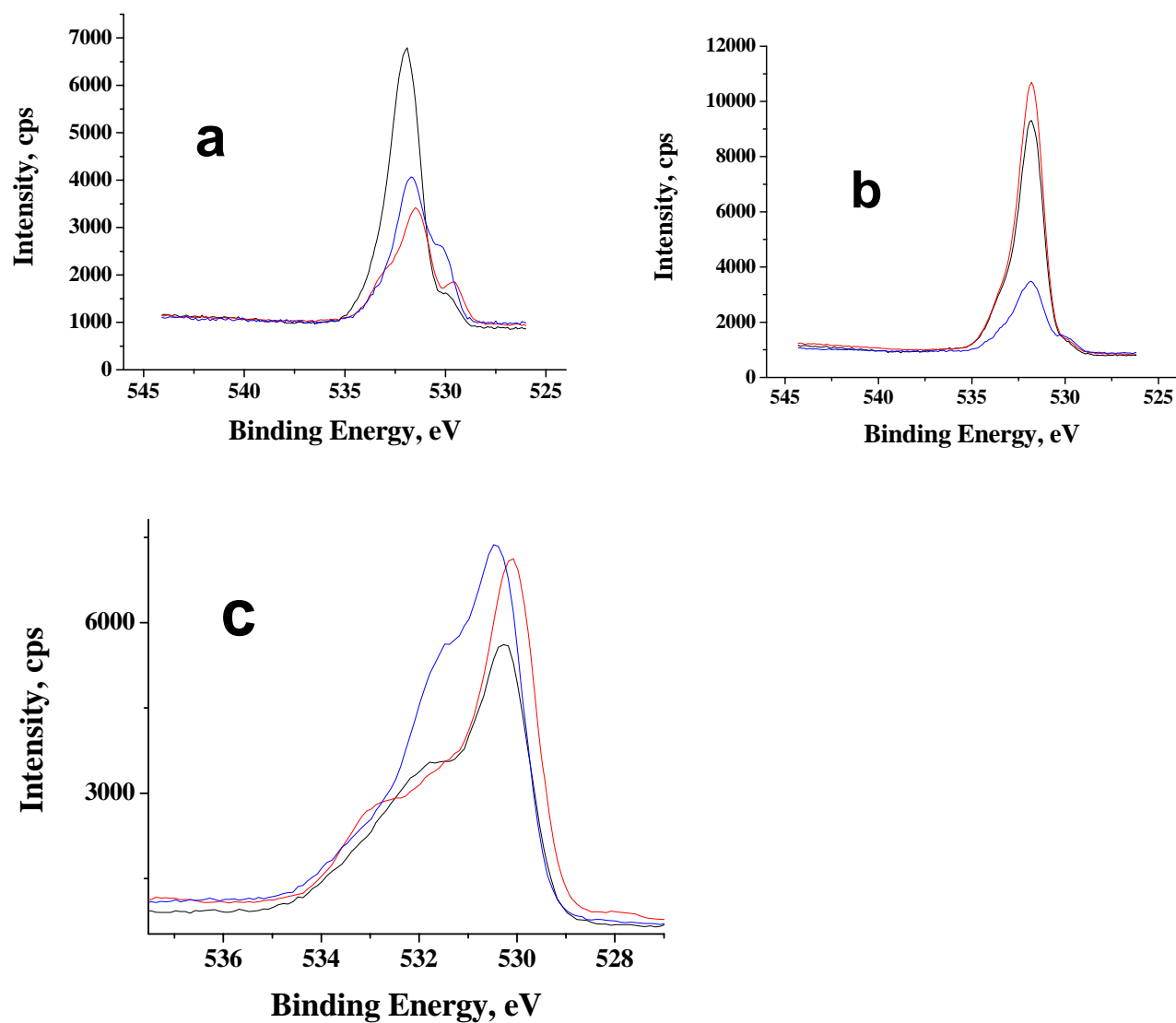




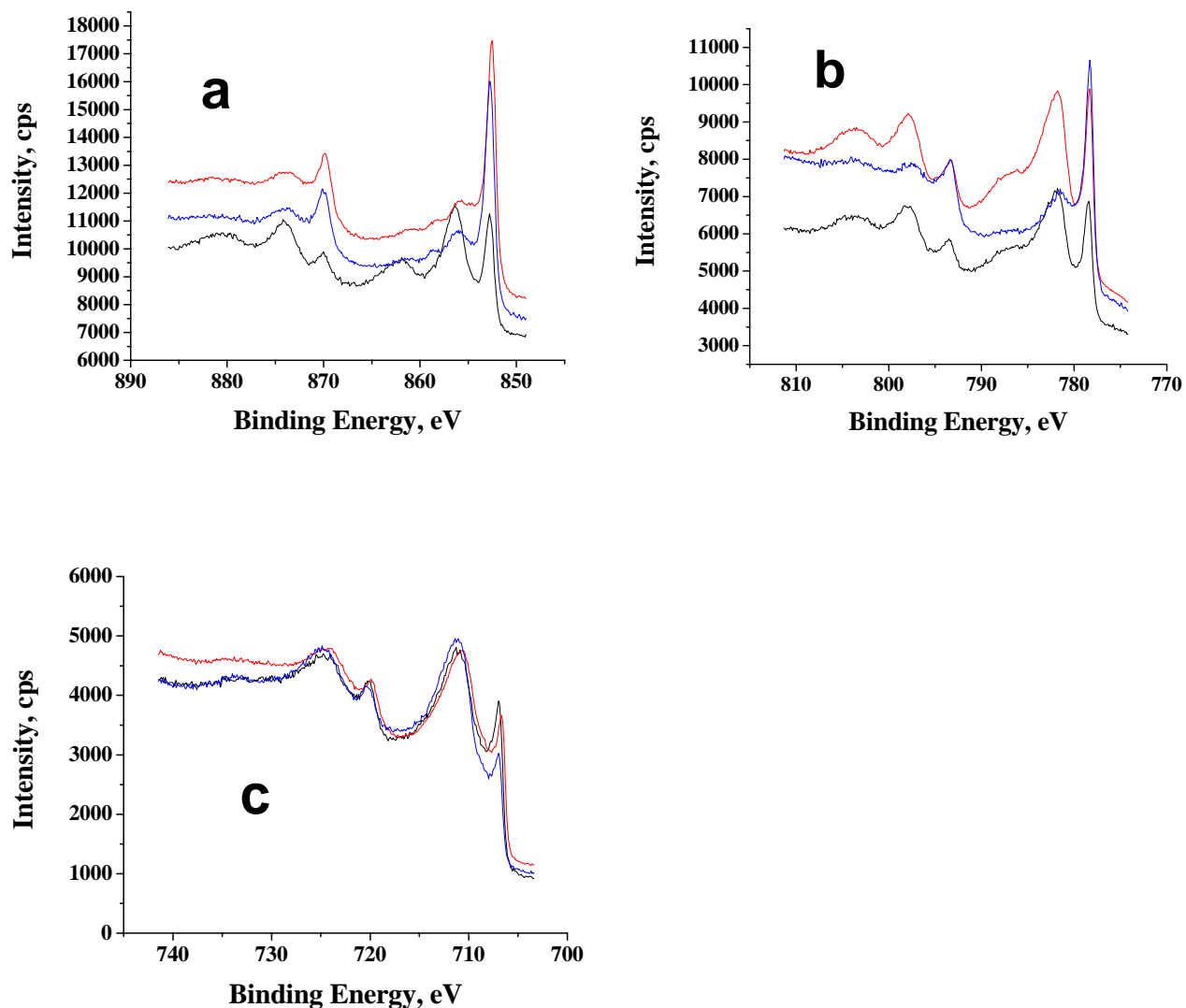
**Figure S1.** Cyclic voltammograms for (a) Ni, (b) Co, and (c) Fe surfaces derivatized with Fc-(CH<sub>2</sub>)<sub>11</sub>-SH (1 mM ethanolic solution) prepared in the glovebox (black lines), after electroreduction (red lines), or under atmospheric conditions (blue lines). The data for Ni and Co were recorded at 500 mV/s while that for Fe were recorded at 200 mV/s.



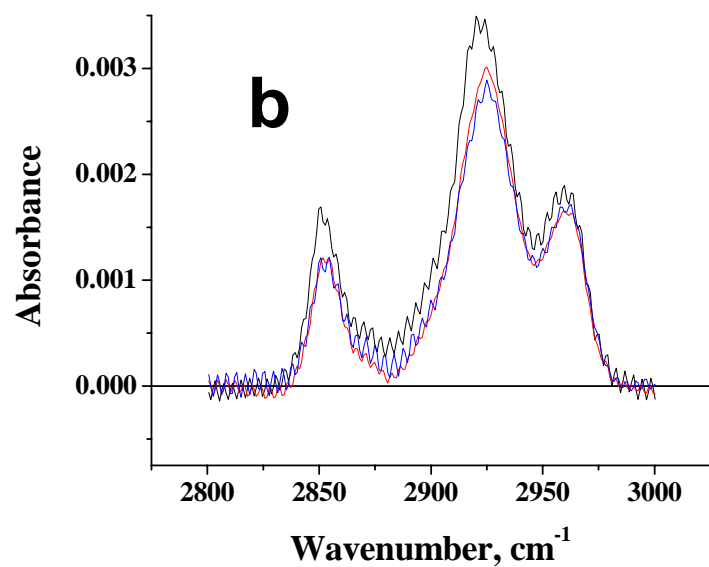
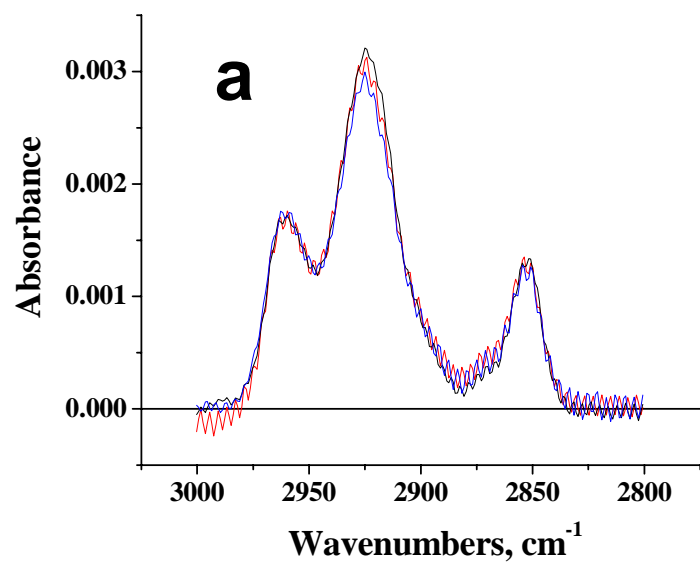
**Figure S2.** Contact angle versus time for a Co surface treated with 10 mM hexadecanethiol in ethanol under atmospheric conditions.



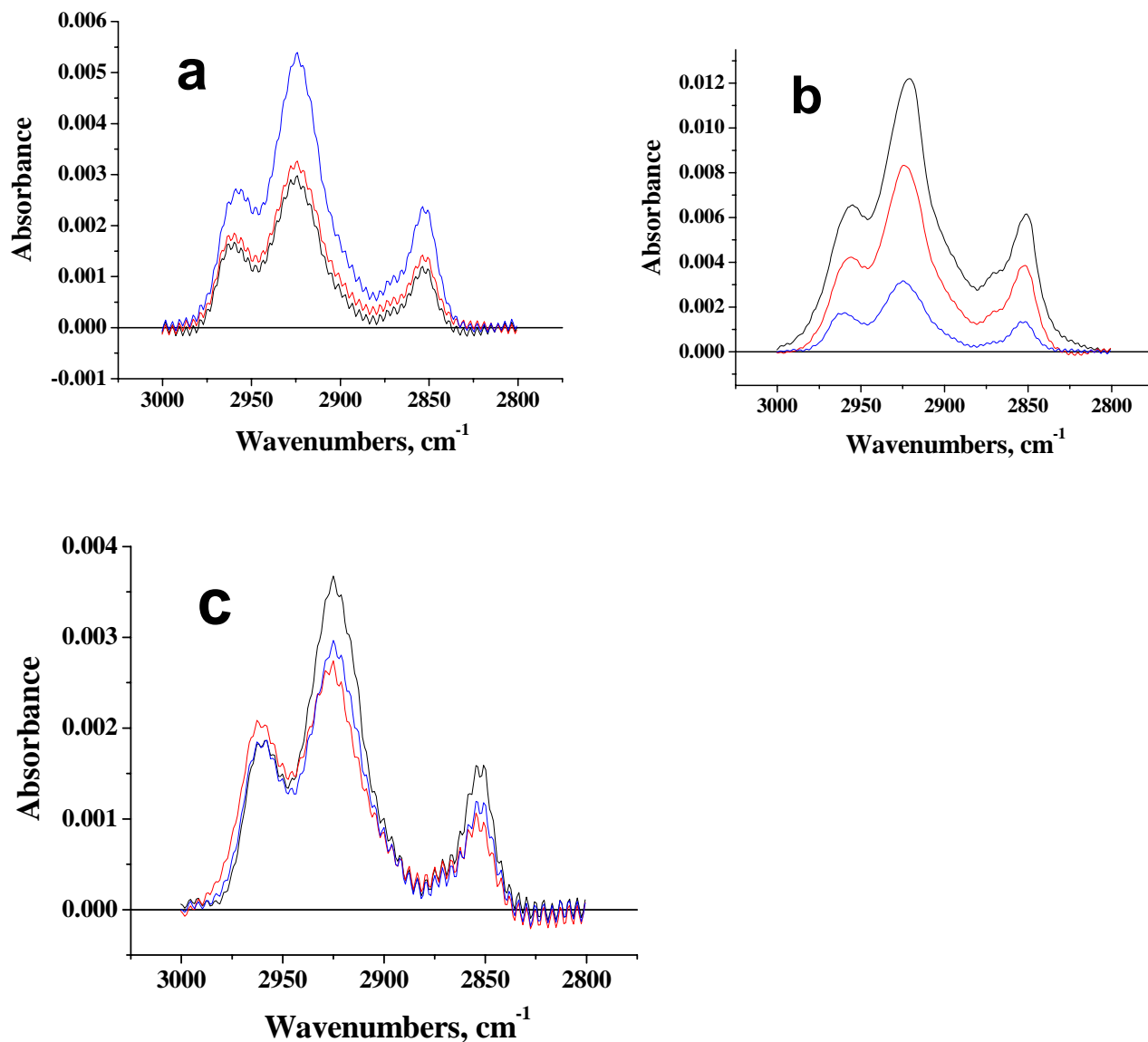
**Figure S3.** XPS O 1s regional scans for hexadecanethiol on electroreduced (a) Ni, (b) Co, and (c) Fe after minimal exposure to atmospheric conditions (< 1 h) as a function of electroreduction time: 1 min (black line), 5 min (red line), and 10 min (blue line).



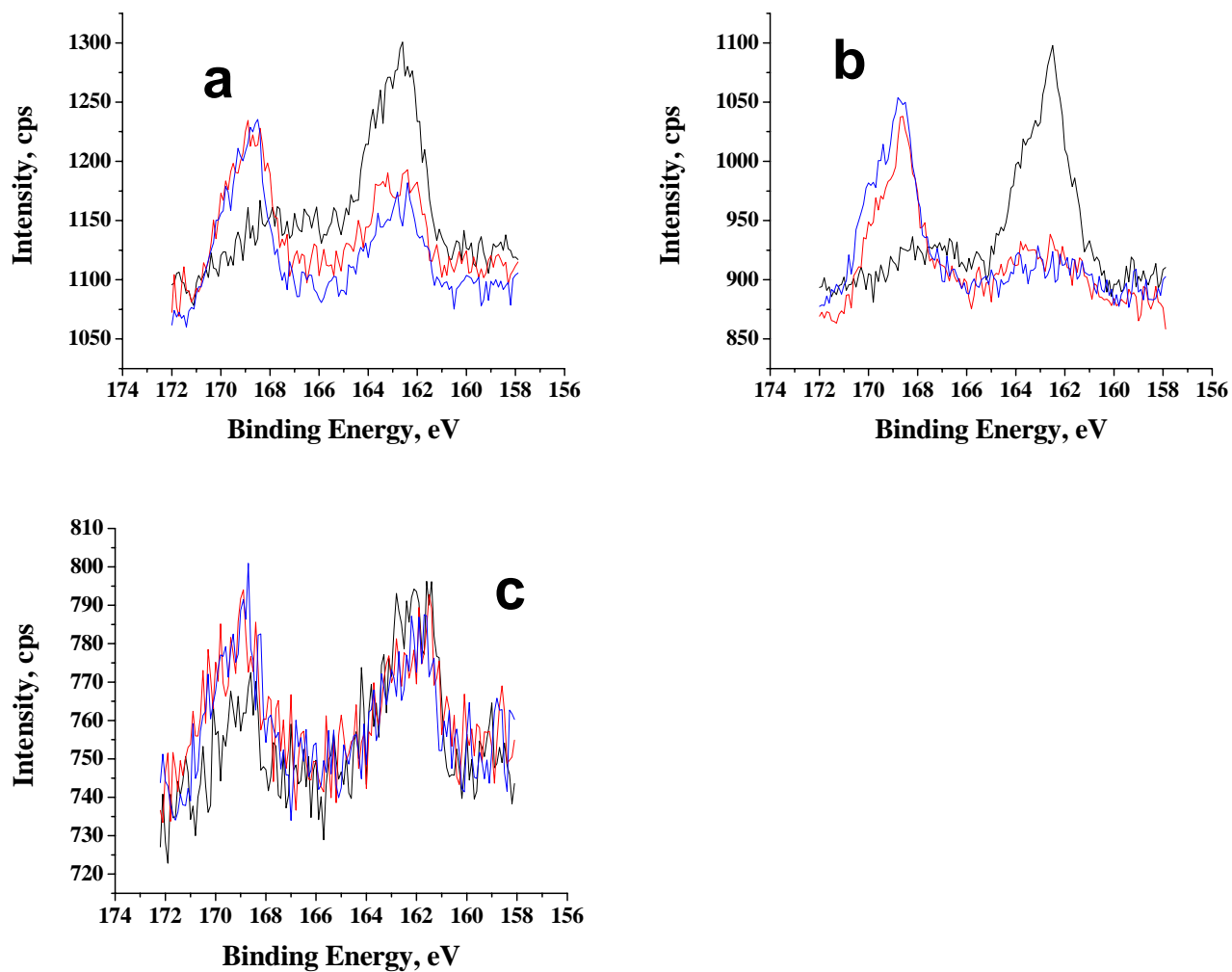
**Figure S4.** XPS Metal 2p regional scans for hexadecanethiol on electroreduced (a) Ni, (b) Co, and (c) Fe after minimal exposure to atmospheric conditions ( $< 1$  h) as a function of electroreduction time: 1 min (black line), 5 min (red line), and 10 min (blue line).



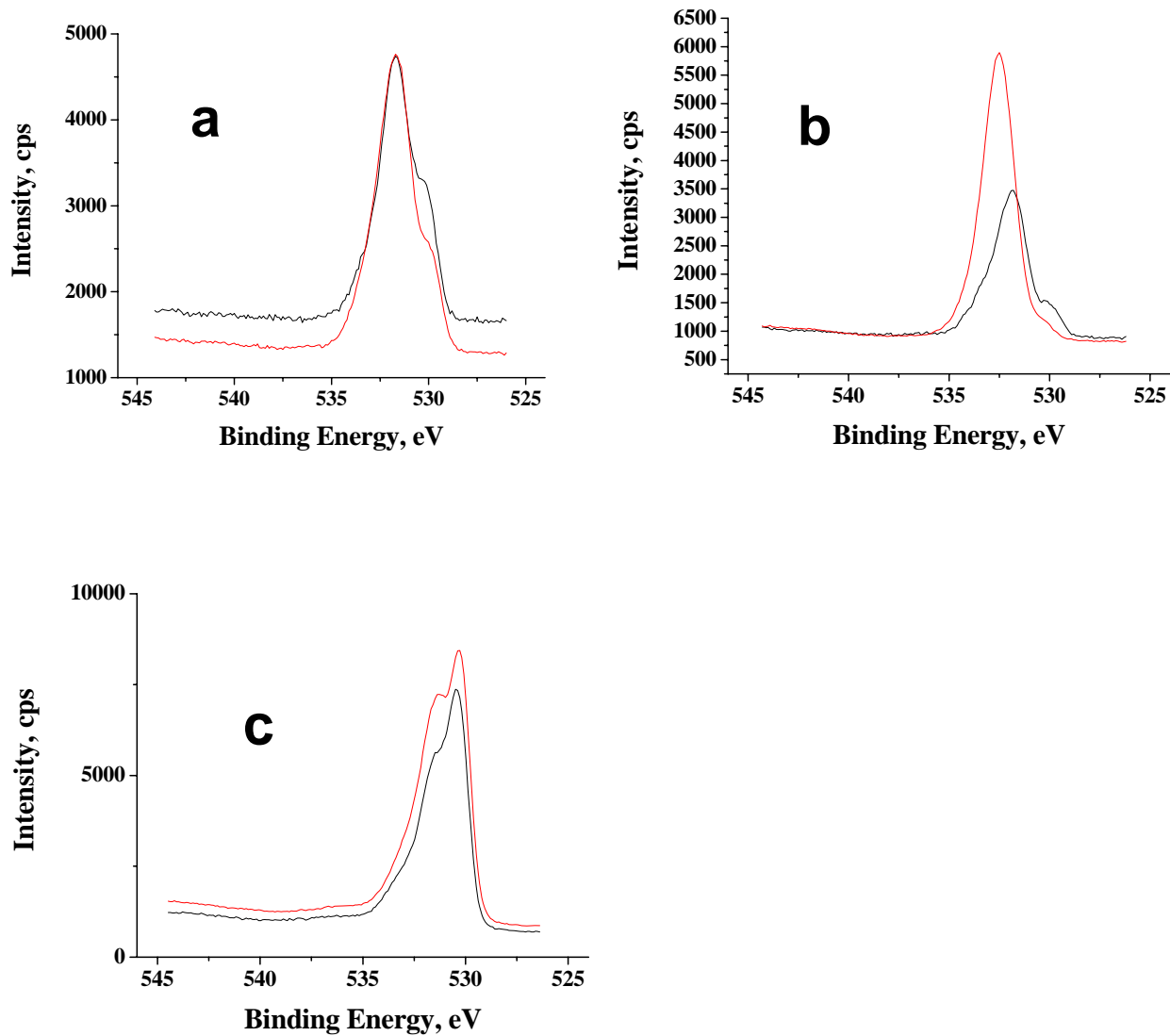
**Figure S5.** Reflectance-absorbance infrared spectra for hexadecanethiol prepared (a) under atmosphere conditions and (b) under glovebox conditions on nickel (black line), cobalt (red line), and iron (blue line).



**Figure S6.** Reflectance-absorbance infrared spectra for hexadecanethiol (from 10 mM solution) prepared by electroreduction conditions at  $V_{\text{app}} = -1.2$  V vs Ag/AgCl as a function of electroreduction time for (a) Ni, (b) Co, and (c) Fe: 1 min (black line), 5 min, (red line), and 10 min (blue line).

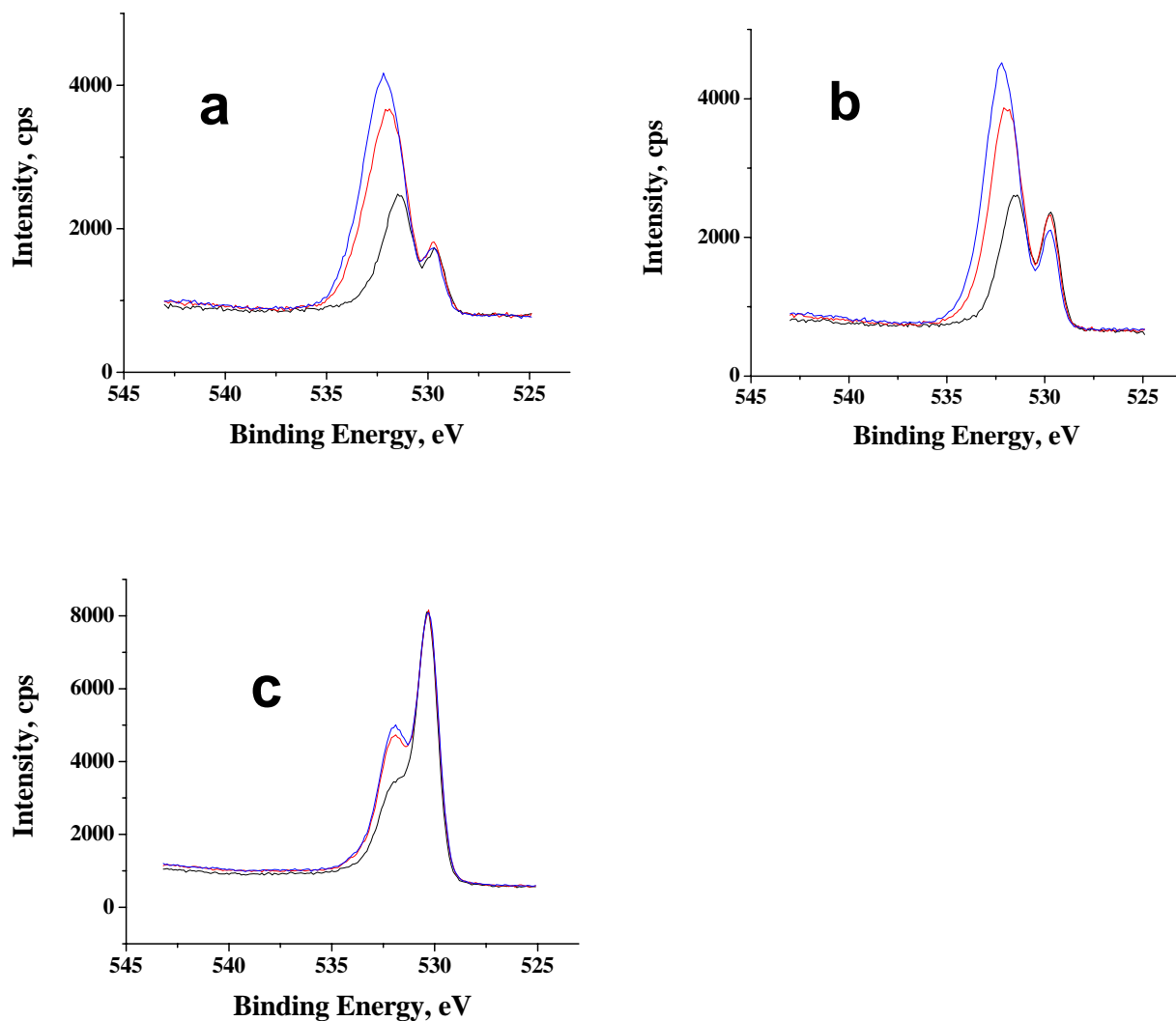


**Figure S7.** XPS S 2p regional scans for hexadecanethiol SAMs on (a) Ni, (b) Co, and (c) Fe prepared in the glovebox after minimal exposure to atmospheric conditions (black line), after eight days constant exposure to atmospheric conditions (red line), and after fifteen days constant exposure to atmospheric conditions (blue line).

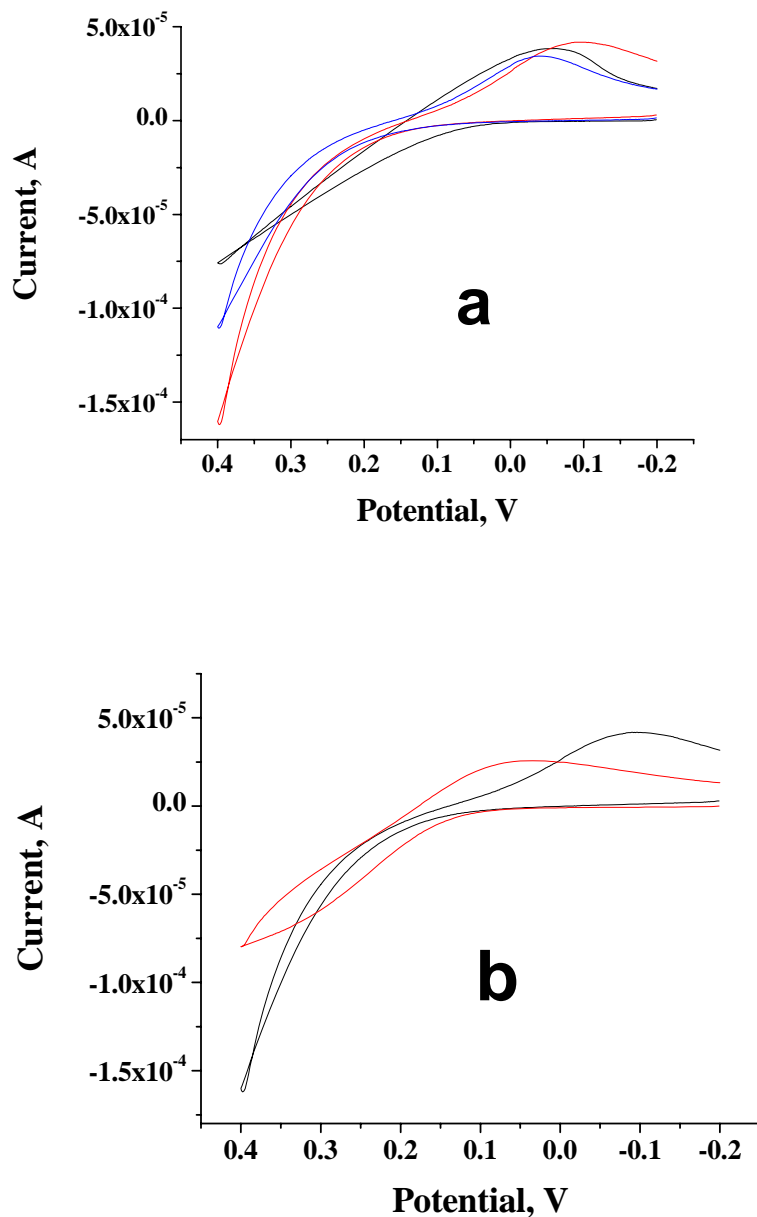


**Figure S8.** XPS O 1s regional scans for hexadecanethiol on electroreduced (a) Ni, (b) Co, and (c) Fe after minimal exposure to atmospheric conditions (black line) and after 5 days constant exposure to atmospheric conditions (red line).





**Figure S9.** XPS O 1s regional scans for hexadecanethiol SAMs on (a) Ni, (b) Co, and (c) Fe prepared in the glovebox after minimal exposure to atmospheric conditions (black line), after eight days constant exposure to atmospheric conditions (red line), and after fifteen days constant exposure to atmospheric conditions (blue line).



**Figure S10.** (a) Cyclic voltammograms of bare Ni (black line), bare Co (red line), and bare Fe (blue line) surfaces performed in the presence of 1 mM ferrocene in 0.1 M tetrabutylammonium hexafluorophosphate in dry, distilled tetrahydrofuran. (b) Cyclic voltammograms of bare Co (black line) and HDT/Co (glovebox) (red line) performed in the presence of 1 mM ferrocene in 0.1 M tetrabutylammonium hexafluorophosphate in dry, distilled tetrahydrofuran.

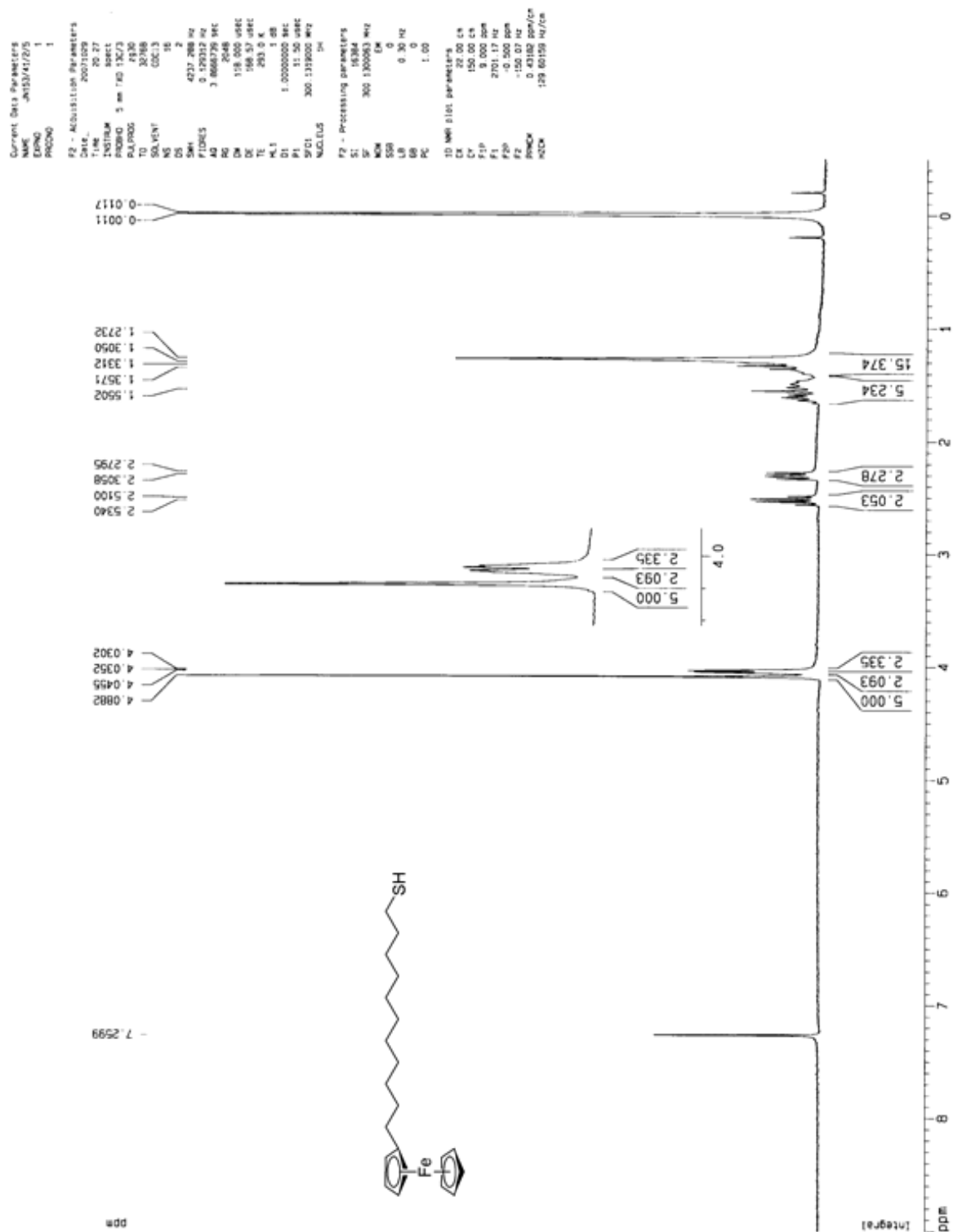
**Table S1.** XPS O 1s data for all glovebox and electroreduced samples analyzed including the binding energies (BE) of peaks determined from Lorentzian-Gaussian fits as well as integrated areas for the peaks.

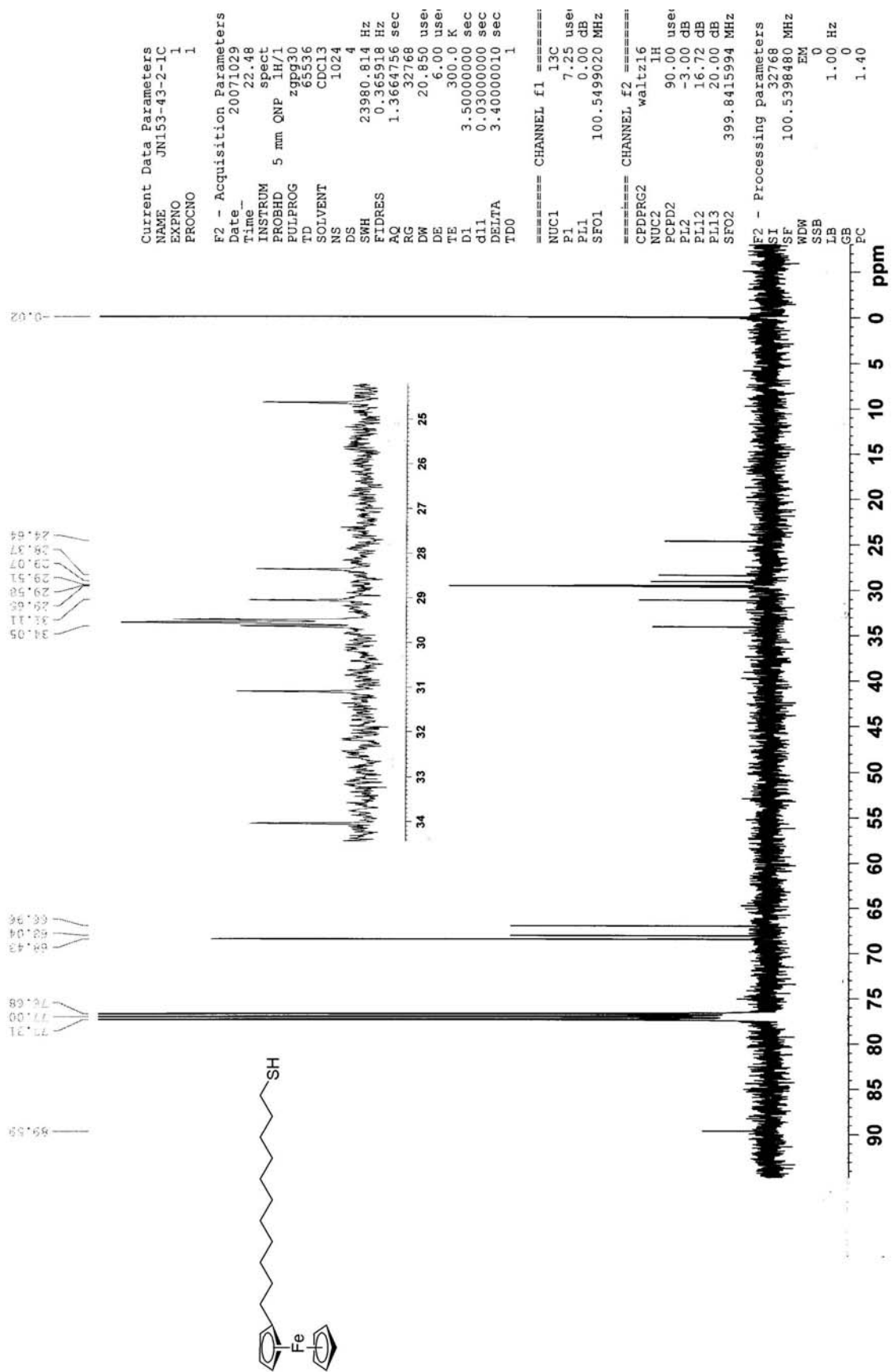
Sample	BE, eV	Area % (Area)	BE, eV	Area % (Area)	BE, eV	Area % (Area)
Co, sput	---	---	531.5	66.5 (10633)	529.8	33.5 (5359)
Co bare	532.8	5.5 (8182)	531.8	64.4 (96319)	529.6	30.1 (45030)
Co, ER, 1 min	533.3	23.1 (12670)	531.8	73.9 (40488)	529.9	2.9 (1611)
Co, ER, 5 min	533.4	18.3 (5595)	531.79	79.8 (24439)	529.7	2 (604)
Co, ER, 10 min, 1 h	533.3	21.4 (4288)	531.8	67.1 (13417)	529.9	11.4 (2289)
Co, ER, 10 min, 5 d	534.2	7 (1205)	532.5	90.2 (15646)	530.1	2.8 (486)
Co, GB, 1 d	---	---	531.5	68.7 (10921)	529.6	31.3 (4986)
Co, GB, 8 d	533.6	4.8 (1264)	531.9	75.8 (19883)	529.7	19.4 (5100)
Co, GB, 15 d	534.3	2.2 (689)	532.2	83.8 (26752)	529.7	14 (4480)
Ni sput	---	---	531.2	96.7 (20931)	529.5	3.3 (712)

Ni bare	532.8	5.5 (6152)	531.8	64.4 (72420)	529.6	30.1 (33857)
Ni, ER, 1 min	533.5	14 (5740)	532	81.2 (33391)	529.7	4.9 (2004)
Ni, ER, 5 min	533.2	17.8 (1888)	531.5	69.8 (7410)	529.5	12.4 (1320)
Ni, ER, 10 min, 1 h	532.5	33.4 (8687)	531.6	40.5 (10524)	530.2	26.1 (6796)
Ni, ER, 10 min, 5 d	533.3	19.6 (2987)	531.6	71.6 (10900)	529.9	8.8 (1345)
Ni, GB, 1d	533.2	9.1 (1158)	531.4	69.5 (8866)	529.6	21.4 (2726)
Ni, GB, 8 d	533.5	4.9 (1144)	531.95	84.5 (19623)	529.6	10.6 (2464)
Ni, GB, 15 d	534.2	3 (899)	532.2	88.6 (26409)	529.6	8.4 (2509)
Fe, sput	---	---	531.7	40.2 (2187)	530	59.8 (3248)
Fe, bare	---	---	531.7	34.2 (16720)	530.2	65.8 (32238)
Fe, ER 1min	533.6	4.2 (1664)	531.9	50.8 (19967)	530.3	45 (17695)
Fe, ER, 5min	533.1	9.3 (2070)	531.5	43.4 (9690)	530.1	47.3 (10545)
Fe, ER, 10 min, 1 h	533.1	13 (6647)	531.5	41.5 (21249)	530.3	45.6 (23344)
Fe, ER, 10 min, 5d	533	13 (4288)	531.3	63 (20764)	530.2	24 (7916)

Fe,GB, 1 h	533.7	3.2 (1377)	531.9	35.5 (15163)	530.3	61.3 (26222)
Fe,GB, 8 d	532.5	6.7 (3257)	531.9	40.6 (19658)	530.3	52.7 (25502)
Fe,GB,15 d	---	---	531.9	50.1 (26589)	530.3	49.9 (26478)

# NMR Spectra





Current Data Parameters  
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EXPNO 1  
PROCNO 1

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Time\_ 22.48  
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DS 4  
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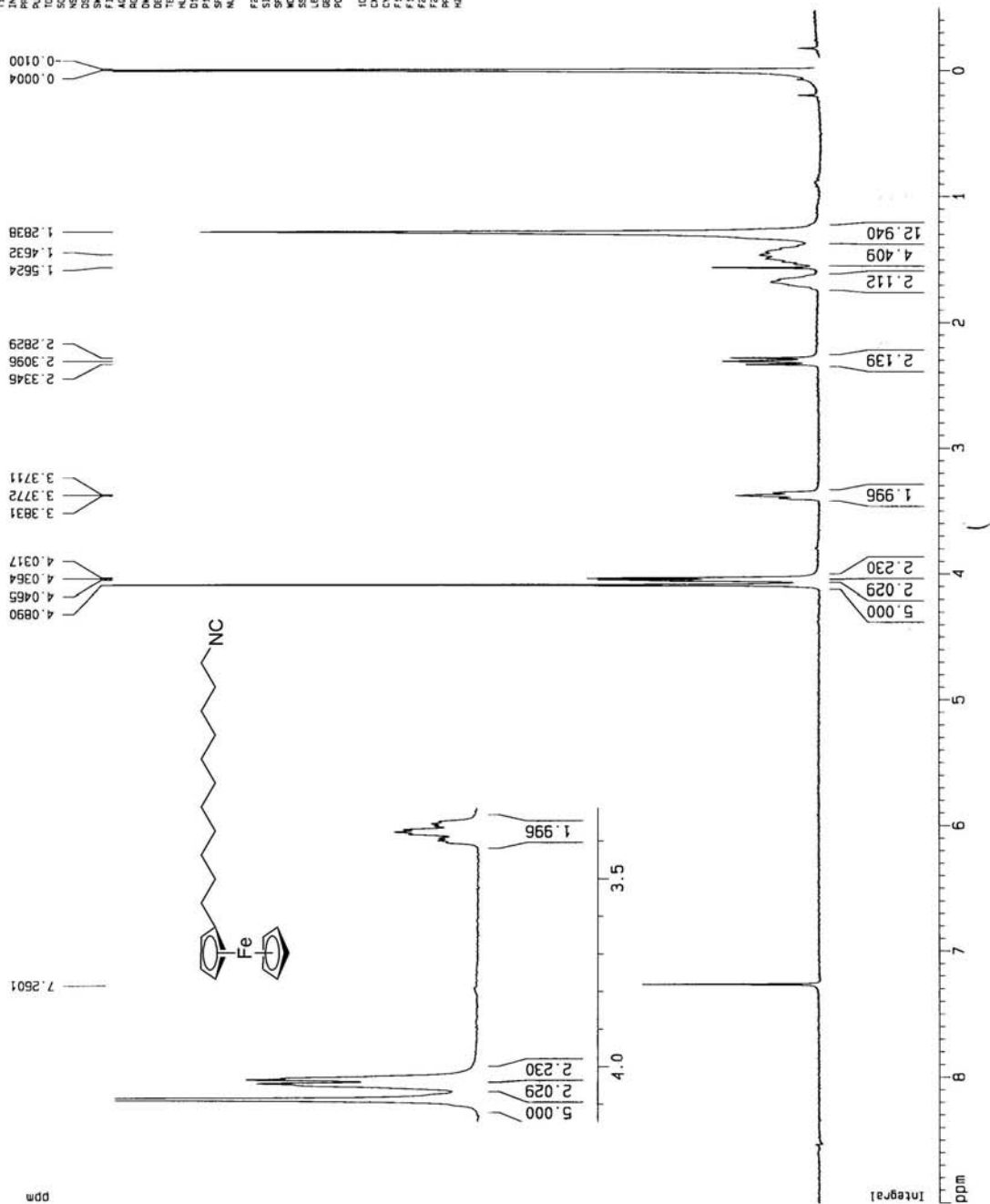
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===== CHANNEL f2 =====  
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PL13 20.00 dB  
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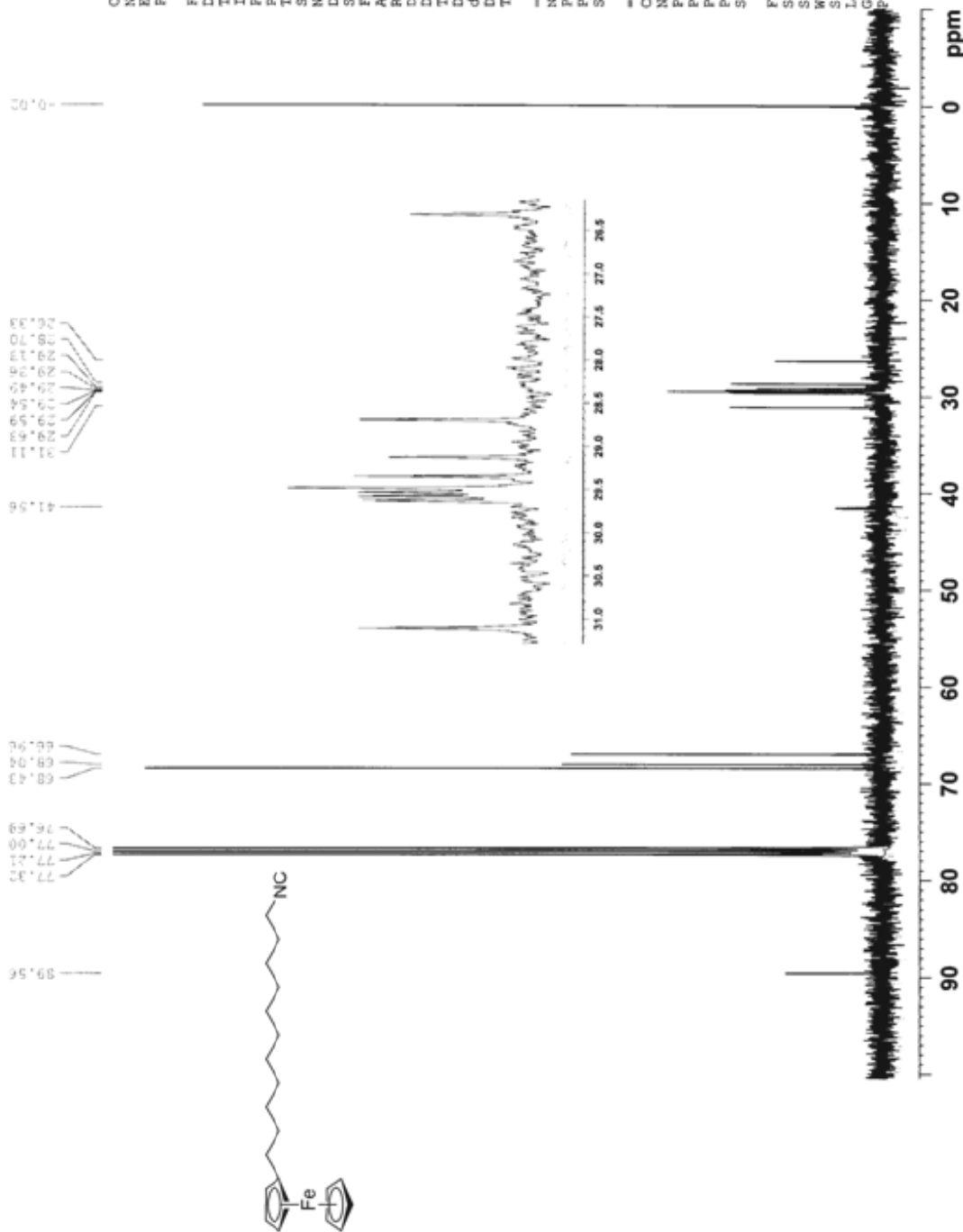
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Current Data Parameters  
 NAME Ferrocenyldecylalcohol  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
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 FIDRES 0.129312 Hz  
 AQ 3.8666729 sec  
 RG 2048  
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 DE 19.00 usec  
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 NUC1 1H  
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 LG 0.30 Hz  
 GB 0  
 PC 1.00  
 1D NMR plot parameters  
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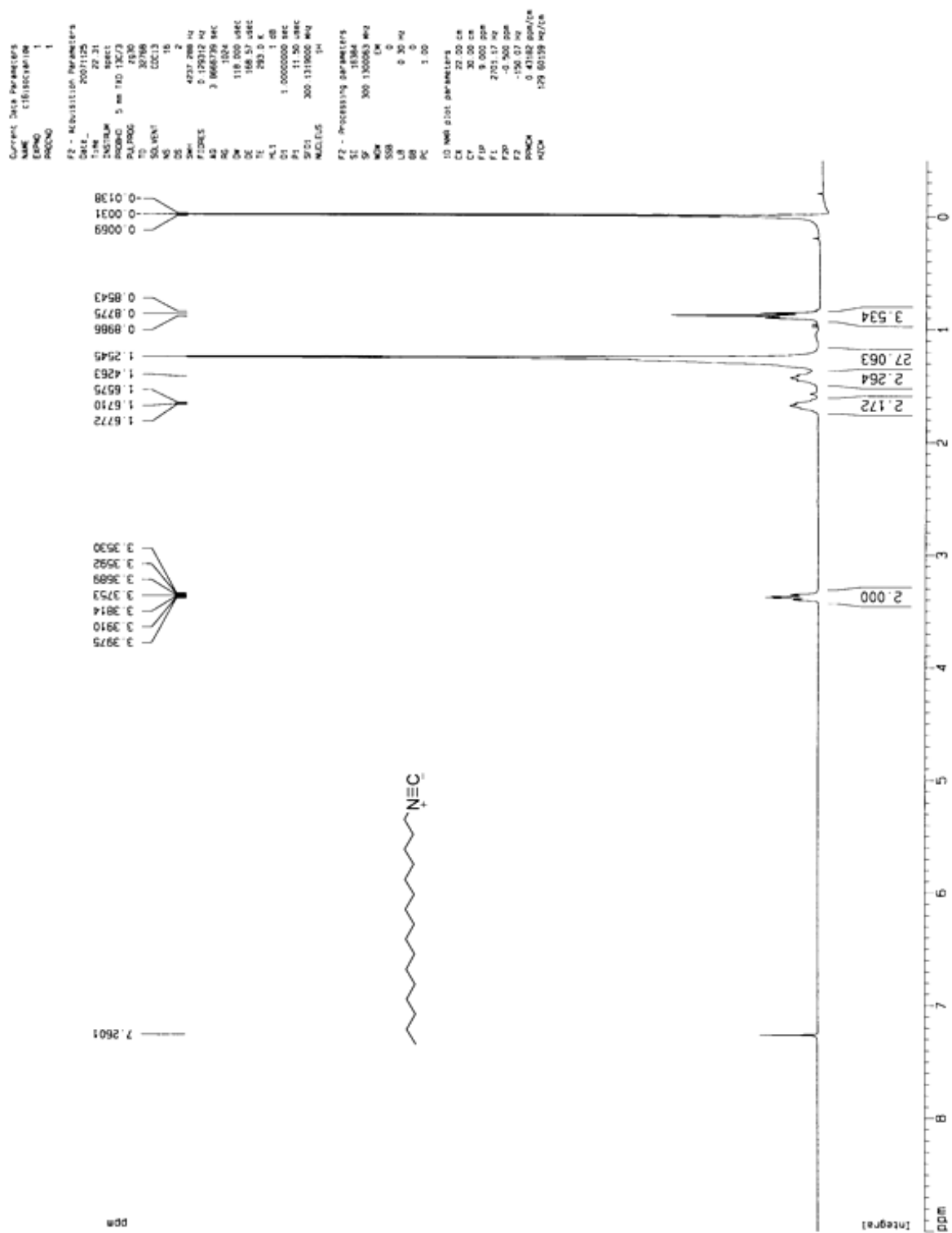
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NAME JNferroceneisocyanide  
EXPNO 1  
PROCNO 1

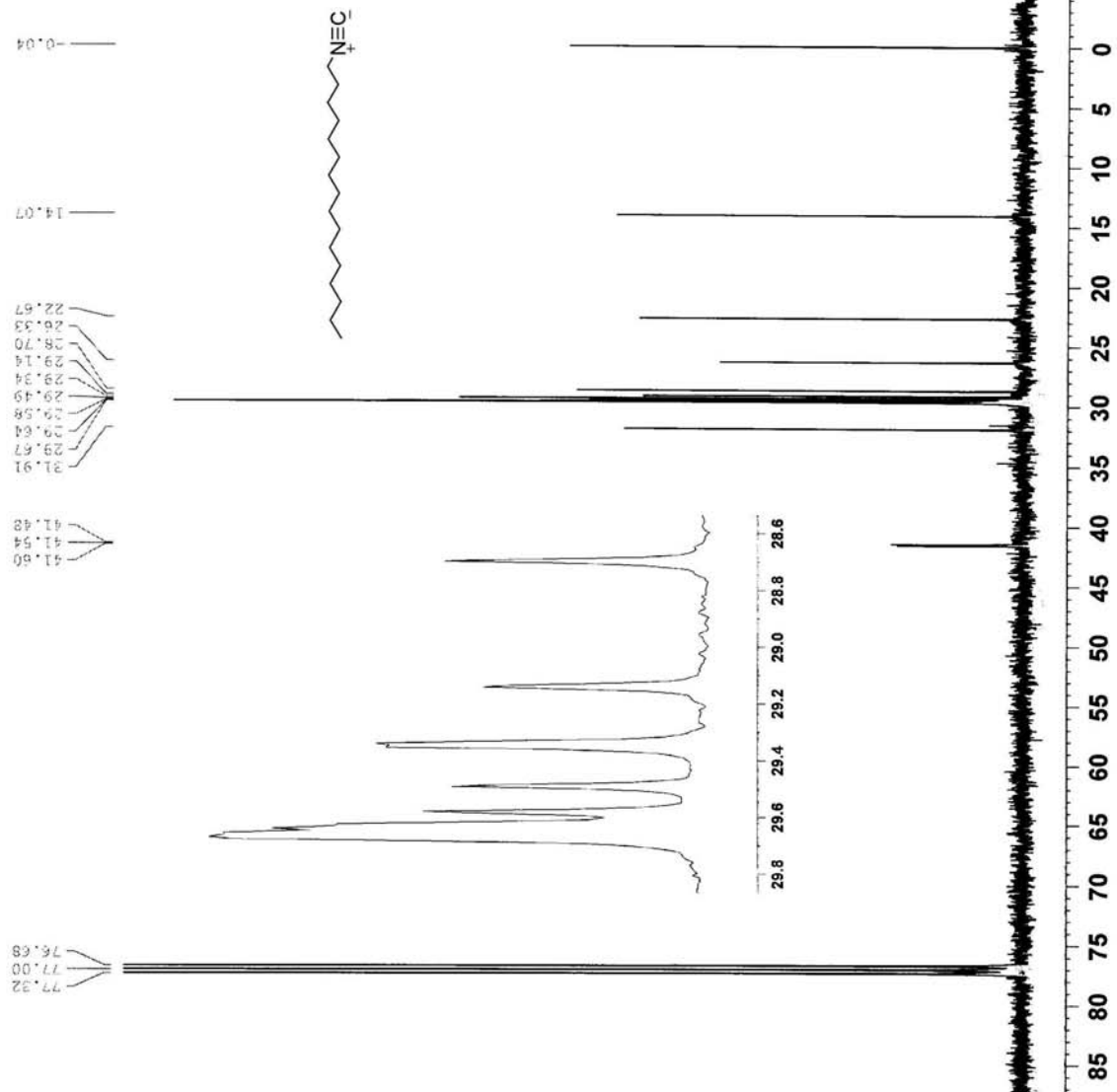
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FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 32768  
CW 20.850 usec  
DE 6.00 usec  
TE 300.0 K  
D1 4.50000000 sec  
d11 0.03000000 sec  
DELTA 4.40000010 sec  
TD0 1

===== CHANNEL f1 =====  
NUC1 13C  
P1 7.25 usec  
PL1 0.00 dB  
SF01 100.5499020 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 -2.00 dB  
PL12 16.72 dB  
PL13 20.00 dB  
SF02 399.8415994 MHz

F2 - Processing parameters  
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SF 100.5398480 MHz  
WDW EM  
SSB 0  
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PC 1.40





Current Data Parameters  
NAME JNC16isocyanide  
EXPNO 1  
PROCNO 1

F2 - Acquisition Parameters  
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FIDRES 0.365918 Hz  
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RG 32768  
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DE 6.00 usec  
TE 300.0 K  
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d11 0.03000000 sec  
DELTA 1.89999998 sec  
TD0 1

===== CHANNEL f1 =====  
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PL1 0.00 dB  
SFO1 100.5499020 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 -3.00 dB  
PL12 16.72 dB  
PL13 20.00 dB  
SFO2 399.8415994 MHz

F2 - Processing parameters  
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SF 100.5398480 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

## References

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