Supplementary Information (SI) for Analyst.

Analysis of blue and green REACH Compliant Tattoo Inks

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1. Summary Tables

Table S1. Summary of carrier ink composition determined by NMR spectroscopy

Brand	Name	Reported Composition	Observed Composition
Intenze GenZ	Light Grass	water (aqua), Hamamelis Virginiana Extract, ammonium acrylates copolymer, glycerin, ethanol	water, ethanol, polyethylene glycol, 1,3-butanediol
	Blue Sky	water (aqua), Hamamelis Virginiana Extract, ammonium acrylates copolymer, glycerin, ethanol	water, ethanol, 1,3-butanediol, propylene glycol, unidentified long-chain alkane (Figure S9-12)
Dynamic Platinum	Baby Blue	aqua, glycerin, butylene glycol, Hamamelis Water	water, propylene glycol, glycerol, polyethylene glycol, unidentified long-chain alkene (Figure S15-18)
	Emerald Green	distilled water, glycerin, butylene glycol, Hamamelis Water	water, isopropanol, propylene glycol, polyethylene glycol, glycerol
Quantum Ink	Grover	glycerin, ethanol, aqua	glycerol, ethanol, water
	Pickle Juice	glycerin, ethanol, aqua	glycerol, ethanol, water, polyethylene glycol
Xtreme Ink	Azure	no composition listed on bottle	water, ethanol, glycerol, polyethylene glycol, propylene glycol, unidentified long-chain alkane (Figure S39-42)
	Lime Green	no composition listed on bottle	water, ethanol, propylene glycol, polyethylene glycol, glycerol, unidentified long-chain alkane (S45-48)
BioTek	Green	alcohol, glycerin, aqua, propylene glycol, ricin oil, polysorbate 20, magnesium aluminum silicate*, PVP, Aloe Barbadensis, Hamamelis Virginiana	water, ethanol, propylene glycol, glycerol, polyethylene glycol

	Deep Ocean	glycerin, propylene glycol, Hamamelis Virginiana, aqua, Polysorbate 20, magnesium aluminum silicate*, PVP, ricin oil, Aloe Barbadensis	water, ethanol, propylene glycol, glycerol, polyethylene glycol

**not possible to detect by NMR spectroscopy*

Table S2. Summary of carrier ink composition determined by Raman and XRF spectroscopies

Brand	Name	Reported Pigments	Pigments Observed by Raman	Elements Observed by XRF (Likely pigment in parentheses)
Intenze GenZ	Light Grass	C.I.13980 (PY151), C.I. 69800 (PB60), C.I. 77891 (PW6)	C.I. 69800 (PB60)	Ti (PW6)
	Blue Sky	C.I. 77891 (PW6), C.I.69800 (PB60)	C.I. 69800 (PB60)	Ti (PW6)
Dynamic Platinum	Baby Blue	C.I. 77891 (PW6), C.I. 42090 (FD&C Blue No. 1)	C.I. 74260 (PG7)	Cu (PG7), Ti (PW6)
	Emerald Green	C.I. 77891 (PW6), C.I. 19140 (tartrazine, FD&C Yellow 5), C.I. 42090 (FD&C Blue No. 1)	C.I. 74260 (PG7)	Cu (PG7), Ti (PW6)
Quantum Ink	Grover	C.I. 77891 (PW6), C.I. 42765 (alkali blue)	C.I. 42765 (alkali blue)	Ti (PW6)
	Pickle Juice	C.I. 21290 (PY180), C.I. 74265 (PG36)	C.I. 74260 (PG7), C.I. 11741 (PY74)	Cu (PG7)
Xtreme Ink	Azure	C.I. 77891 (PW6), C.I. 69800 (PB60)	C.I. 74160 (PB15:1/6)	Cu (PB15), Ti (PW6)
	Lime Green	C.I. 77891 (PW6), C.I. 77491 (red iron oxide), C.I. 200310 (PY155)	C.I. 74260 (PG7)	Cu (PG7), Ti (PW6)

BioTek	Green	C.I.77288 (Chromium oxide green)	C.I.77288 (Chromium oxide green)	Cr (chromium oxide)
	Deep Ocean	C.I. 74160 (PB15:1), C.I. 77891 (PW6)	C.I. 74160 (PB15:1/6)	Cu (PB15)

Table S3. Identifying information of tattoo inks analyzed

Brand	Name	Lot	Batch	Ref	Article
Intenze GenZ	Light Grass	SS327	EU151004EUB6000 4EUW003IMX40	1036C50823D2 5080417	ST1508GZLG
	Blue Sky	SS323	EUW003EUB60001I MX40	1053C04422M0 5090186	ST1044BS
Dynamic Viking	Baby Blue	BB-004-D1			
	Emerald Green	EG-002-D1			
Quantum Ink	Grover	#Q013			
	Pickle Juice	#Q013			
Xtreme Ink	Azure		U2H12		
	Lime Green		U2H12		
BioTek	Green	EU0ECS-25D22			

Deep Ocean EU04DN-23E16

2. NMR data

2.1. Intenze GenZ

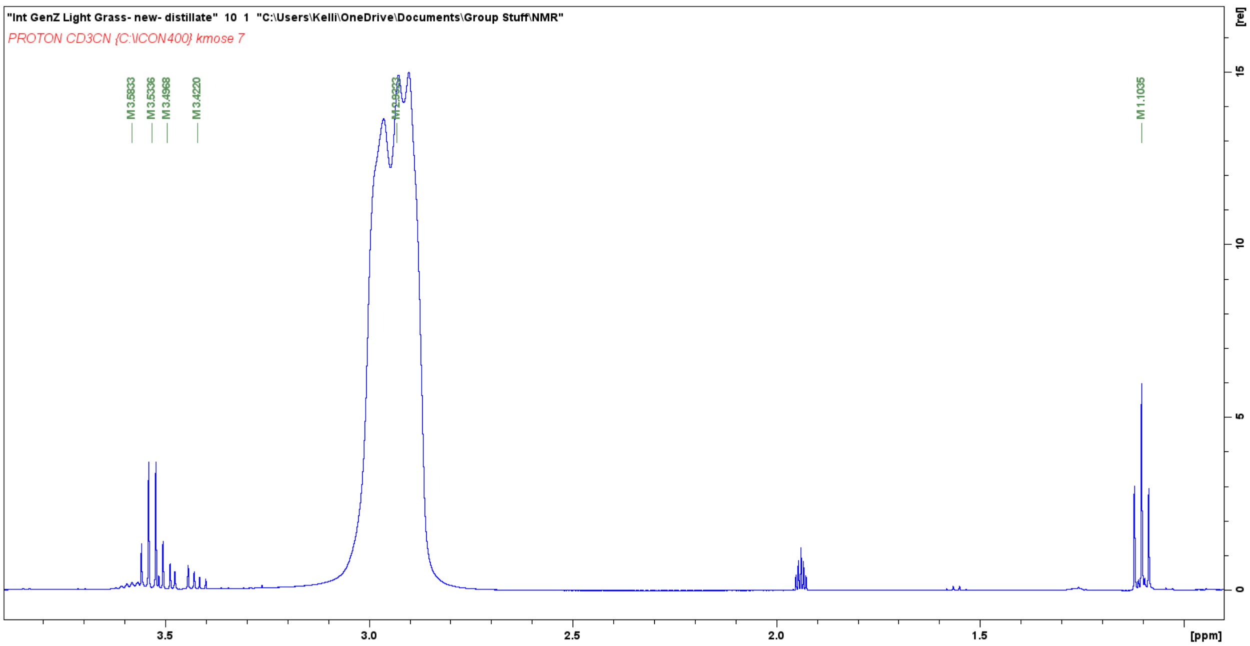

***Figure S1.** ^{1}H NMR spectrum of Intenze GenZ Light Grass ink distillate in acetonitrile-d3*

Signals at δ1.1035 ppm and δ3.5336 ppm are characteristic of ethanol. The broad signal at δ2.9323 ppm is produced by water. Singals at δ3.4220, δ3.4968 ppm, and δ3.5833 ppm are produced by glycerol. The acetonitrile solvent peak is located at δ1.94 ppm.

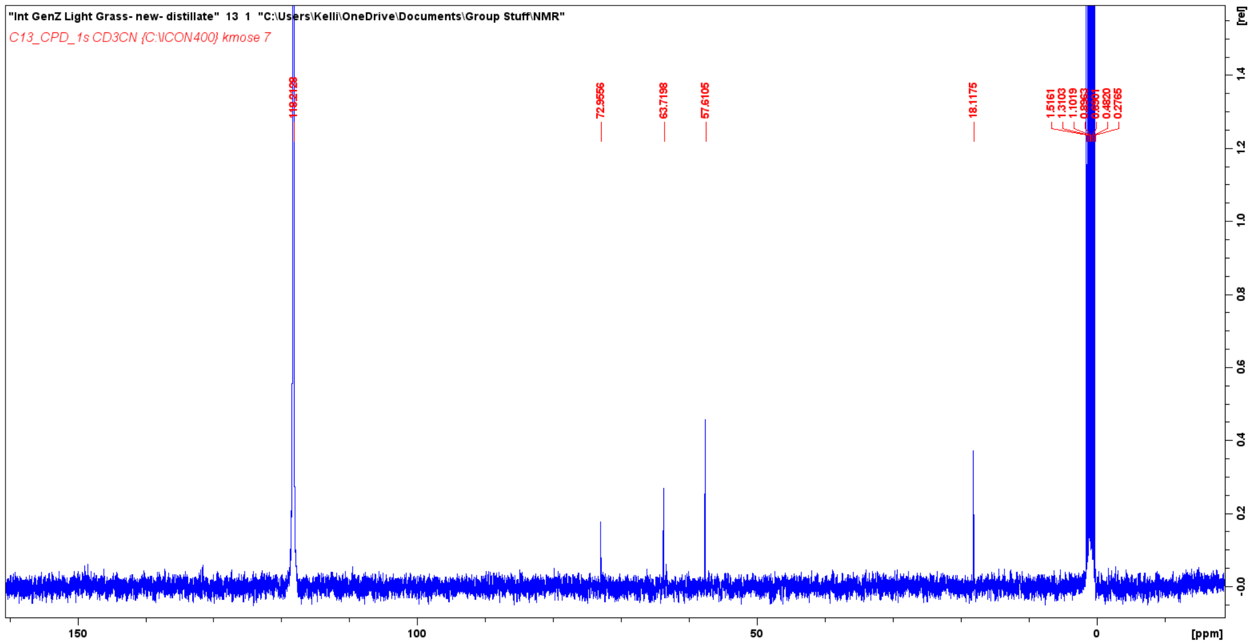

***Figure S2.** [13]C NMR spectrum of Intenze GenZ Light Grass ink distillate in acetonitrile-d3*

Peaks at δ18.1175 ppm and δ57.6105 ppm are produced by ethanol. Glycerol peaks appear at δ63.7198 ppm and δ72.9556 ppm. The solvent peak for acetonitrile is found around δ0.89 ppm and δ118 ppm.

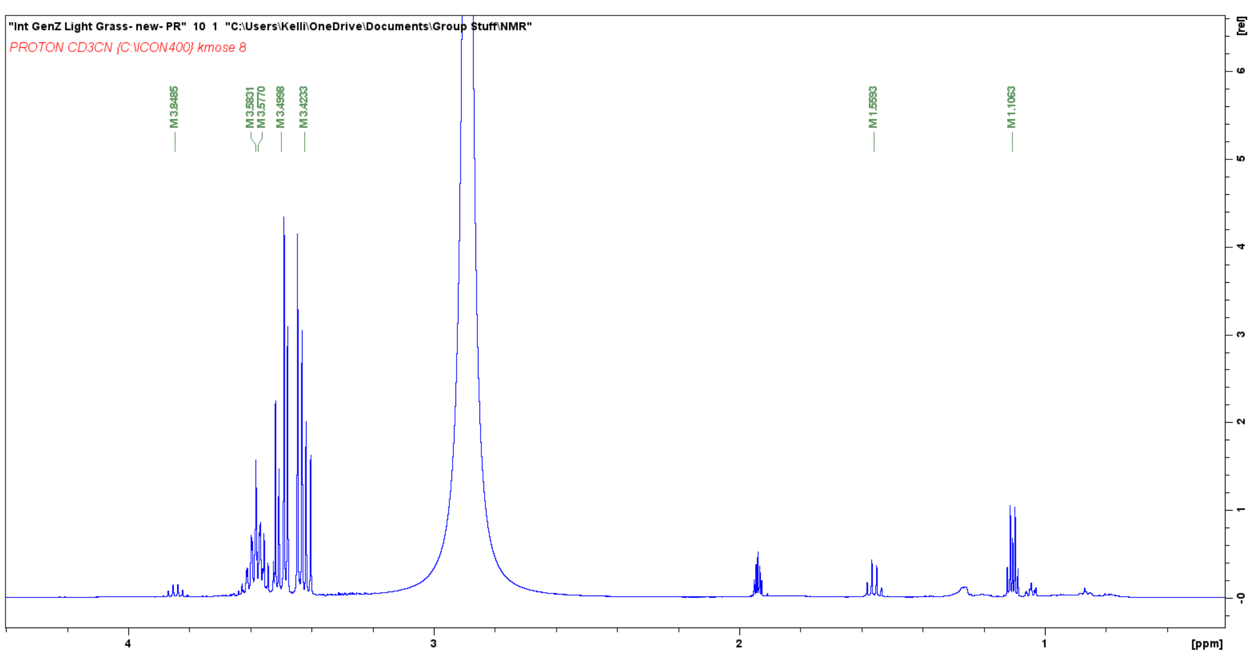

***Figure S3.** [1]H NMR spectrum of Intenze GenZ Light Grass ink pot residue in acetonitrile-d3*

Signals at δ3.4233 ppm, δ3.4998 ppm, and δ3.5770 ppm are consistent with glycerol being present in this ink. A peak at δ3.5831 ppm is likely produced by polyethylene glycol. The signals at δ1.1063 ppm, δ1.5593 ppm, and δ3.8485 ppm are consistent with 1,3-butanediol. The peaks at δ2.90 ppm and δ1.94 ppm are produced by water and acetonitrile, respectively.

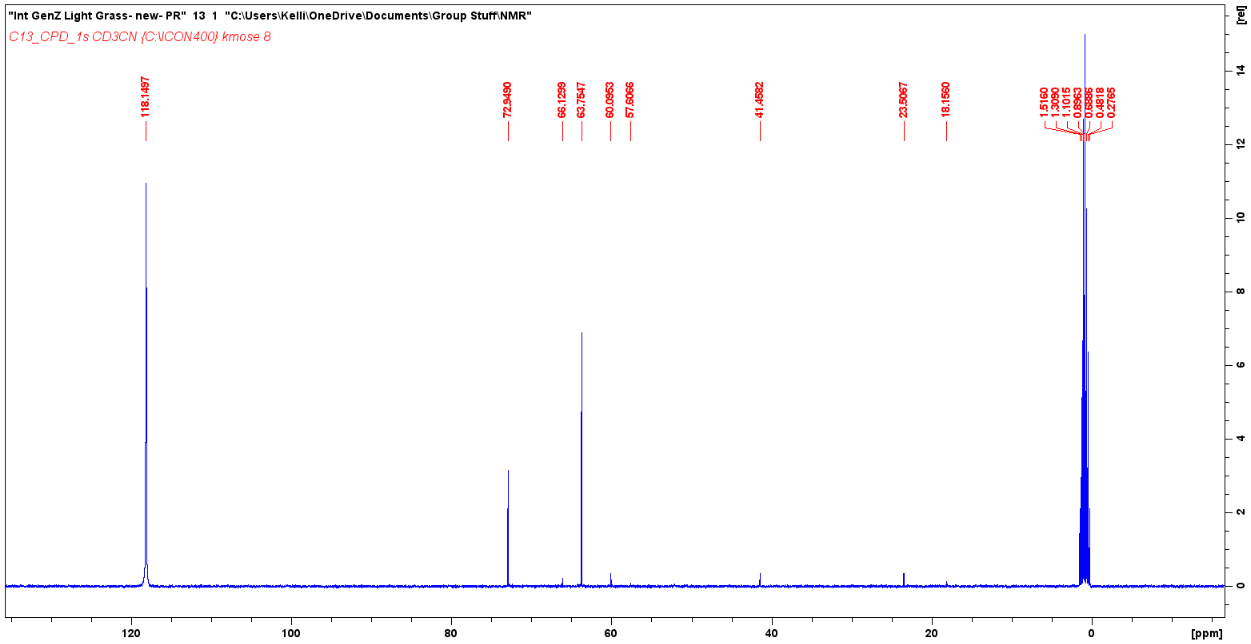

Figure S4. *^{13}C NMR spectrum of Intenze GenZ Light Grass ink pot residue in acetonitrile-d3*

Signals at δ63.7547 ppm and δ72.9490 ppm are consistent with glycerol being in this ink. Signals at δ23.5067 ppm, δ41.4582 ppm, δ60.0953 ppm, and δ66.1299 ppm support 1,3-butanediol being present. Small amounts of ethanol produce the signals at δ18.1560 ppm and δ57.6066 ppm The remaining peaks are produced by the solvent.

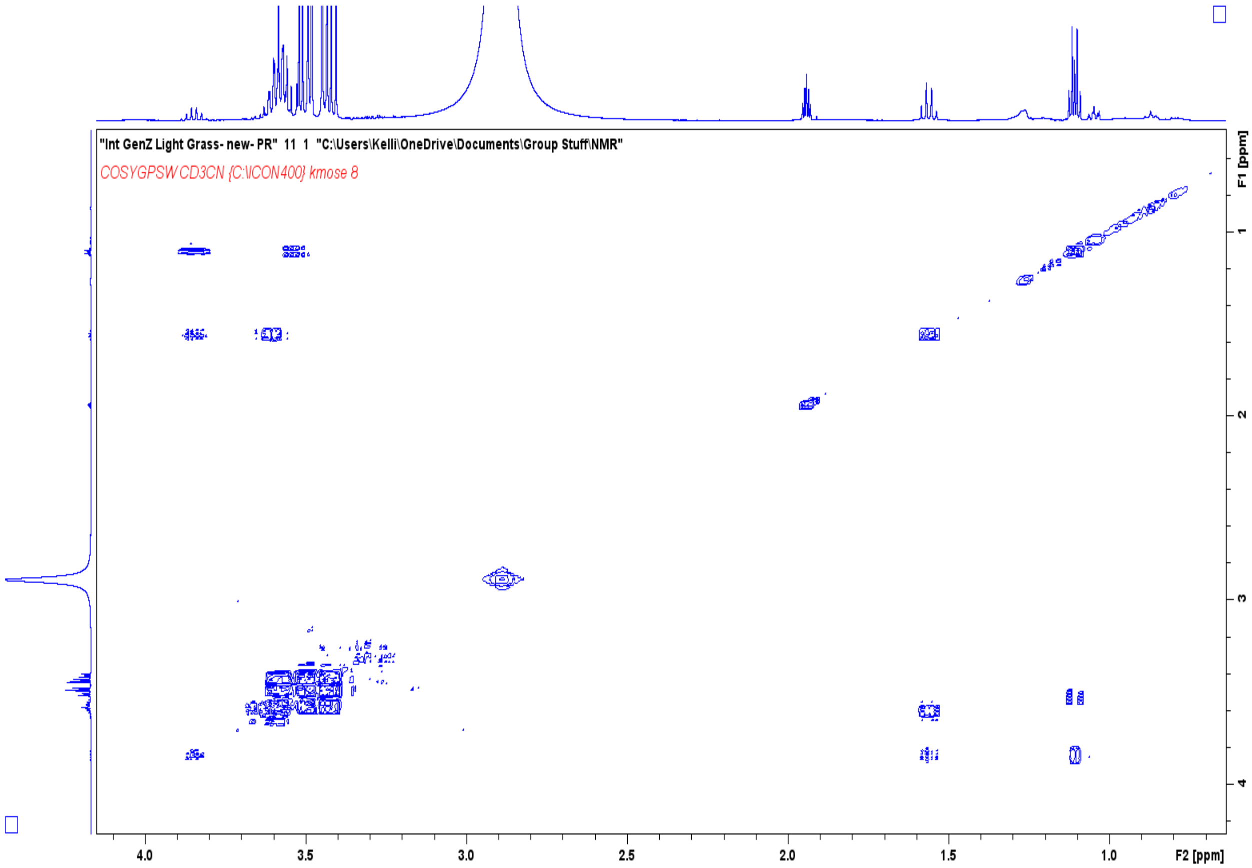

Figure S5. *[1]H-[1]H COSY spectrum of Intenze GenZ Light Grass ink pot residue in acetonitrile-d3*

Coupling occurring between peaks at δ1.1063 ppm, δ1.5593 ppm, δ3.8485 ppm and a peak slightly downfield of δ3.5831 ppm support 1,3-butanediol being present in this ink. Additionally, coupling occurs between peaks at δ3.4233 ppm, δ3.4998 ppm, and δ3.5770 ppm, indicating the presence of glycerol.

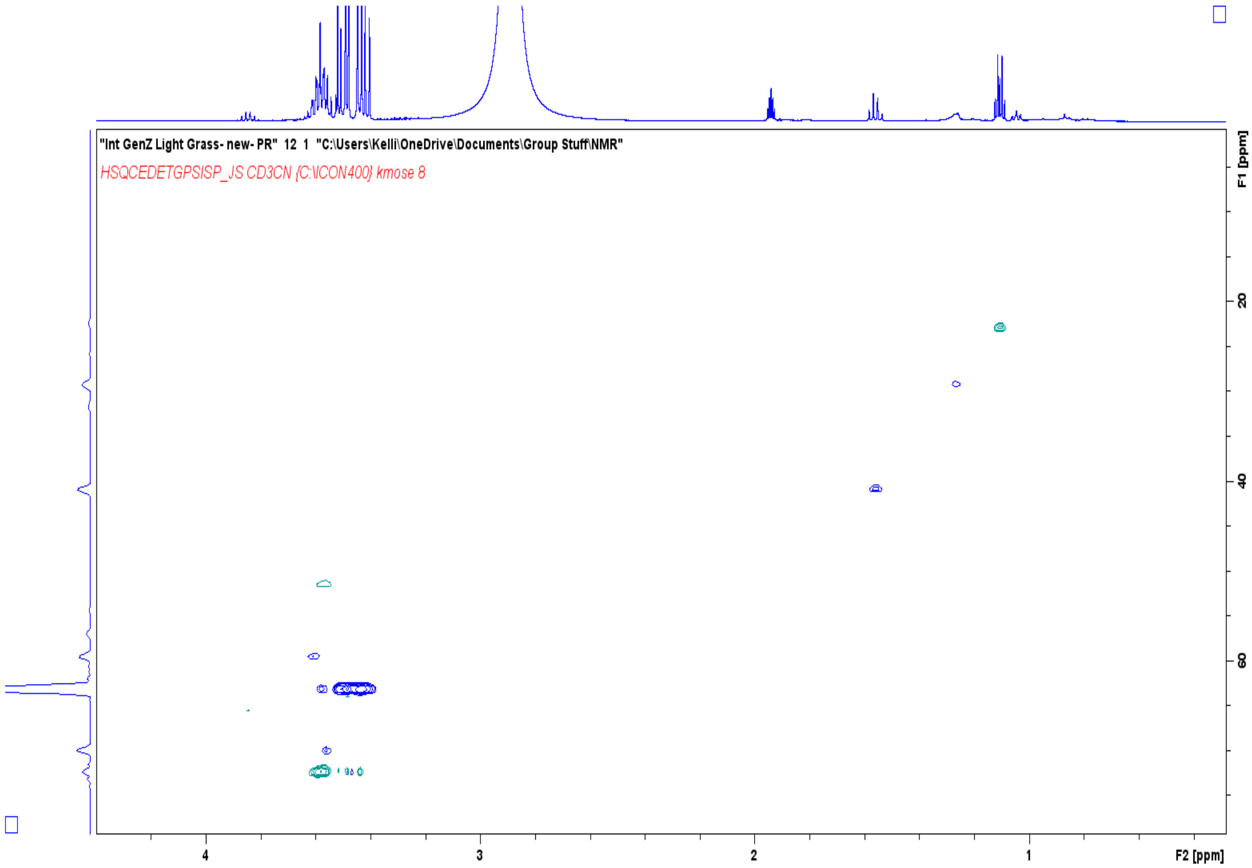

Figure S6. *^{1}H-^{13}C HSQC spectrum of Intenze GenZ Light Grass ink in acetonitrile-d3*

Coupling between the signals at δ1.1063 ppm and δ23.5067 ppm, δ1.5593 ppm and δ41.4582 ppm, and δ3.8485 ppm and δ66.1299 ppm is consistent with 1,3-butanediol. Additionally, coupling occurs between the ^{13}C peak at δ60.0953 ppm and a signal slightly downfield of δ3.5831 ppm which further supports 1,3-butanediol being present. Coupling between ^{1}H peaks at δ3.4233 ppm, δ3.4998 ppm, and δ3.5770 ppm and ^{13}C peaks at δ63.7547 ppm and δ72.9490 ppm support glycerol being present in the ink. Lastly, there appears to be coupling between a ^{1}H peak at around δ3.5831 ppm and a ^{13}C peak at δ70 ppm which is typical of polyethylene glycol being present. This cannot be confirmed due to the significant overlapping of the peaks.

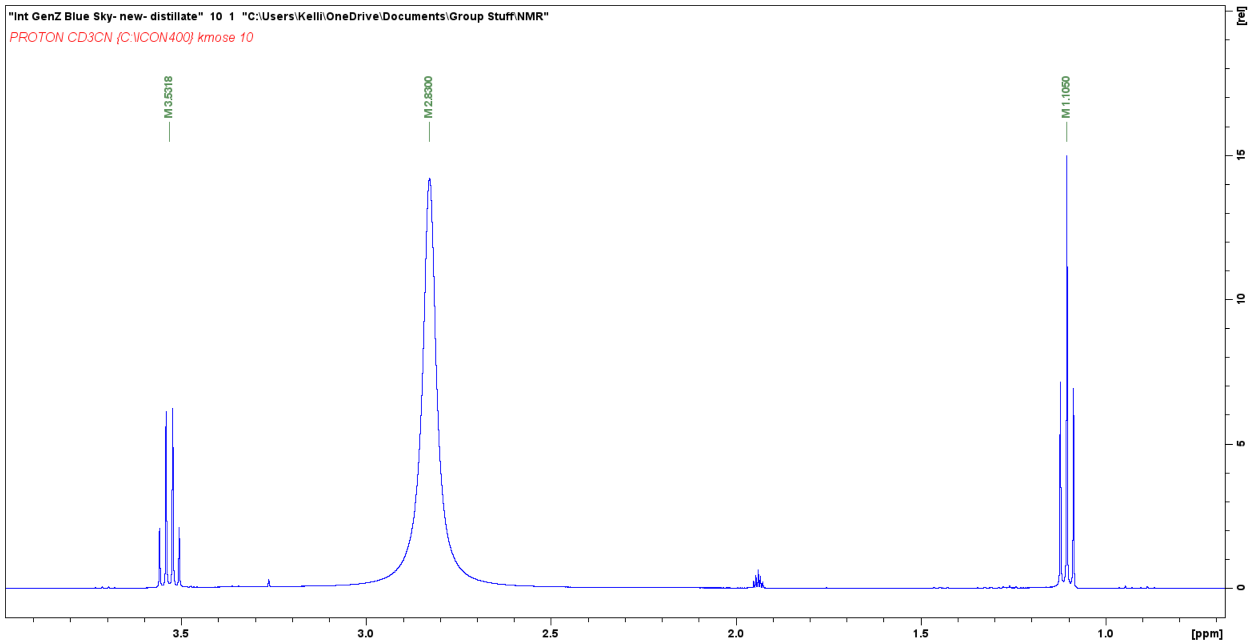

Figure S7. *^{1}H NMR spectrum of Intenze GenZ Blue Sky ink distillate in acetonitrile-d3*

Peaks at δ1.1050 ppm and δ3.5318 ppm are produced by ethanol. Water produces the broad peak at δ2.8300 ppm. The solvent appears at δ1.94 ppm.

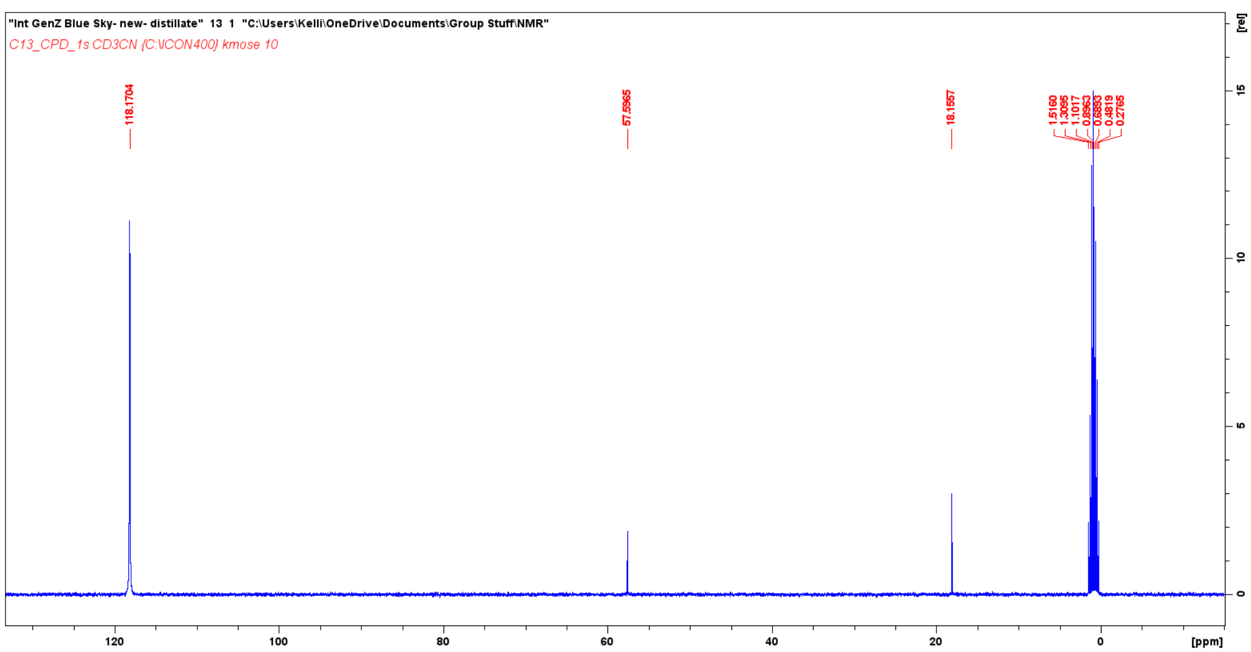

Figure S8. *^{13}C NMR spectrum of Intenze GenZ Blue Sky ink distillate in acetonitrile-d3*

Ethanol produces the peaks at δ18.1557 ppm and δ57.5965 ppm. The remaining peaks are produced by the solvent.

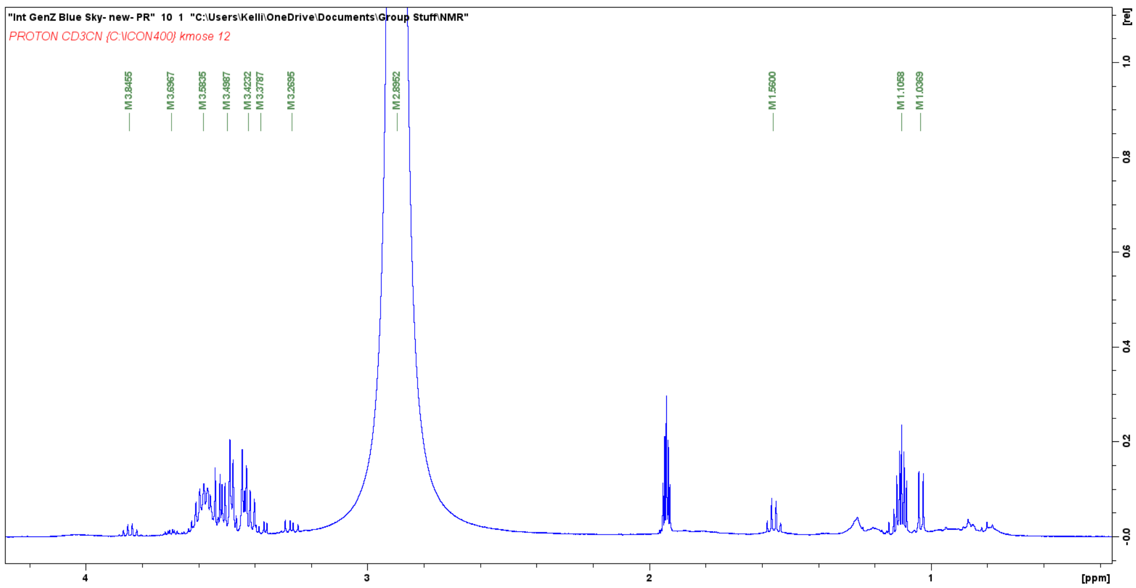

Figure S9. ^{1}H NMR spectrum of Intenze GenZ Blue Sky ink pot residue in acetonitrile-d3 Peaks at δ1.0369 ppm, δ3.2695 ppm, δ3.3787 ppm, and δ3.6967 ppm are attributed to small amounts of propylene glycol. 1,3-butanediol likely produces the peaks at δ1.1058 ppm, δ1.5600 ppm, δ3.8455 ppm, while glycerol produces ones at δ3.4232 ppm, δ3.4987 ppm, and δ3.5853 ppm. Water and the solvent produce signals at δ2.90 ppm and δ 1.94 ppm, respectively. Small peaks around δ0.81 ppm and δ1.26 ppm may be due to the presence of a long-chain alkane.

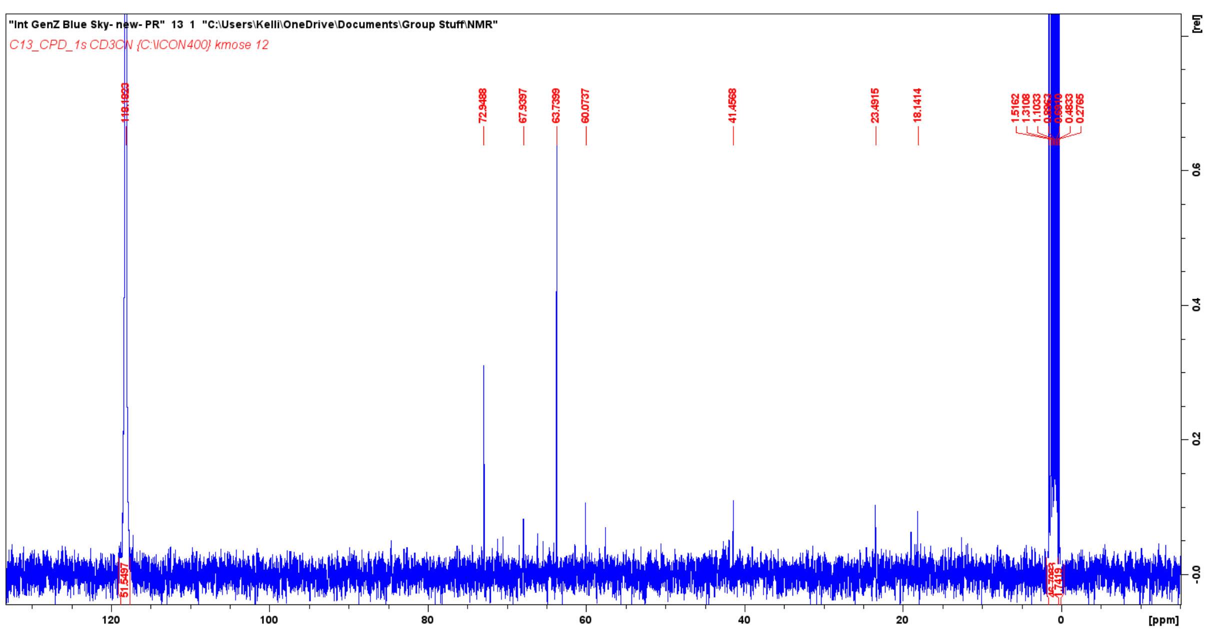

Figure S10. *^{13}C NMR spectrum of Intenze GenZ Blue Sky in pot residue in acetonitrile-d3*

Peaks appearing at δ63.7399 ppm and δ72.9488 ppm are produced by glycerol. Peaks at δ23.4915 ppm, δ41.4568 ppm, δ60.0737 ppm, and δ67.9397 ppm support the presence of 1,3-butanediol. A peak at δ18.1414 ppm is likely from propylene glycol, although the two corresponding peaks around δ68 ppm do not appear.

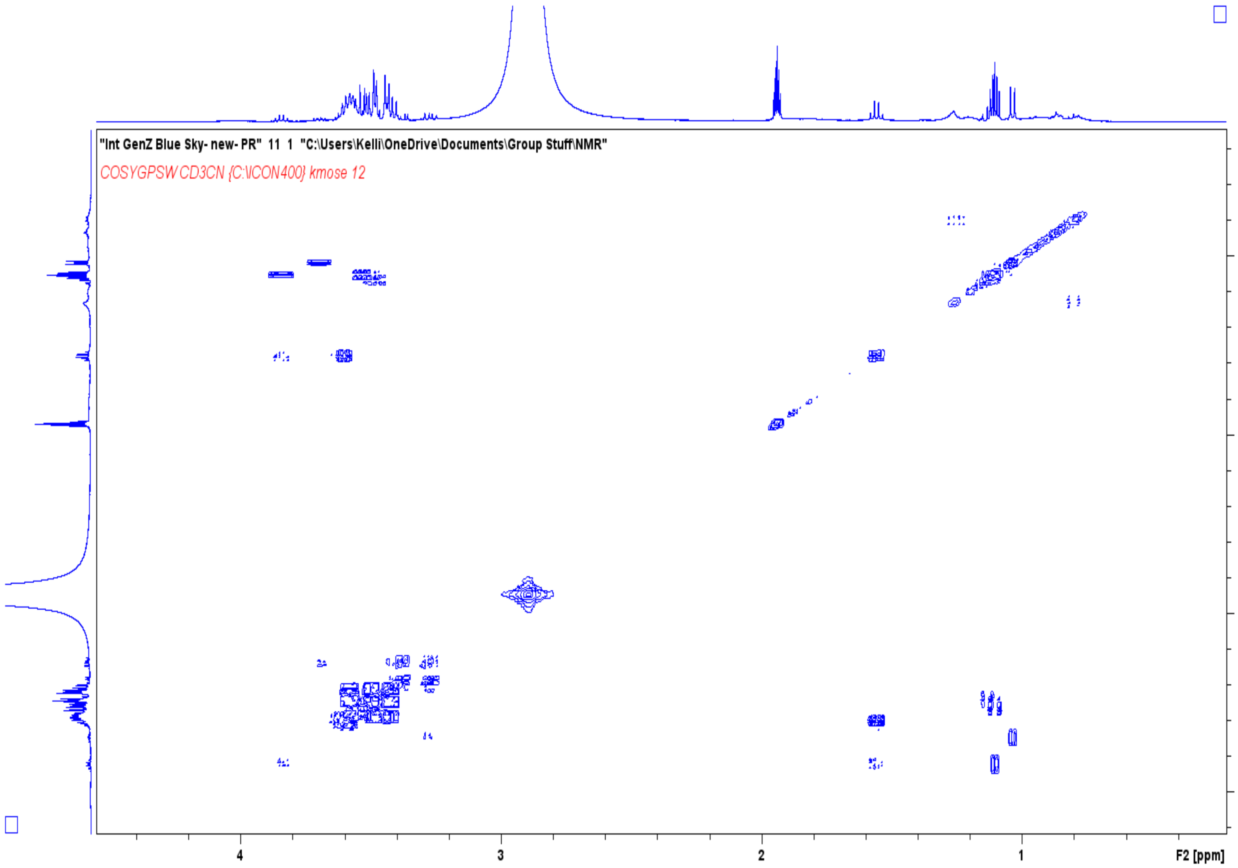

Figure S11. *[1]H-[1]H COSY NMR spectrum of Intenze GenZ Blue Sky ink pot residue in acetonitrile-d3*

Peaks at δ1.0369 ppm, δ3.2695 ppm, δ3.3787 ppm, and δ3.6967 ppm show coupling, supporting propylene glycol being present. Peaks at δ1.1058 ppm, δ1.5600 ppm, δ3.8455 ppm, and peaks slightly downfield of δ3.5835 ppm support 1,3-butanediol being present. Coupling between peaks around δ1.11 ppm and δ3.51 ppm are likely from small amounts of ethanol being present in the sample but have overlapping peaks with other components. Glycerol peaks exhibit coupling between its peaks at δ3.4232 ppm, δ3.4987 ppm, and δ3.5835 ppm. Evidence of a long-chain alkane is seen by coupling between peaks at δ0.81 ppm and δ1.26 ppm.

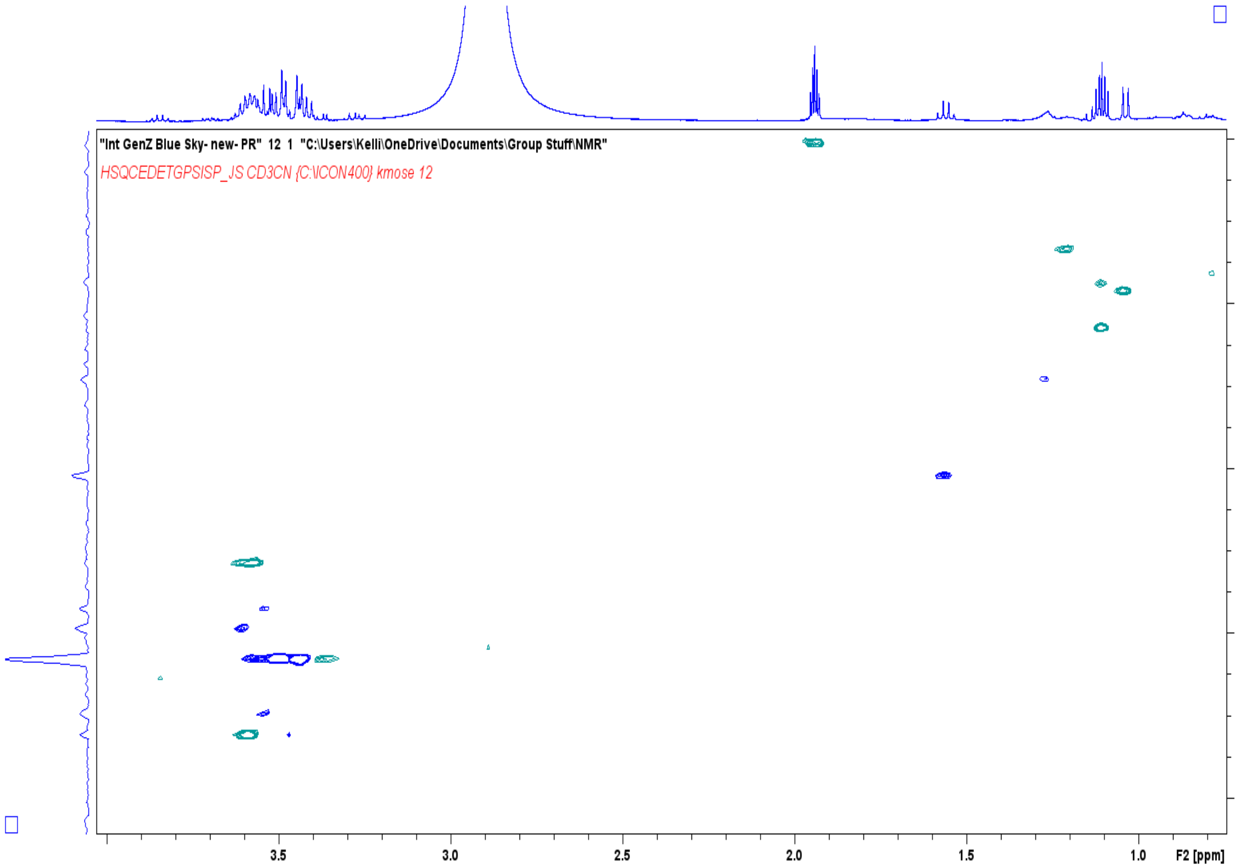

Figure S12. *^{1}H-^{13}C HSQC spectrum of Intenze GenZ Blue Sky ink pot residue in acetonitrile-d3*

Coupling occurs between the ^{1}H and ^{13}C peaks at δ1.0369 ppm and δ19.0219 ppm which is characteristic of propylene glycol. No other coupling is seen due to low concentration. Ethanol exhibits coupling between ^{1}H peaks at δ1.11 ppm and δ3.51 ppm and ^{13}C peaks at δ17.4 ppm and δ57.1 ppm, respectively. Coupling occurs between the ^{1}H and ^{13}C peaks at δ1.1058 ppm and δ23.4915 ppm, δ1.5600 ppm and δ41.4568 ppm, δ3.61 ppm and δ60.0737 ppm, and δ3.8455 ppm and δ67.9397 ppm support1,3-butanediol being present in the sample. Some coupling also occurs between ^{1}H peaks at δ3.4232 ppm, δ3.4987ppm and δ3.5835 ppm with ^{13}C peaks at δ72.27 ppm and δ60.97 ppm which may be indicative of glycerol.

2.2 Dynamic Viking

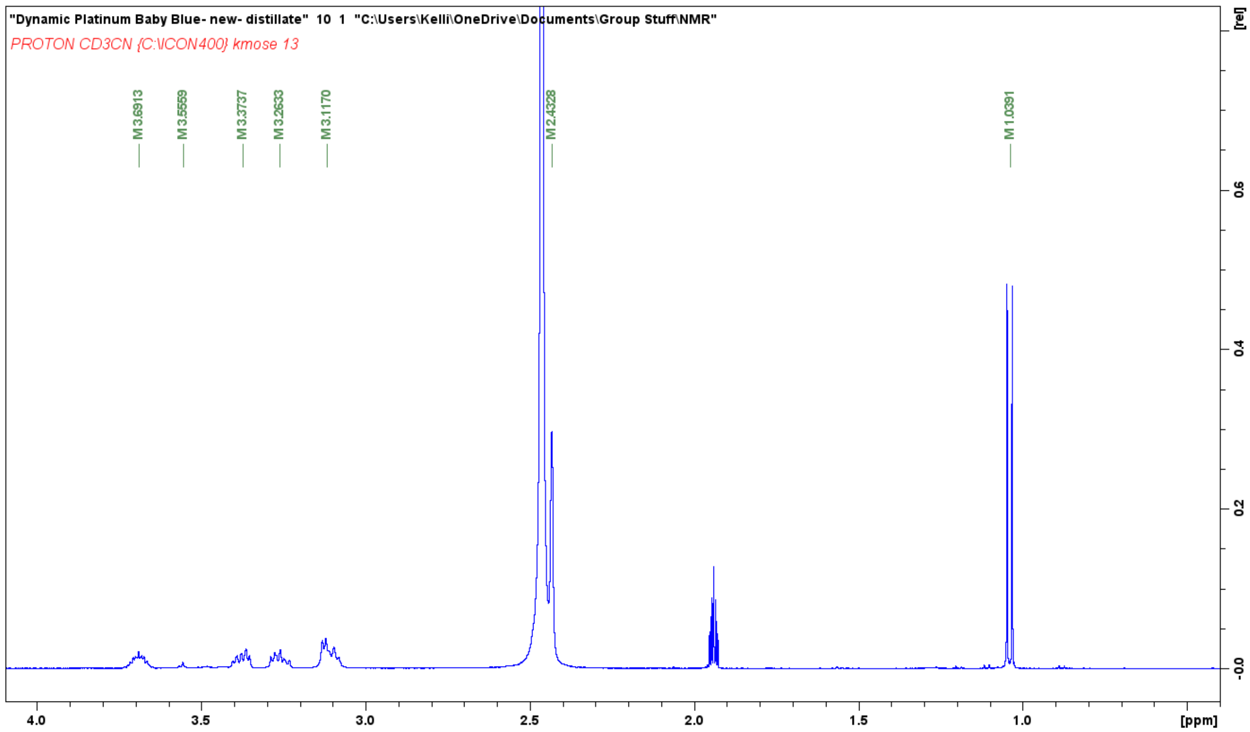

Figure S13. *[1]H NMR spectrum of Dynamic Platinum Baby Blue ink distillate in acetonitrile-d3*

Peaks at δ1.0391 ppm, δ3.1170 ppm, δ3.2633 ppm, δ3.3737 ppm, and δ3.6913 ppm are all produced by propylene glycol. The peak around δ2.45 ppm is produced by water. The peak at δ3.5559 ppm is unidentified.

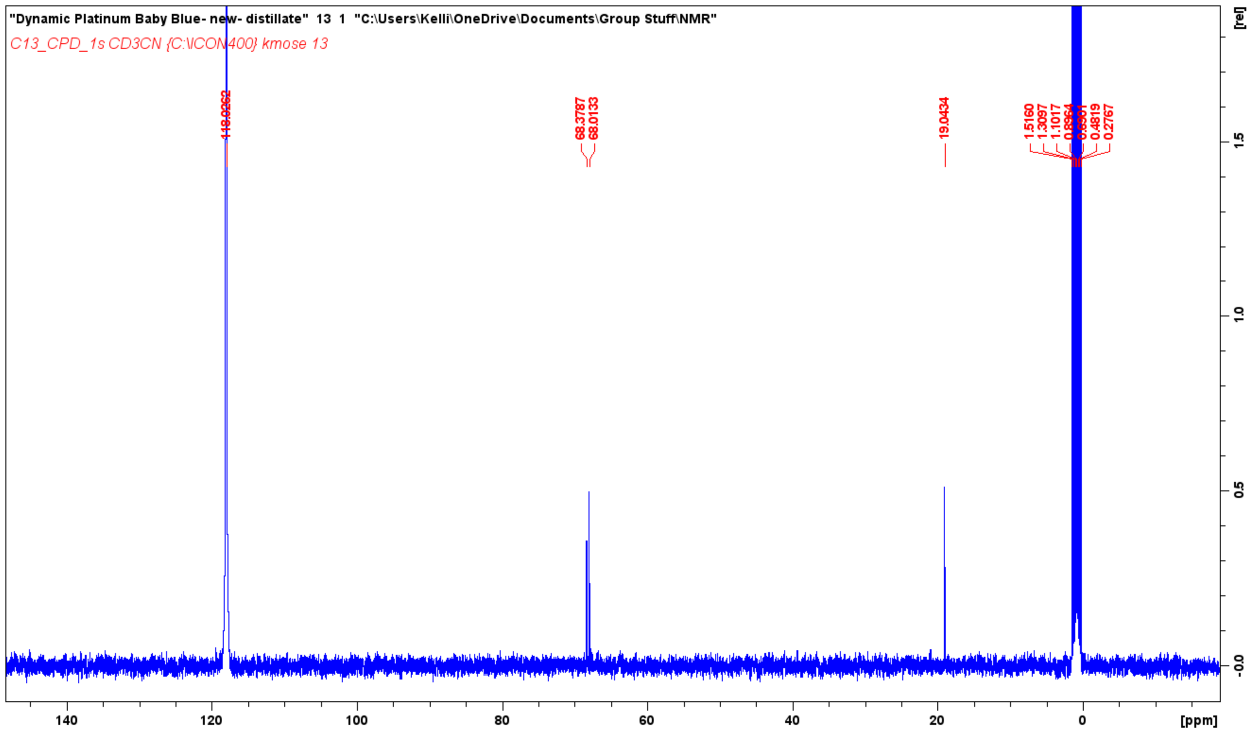

Figure S14. *^{13}C NMR spectrum of Dynamic Platinum Baby Blue ink distillate in acetonitrile-d3*

Peaks produced by propylene glycol are seen at δ19.0434 ppm, δ68.3787 ppm, and δ68.0133 ppm. The other peaks are produced but the acetonitrile solvent.

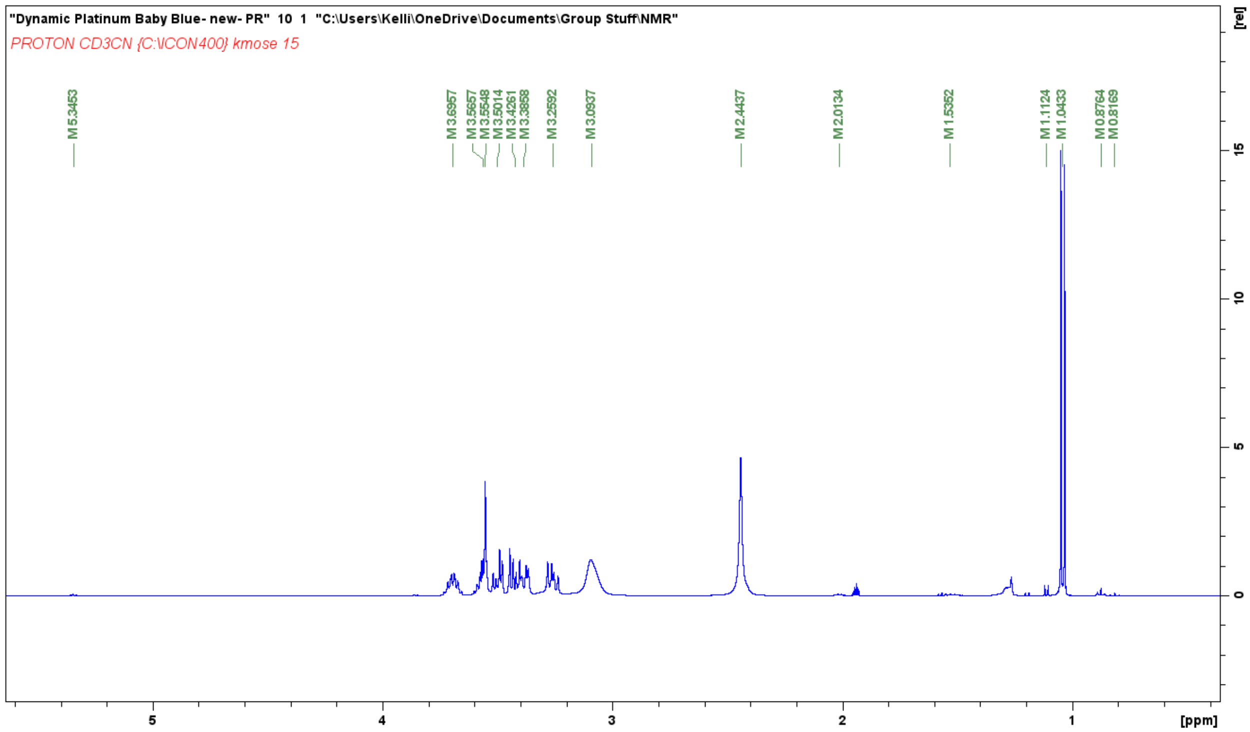

Figure S15. *^{1}H NMR spectrum of Dynamic Platinum Baby Blue ink pot residue in acetonitrile-d3*

Peaks at δ1.0433 ppm, δ3.0937 ppm, δ3.2592 ppm, δ3.3858 ppm, and δ3.6957 ppm are produced by propylene glycol. Glycerol produces the peaks at δ3.4261 ppm, δ3.5014 ppm, and δ3.5657 ppm. A large singlet at δ3.5548 ppm is likely produced by polyethylene glycol. The singlet at δ2.2884 ppm is attributed to water. There are small peaks at δ0.8169 ppm, δ0.8764 ppm, δ1.2650 ppm, δ1.2824 ppm, δ1.51352 ppm, δ2.0134 ppm, and δ5.3470 ppm which are likely produced by a long-chain alkene. There are small signals at δ1.1124 ppm and δ3.8567 ppm which may be produced by small amounts of isopropyl alcohol. The peak at δ 2.4437 ppm is attributed to water.

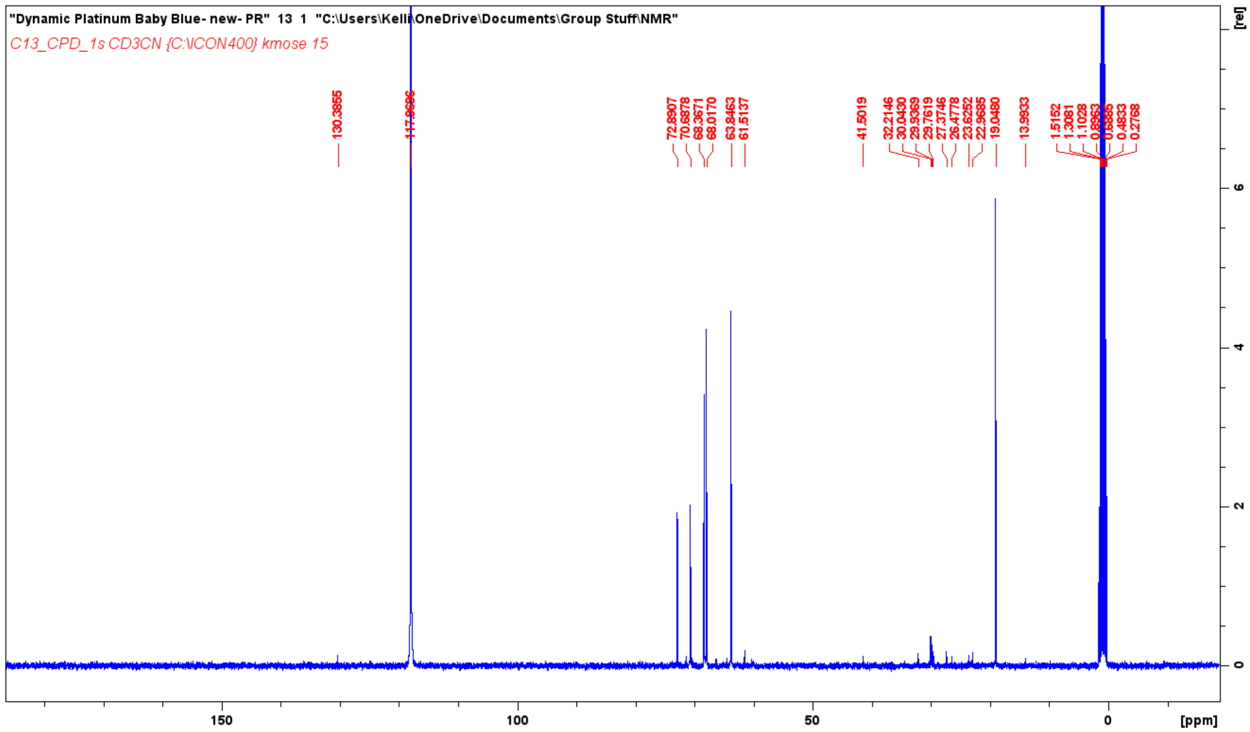

Figure S16. *^{13}C NMR spectrum of Dynamic Platinum Baby Blue ink pot residue in acetonitrile-d3*

Peaks at δ19.0480 ppm, δ68.0170 ppm, and δ68.3671 ppm are attributed to propylene glycol. Glycerol produces the peaks at δ63.8463 ppm and δ72.8907 ppm. The peak at δ70.6878 ppm is characteristic of polyethylene glycol. Small peaks at δ13.9933 ppm, δ22.9685 ppm, δ26.4778 ppm, δ27.3746 ppm, δ29.7619 ppm, δ29.9385 ppm, δ30.0430 ppm, δ32.2146 ppm, δ61.5137 ppm, and δ130.3855 ppm are likely produced by a long-chain alkene. The peak at δ23.6252 ppm is likely from isopropyl alcohol.

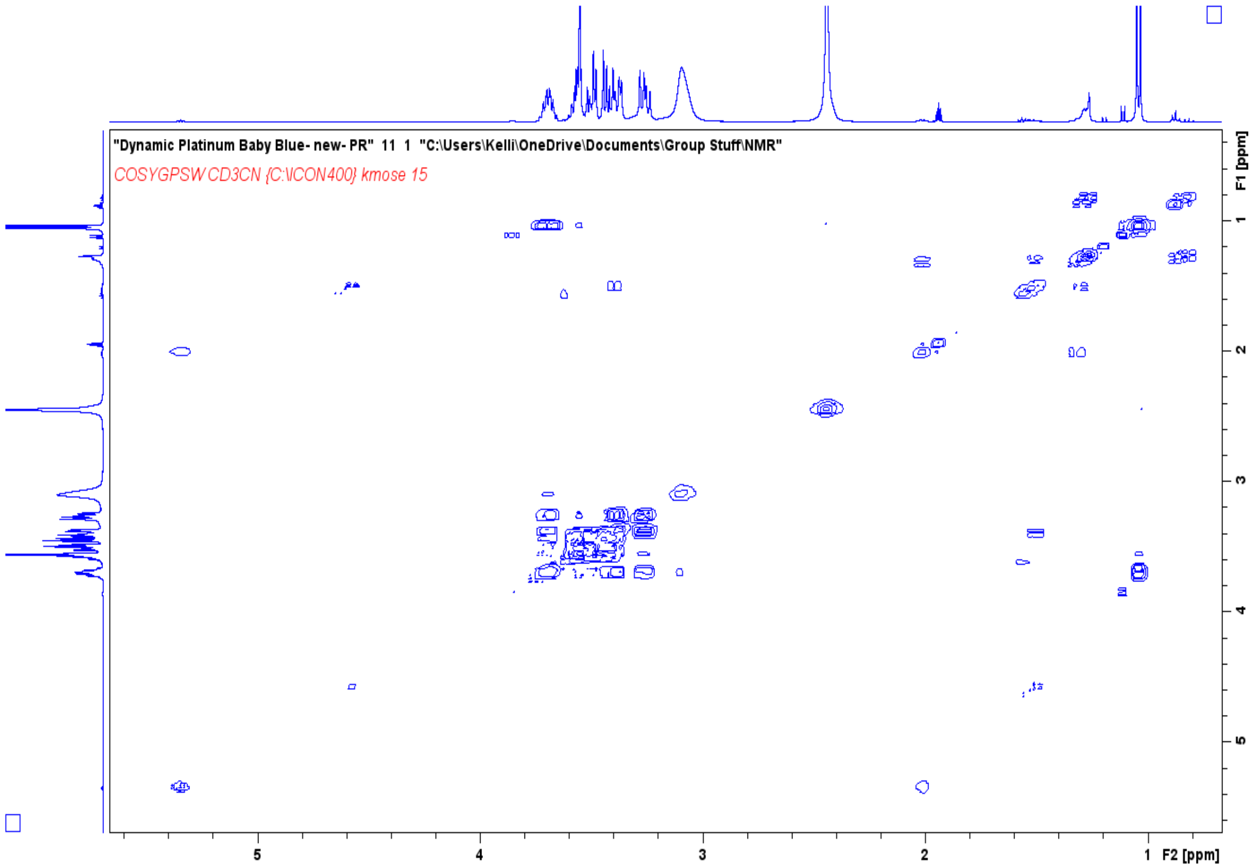

Figure S17. *^{1}H-^{1}H COSY spectrum of Dynamic Platinum Baby Blue ink pot residue in acetonitrile-d3*

Propylene glycol shows coupling between peaks at δ1.0433 ppm, δ3.0937 ppm, δ3.2592 ppm, δ3.3858 ppm, and δ3.6957 ppm. Additionally, coupling between peaks at δ3.4261 ppm, δ3.5014 ppm, and δ3.5657 ppm support glycerol being present. The peaks at δ0.8169 ppm, δ0.8764 ppm, δ1.2650 ppm, δ1.2824 ppm, δ1.5352 ppm, δ2.0134 ppm, and δ5.3470 ppm show coupling; coupling indicates that these peaks are all produced by the same unidentified alkene. Additionally, coupling occurring between the small doublet at δ1.1124 ppm and a small peak at δ3.8567 ppm supports isopropyl alcohol being in the sample.

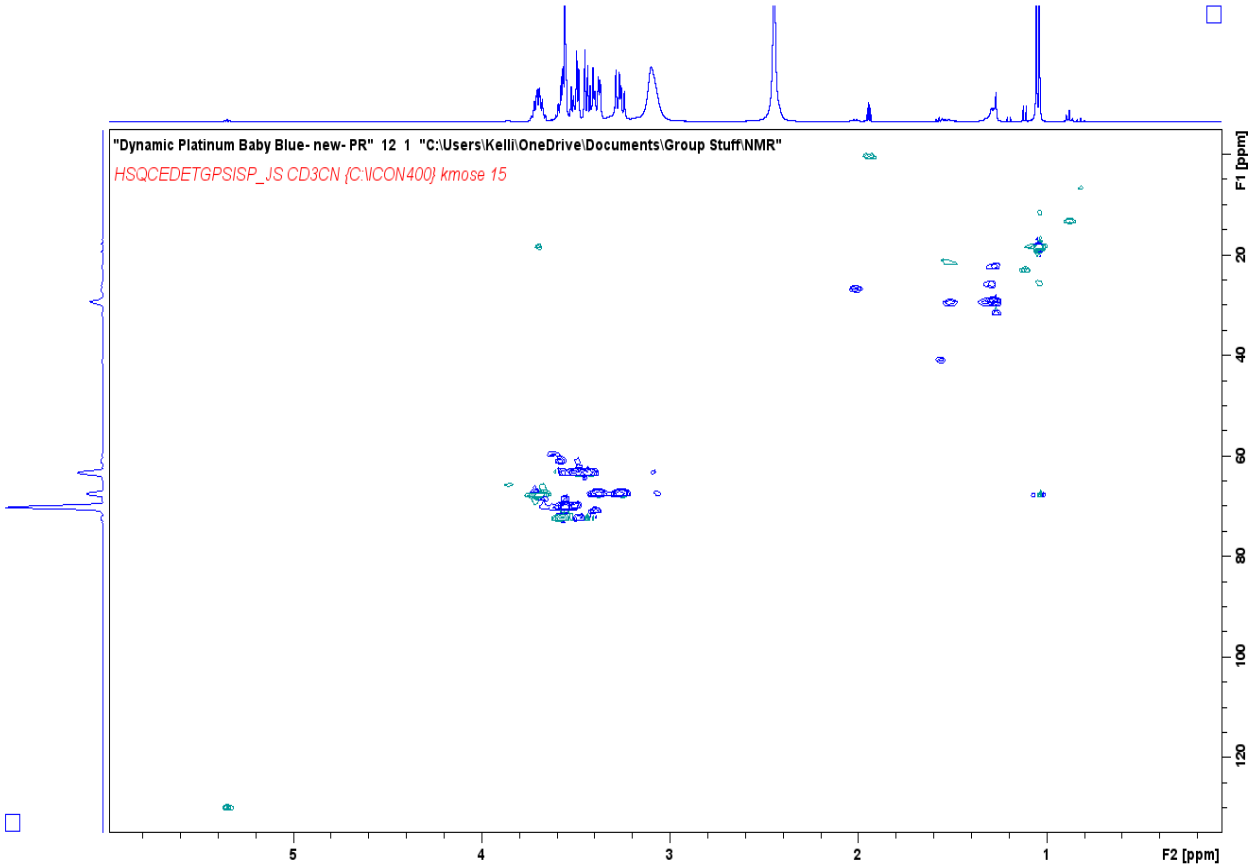

***Figure S18**. ^{1}H-^{13}C HSQC spectrum of Dynamic Platinum Baby Blue ink pot residue in acetonitrile-d3*

Characteristic propylene glycol ^{1}H-^{13}C coupling occurs between peaks at δ1.0433 ppm and δ19.0480 ppm, between peaks at δ3.2592 ppm and δ3.3858 ppm and δ68.0170 ppm, and δ3.6957 ppm and δ68.3671 ppm. Additionally, coupling occurs between ^{1}H glycerol peaks at δ3.4261 ppm, δ3.5014 ppm, and δ3.565 ppm with ^{13}C peaks at δ63.8463 ppm and δ72.8907 ppm. The ^{1}H peak of polyethylene glycol at δ3.5548 ppm couples with its ^{13}C peak at δ70.6878 ppm. Coupling occurs between the unidentified ^{1}H peaks at δ0.8169 ppm, δ0.8764 ppm, δ1.2650 ppm, δ1.2824 ppm, δ1.5352 ppm, δ2.0134 ppm, and δ5.3470 ppm with some of the unidentified ^{13}C peaks at δ22.9685 ppm, δ26.4778 ppm, δ27.3746 ppm, δ29.7619 ppm, δ29.9369 ppm, δ30.0430 ppm, δ32.2116 ppm, δ61.5137 ppm, and δ130.3971 ppm. These features are characteristic of a long-chain alkene. Lastly, coupling between ^{1}H peaks at δ1.1124 ppm and δ3.8567 ppm and ^{13}C peaks at δ23.6245 ppm and δ65.69 ppm, respectively, supports small amounts of isopropyl alcohol being present in the ink.

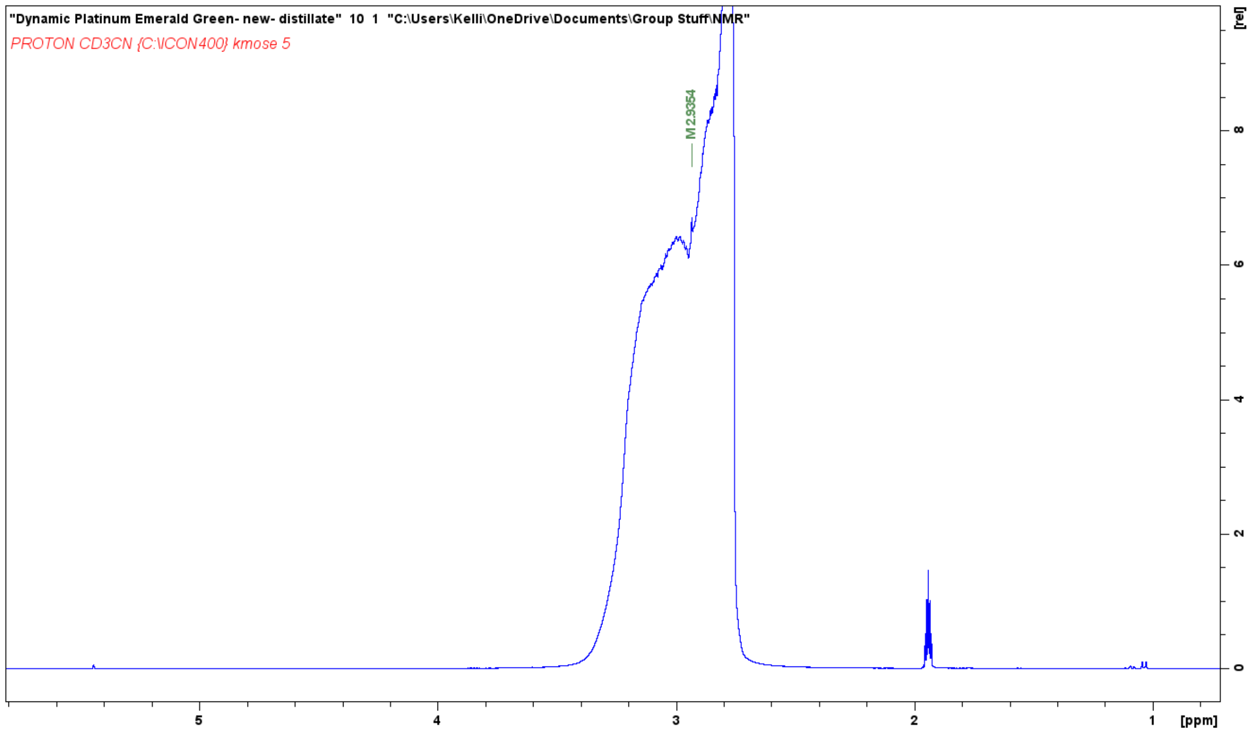

Figure S19. *[1]H NMR spectrum of Dynamic Platinum Emerald Green ink distillate in acetonitrile-d3*

A broad signal at δ2.9354 ppm indicates a large amount of water in the sample. A peak at δ1.94 ppm is from the solvent.

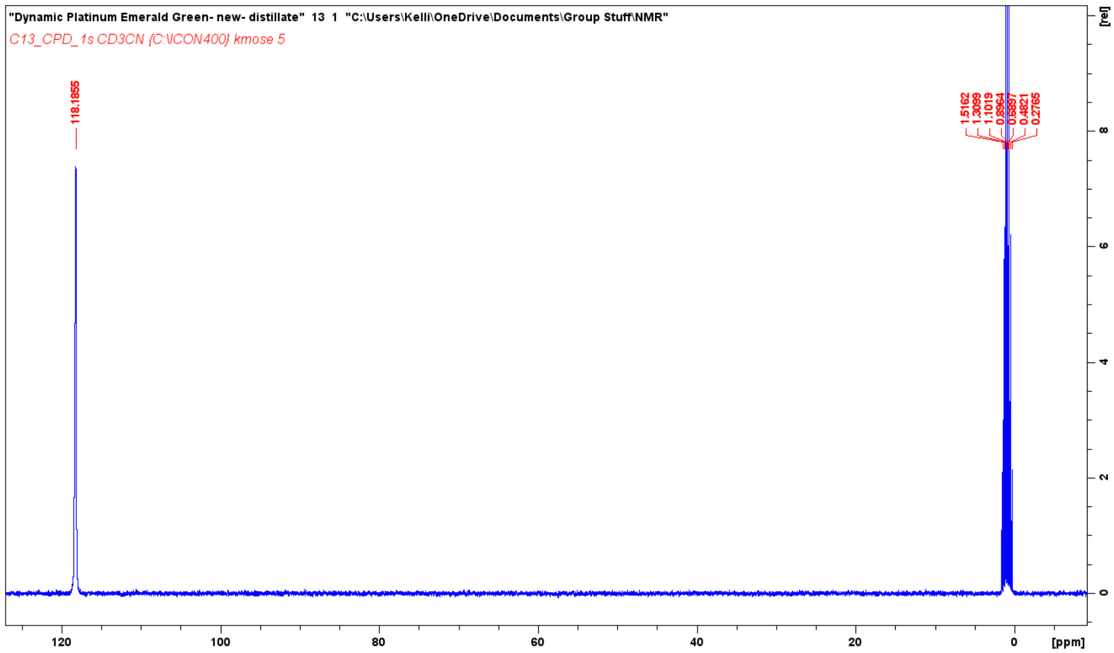

Figure S20. ^{13}C NMR spectrum of Dynamic Platinum Emerald Green ink distillate in acetonitrile-d3

The lack of signal, besides from the solvent, supports water being the only component of the ink’s distillate.

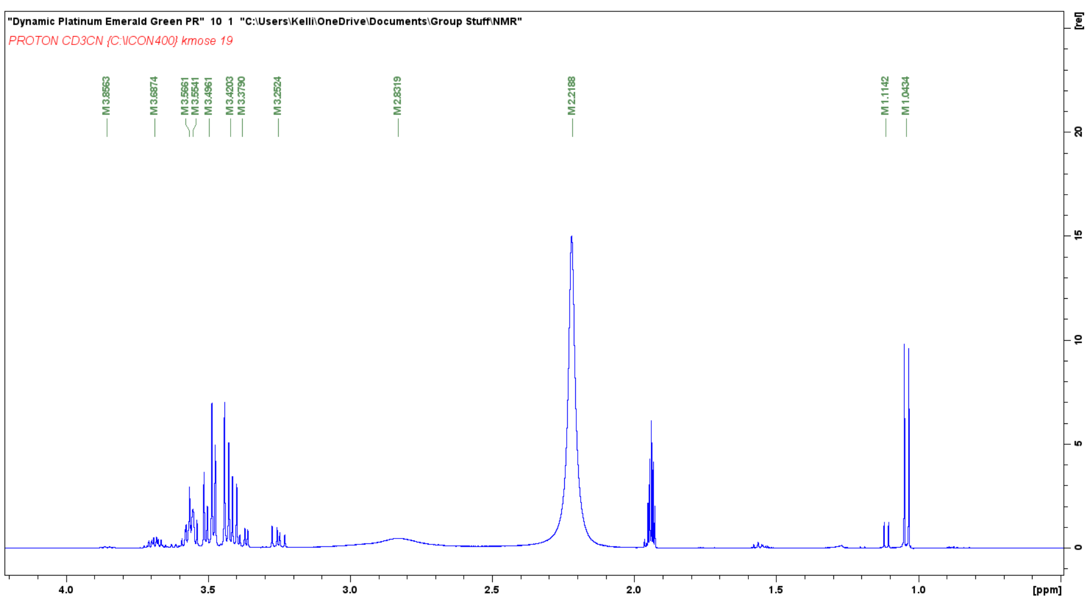

Figure S21. *^{1}H NMR spectrum of Dynamic Platinum Emerald Green ink pot residue in acetonitrile-d3*

Propylene glycol produces signals at δ1.0434 ppm, δ3.2524 ppm, δ3.3790 ppm, and δ3.6874 ppm. Signals at δ3.4203 ppm, δ3.4961 ppm and δ3.5661 ppm are attributed to glycerol. Polyethylene glycol likely produces the singlet at δ3.5541 ppm. Peaks at δ1.142 ppm and δ3.8563 ppm are made by isopropyl alcohol. The peak at δ2.2188 ppm is attributed to water.

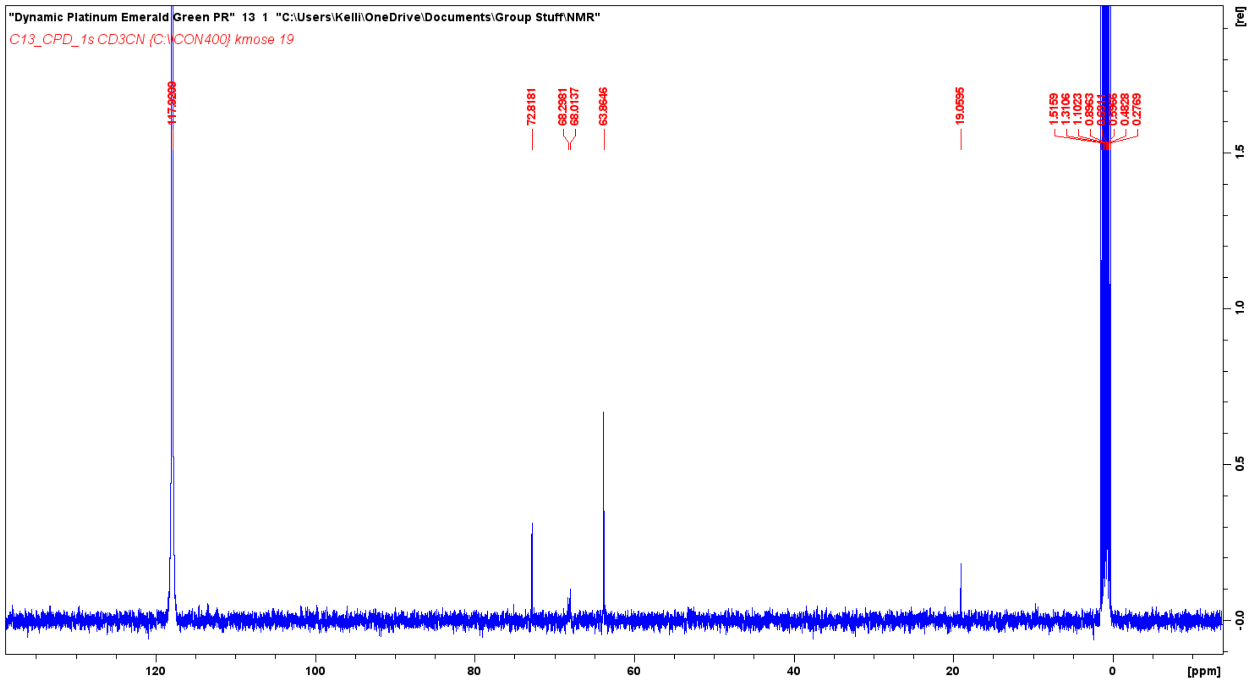

Figure S22. *[13]C NMR spectrum of Dynamic Platinum Emerald Green ink pot residue in acetonitrile-d3*

Glycerol produces signals at δ63.6846 ppm and δ72.8181 ppm. Signals at δ19.0595 ppm, δ68.0137 ppm, and δ68.2981 ppm are produced by propylene glycol.

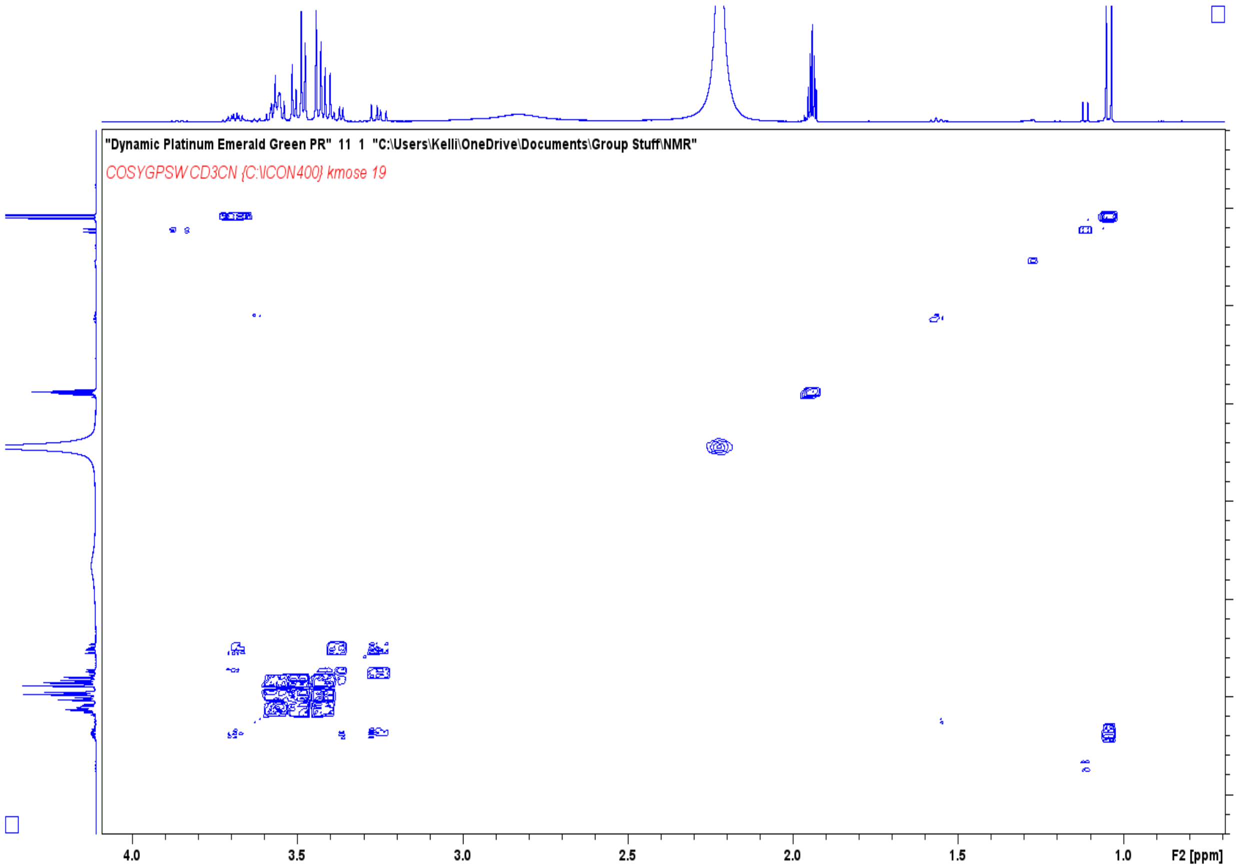

Figure S23. *[1]H-[1]H COSY spectrum of Dynamic Platinum Emerald Green ink pot residue in acetonitrile-d3*

Coupling between peaks at δ1.0434 ppm, δ3.2524 ppm, δ3.3790 ppm, and δ3.6874 ppm support propylene glycol being present. Additionally, coupling occurs between peaks at δ3.4203 ppm, δ3.4961 ppm and δ3.5661 ppm. This supports glycerol being present. There is also coupling between the peaks at δ1.1142 ppm and δ3.8563 ppm, which supports isopropyl alcohol being in this ink.

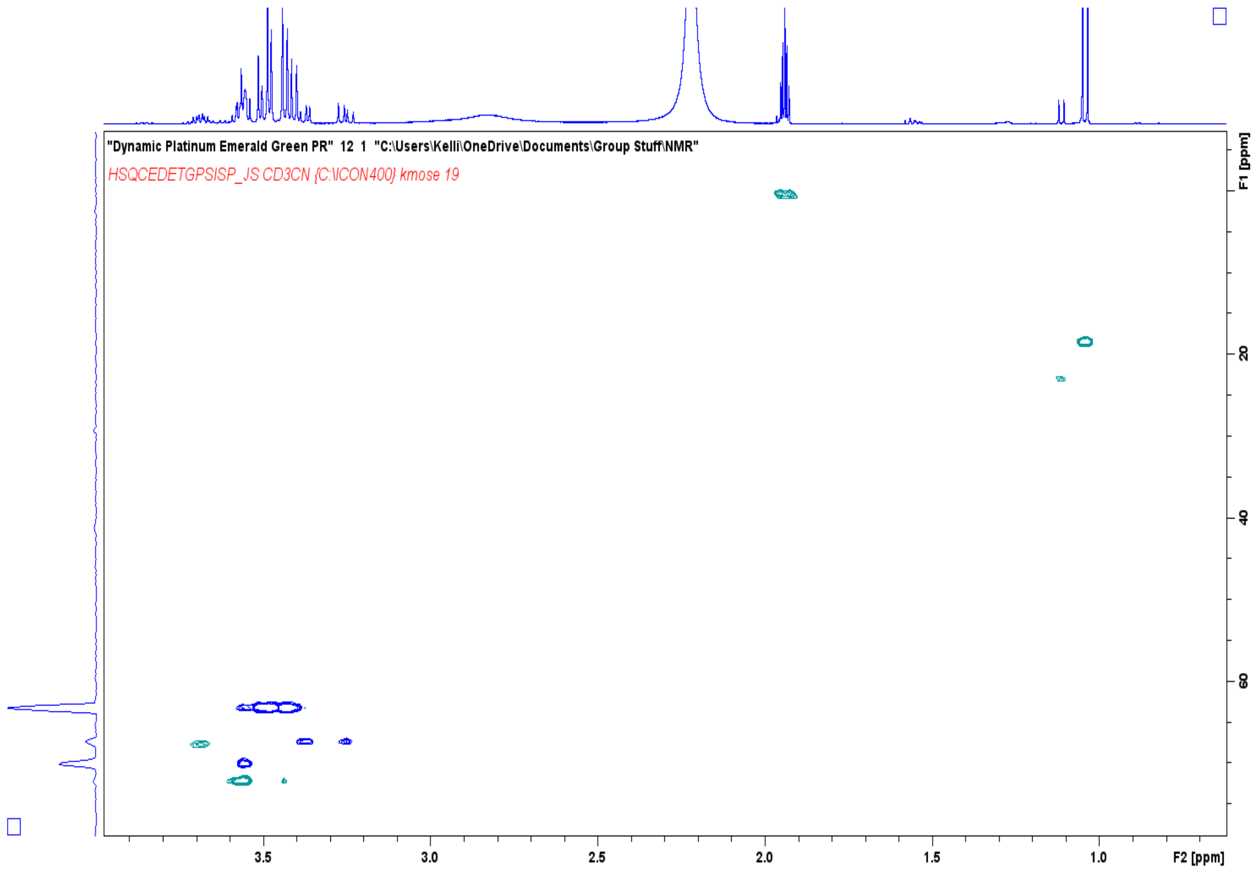

Figure S24. *^1H-^{13}C HSQC spectrum of Dynamic Platinum Emerald Green ink pot residue in acetonitrile-d3*

Coupling occurs between ^1H peaks at δ3.4203 ppm and δ3.4961 ppm with a ^{13}C peak at δ63.8646 ppm, as well as between the ^1H peak at δ3.5661 ppm and ^{13}C peak at δ72.8181 ppm supports glycerol being present in the sample. Coupling occurs between peaks at δ1.0434 ppm and δ19.0595 ppm, δ3.2524 ppm, δ3.3790 ppm and δ68.0137 ppm, and δ3.6874 ppm and δ68.2981 ppm. This supports propylene glycol being present. Isopropyl alcohol ^1H peaks at δ1.1142 ppm and δ3.8563 ppm exhibit coupling with ^{13}C peaks at δ23.1ppm and δ67.8 ppm. The coupling between the ^1H peak at δ3.5541 ppm and ^{13}C peak at δ70.1 ppm support polyethylene glycol being present.

2.3 Quantum Ink

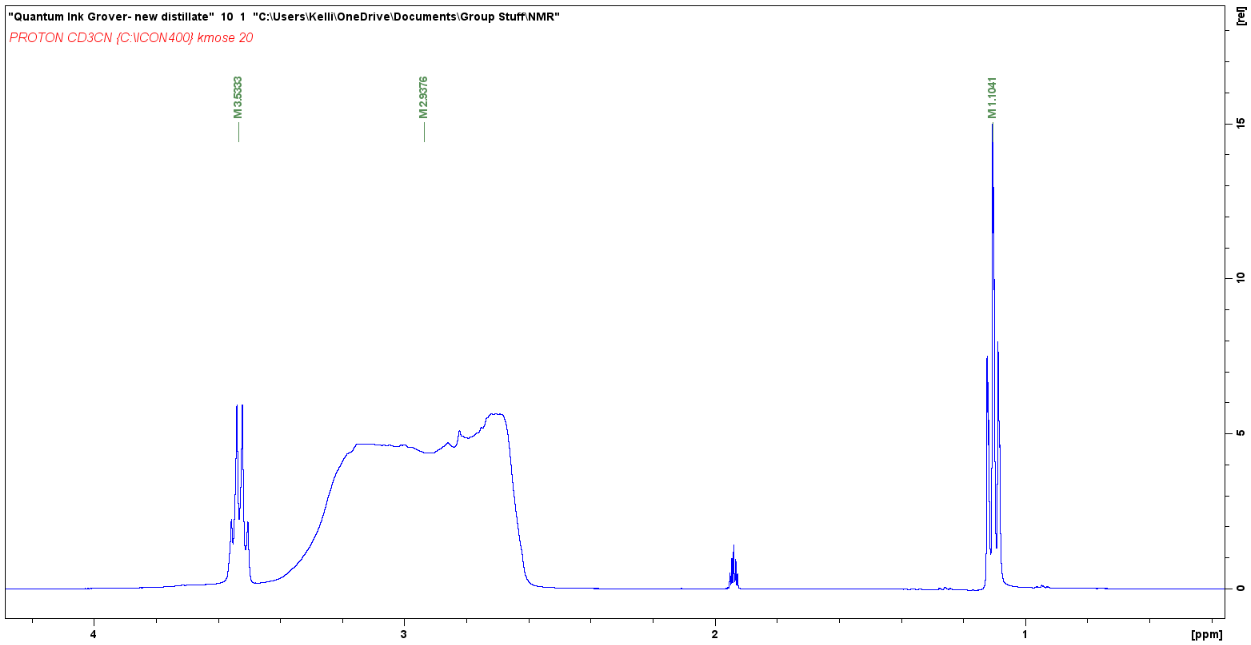

Figure S25. *[1]H NMR spectrum of Quantum Ink Grover distillate in acetonitrile-d3*

Peaks at δ1.1 ppm and δ3.5333 ppm are produced by ethanol. A broad peak centered at δ2.9376 ppm is attributed to large amounts of water. The remaining peak is produced by the solvent.

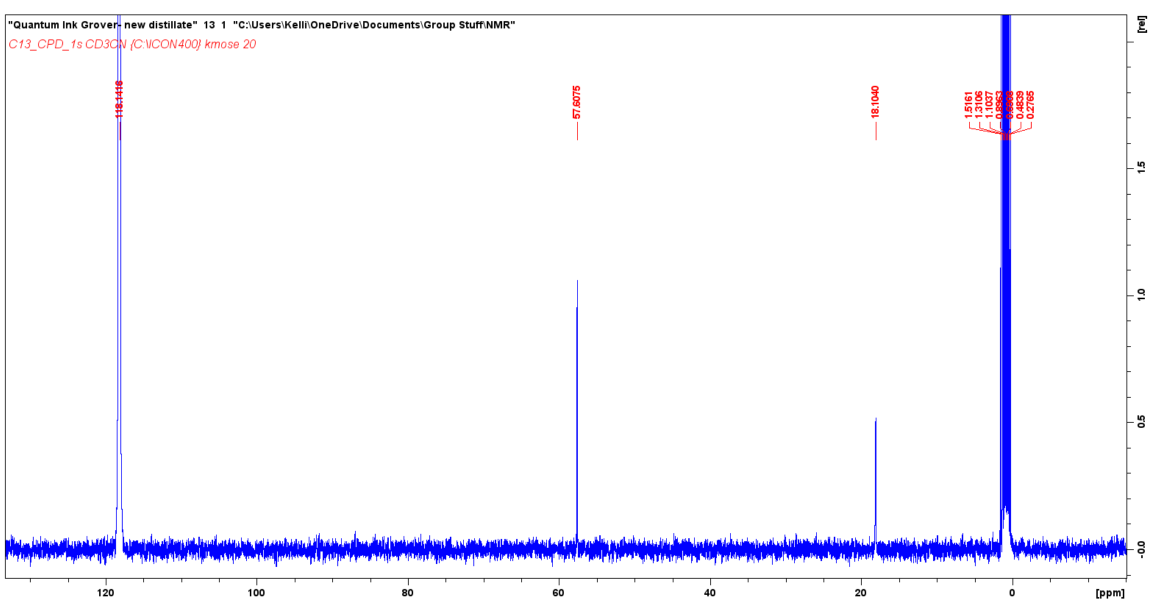

Figure S26. *[13]C NMR spectrum of Quantum Ink Grover distillate in acetonitrile-d3*

Peaks at δ18.1040 ppm and δ57.6075 ppm are attributed to ethanol. The remaining peaks are produced by the solvent.

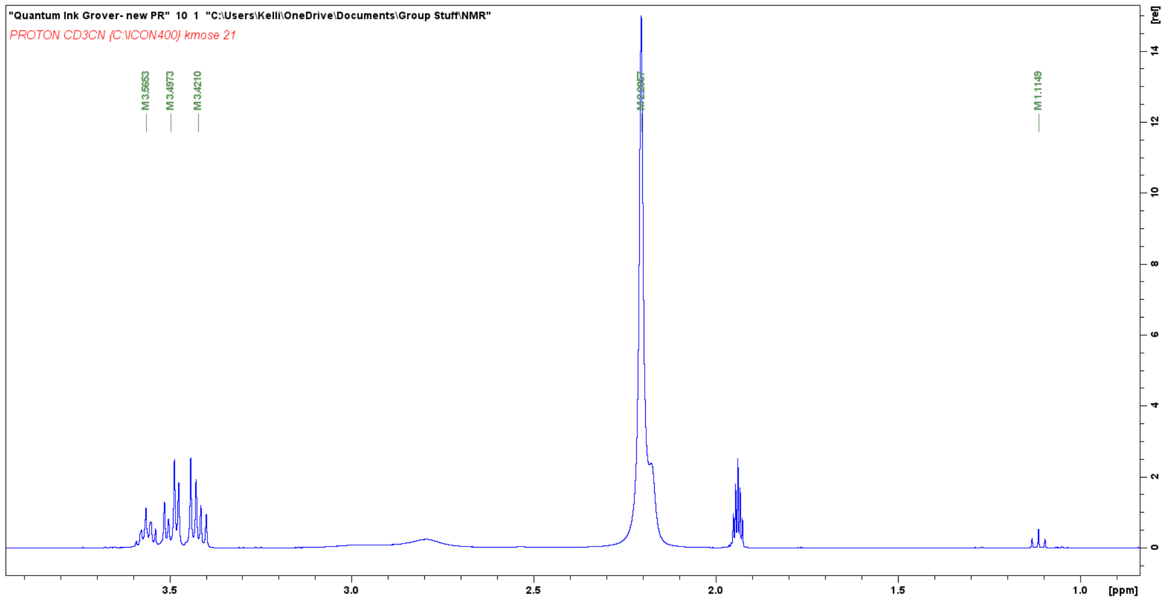

Figure S27. *[1]H NMR spectrum of Quantum Ink Grover pot residue in acetonitrile-d3*

Glycerol produced the signals at δ3.4210 ppm, δ3.4973 ppm, and δ3.5653 ppm. Water produced the peak at δ2.2057 ppm. The peak at δ1.94 ppm is from the acetonitrile solvent. The small triplet at δ1.1149 ppm is likely from small amount of ethanol.

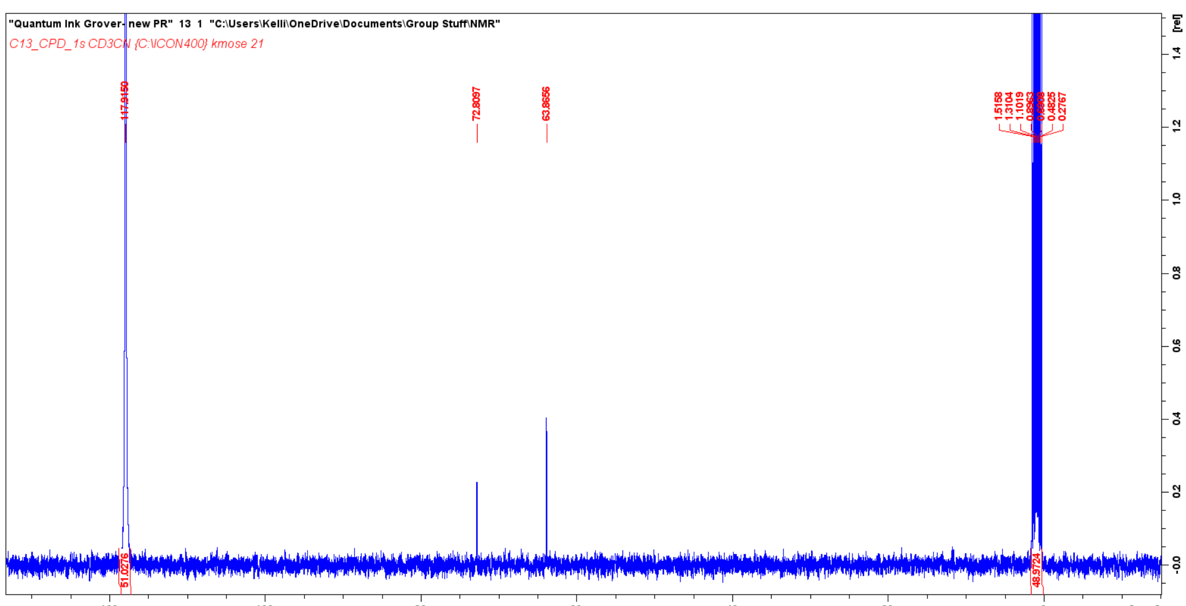

Figure S28. *[13]C NMR spectrum of Quantum Ink Grover pot residue in acetonitrile-d3*

Peaks at δ63.8656 ppm and δ72.8097 ppm are attributed to glycerol. The remaining peaks are produced by the acetonitrile solvent.

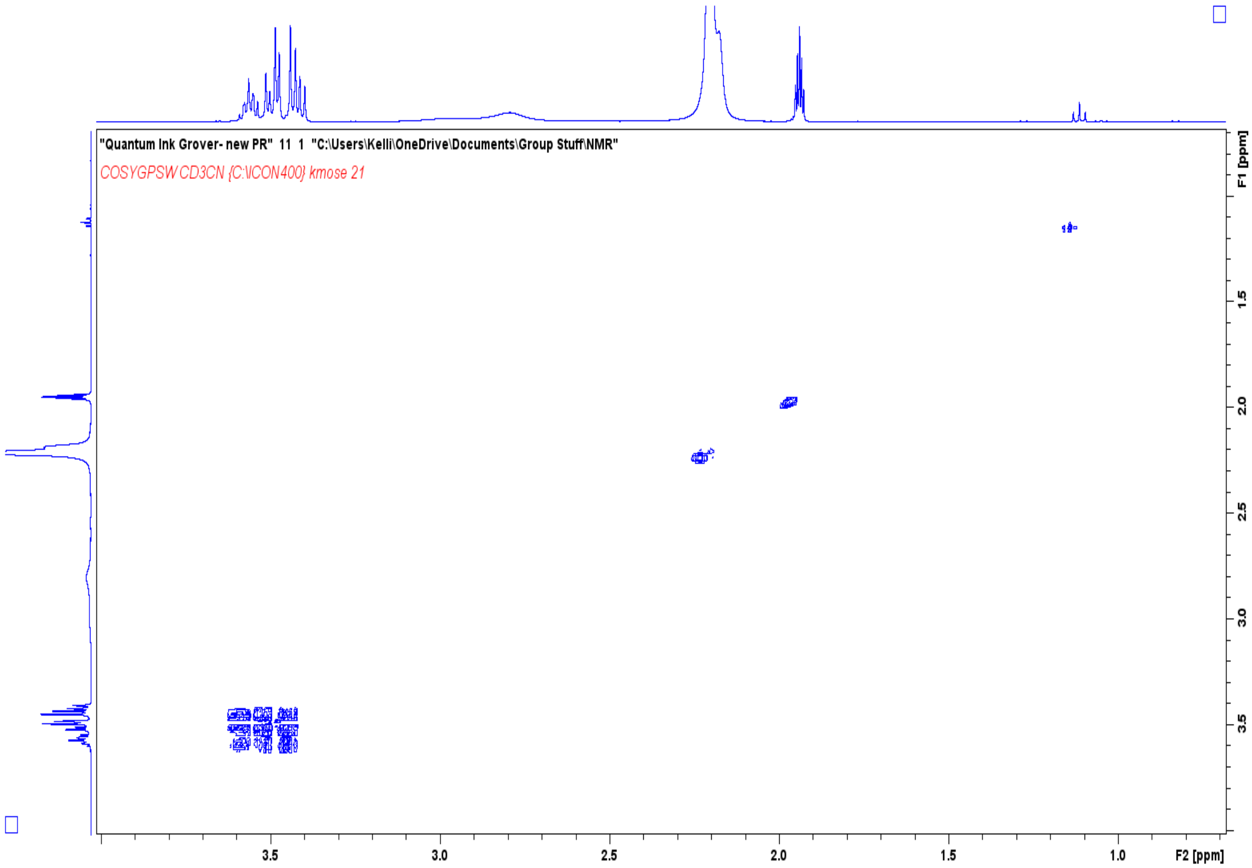

Figure S29. *[1]H-[1]H COSY spectrum of Quantum Ink Grover pot residue in acetonitrile-d3*

Coupling between peaks at δ3.4210 ppm, δ3.4973 ppm, and δ3.5653 ppm support glycerol being present in the sample.

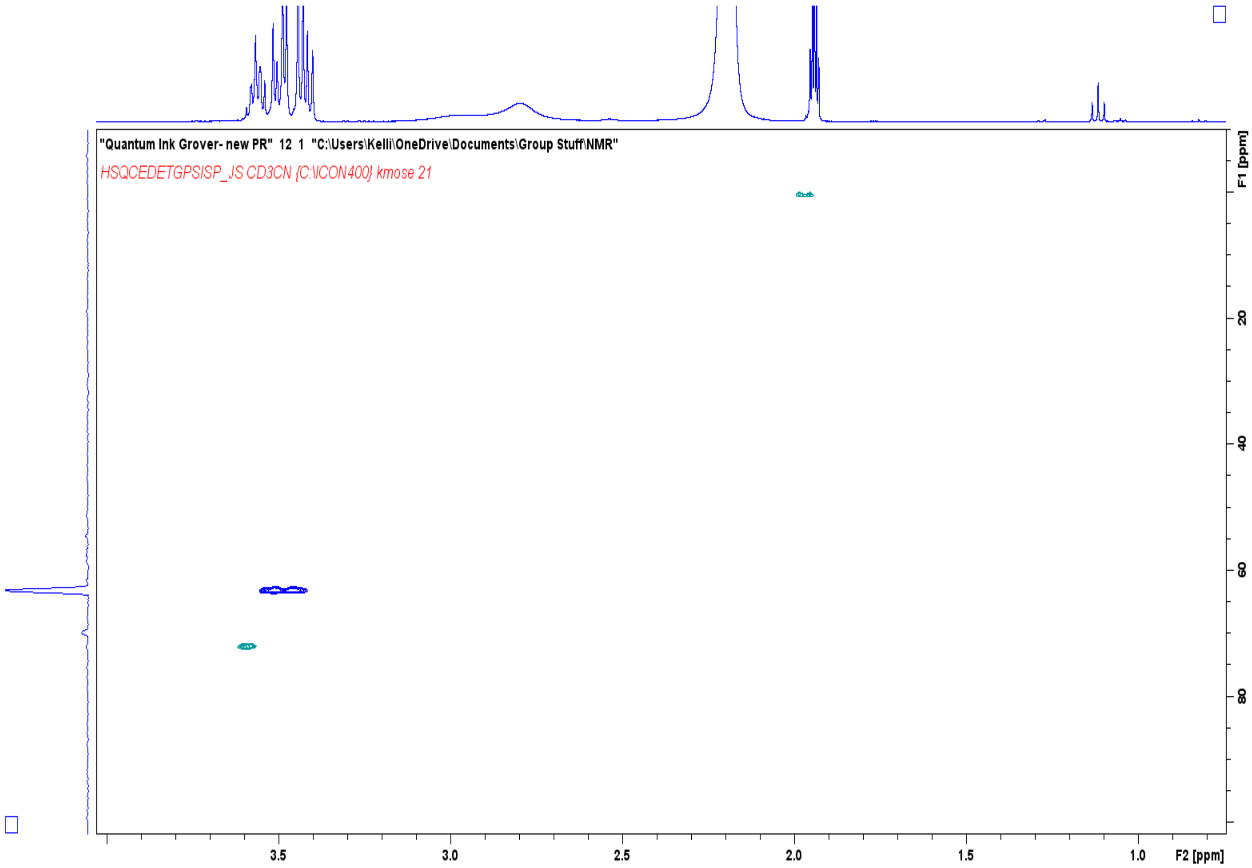

Figure S30. *^{1}H-^{13}C HSQC spectrum of Quantum Ink Grover pot residue in acetonitrile-d3*

Coupling between the ^{1}H peaks and ^{13}C peaks at δ3.4210 ppm, δ3.4973 ppm, and δ63.8656 ppm, as well as δ3.5653 ppm and δ72.8097 ppm support glycerol being present.

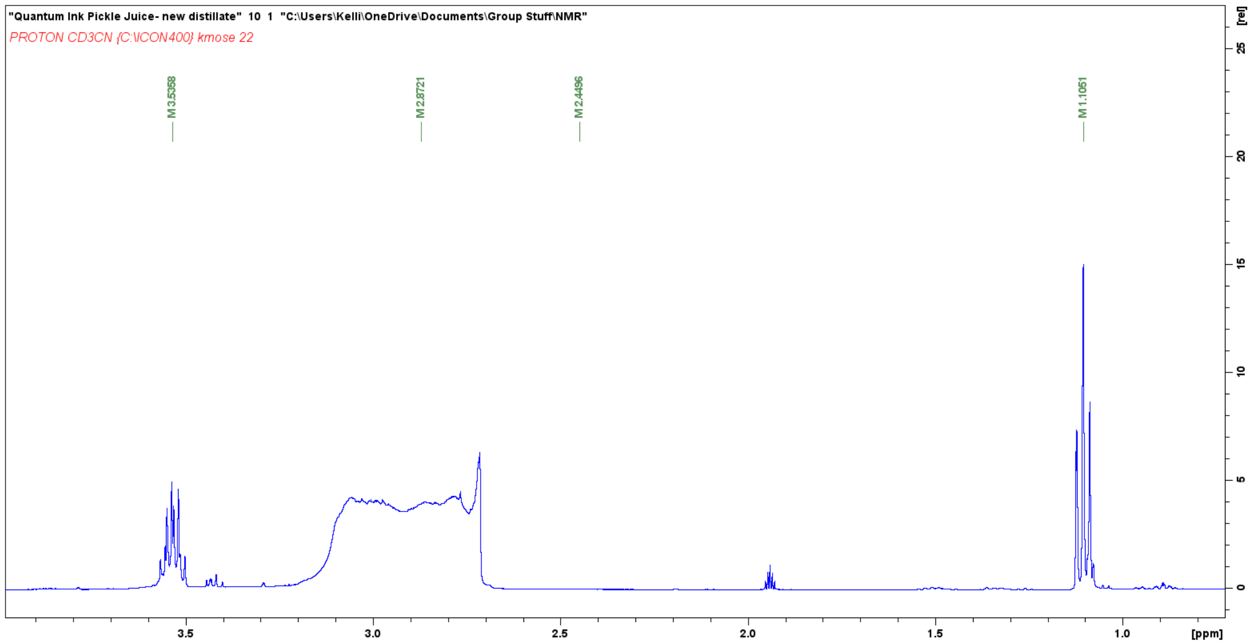

Figure S31. *[1]H NMR spectrum of Quantum Ink Pickle Juice distillate in acetonitrile-d3*

Peaks at δ1.1051 ppm and δ3.5358 ppm are attributed to ethanol. A broad signal centered around δ2.8731 ppm is produced by water. The peak at δ1.94 ppm is from the solvent.

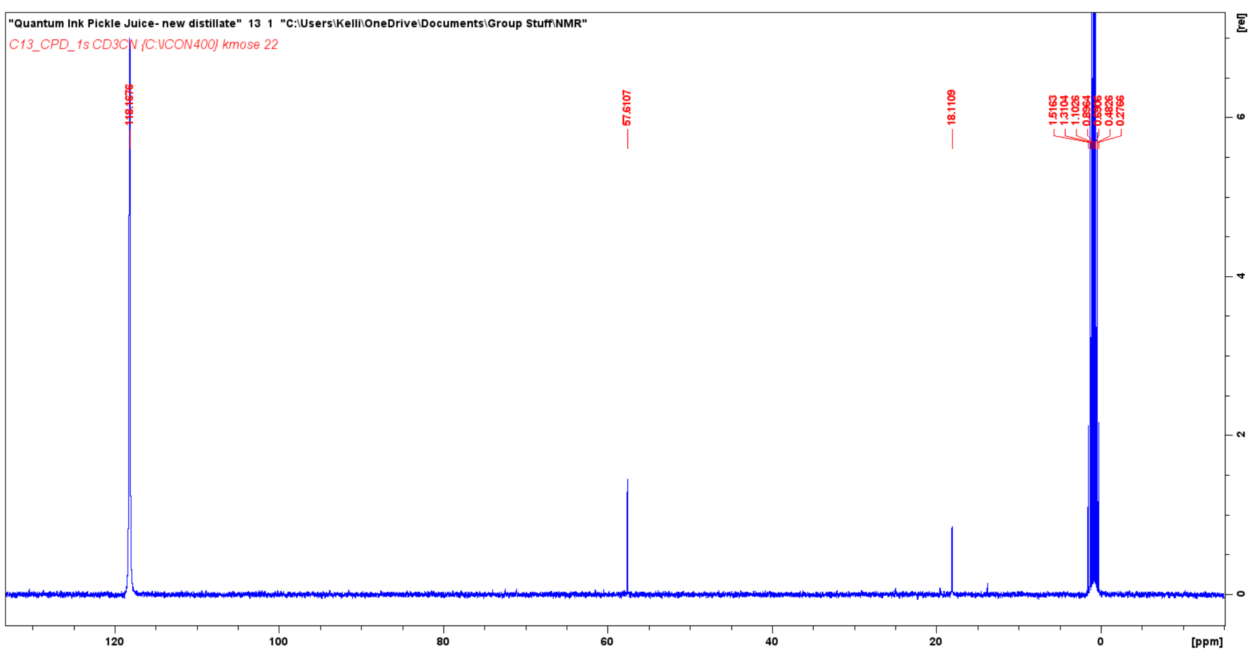

Figure S32. *[13]C NMR spectrum of Quantum Ink Pickle Juice distillate in acetonitrile-d3*

Peaks at δ18.1109 ppm and δ57.6107 ppm are attributed to ethanol. The remaining peaks are produced by the solvent.

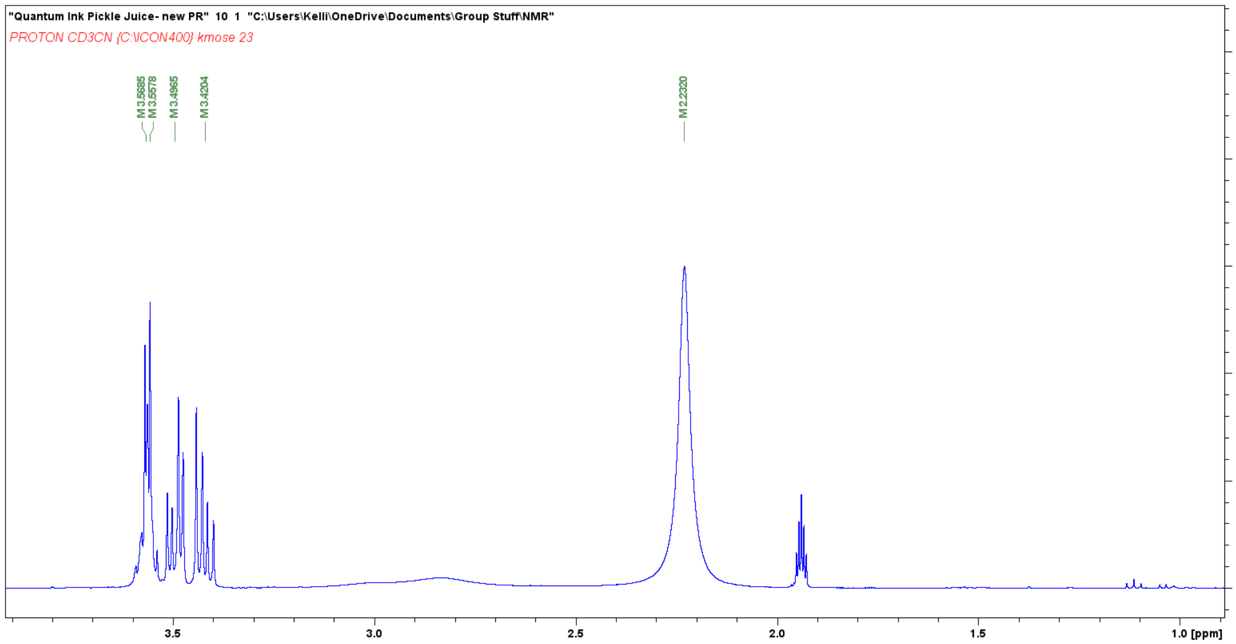

Figure S33. *[1]H NMR spectrum of Quantum Ink Pickle Juice pot residue in acetonitrile-d3*

Glycerol peaks can be seen at δ3.4204 ppm and δ3.4965 ppm, as well as a peak that is overlapping with a small ethanol peak at δ3.5685 ppm. A polyethylene glycol peak appears at δ3.5578 ppm. A small triplet produced by ethanol appears upfield at around δ1.11 ppm.

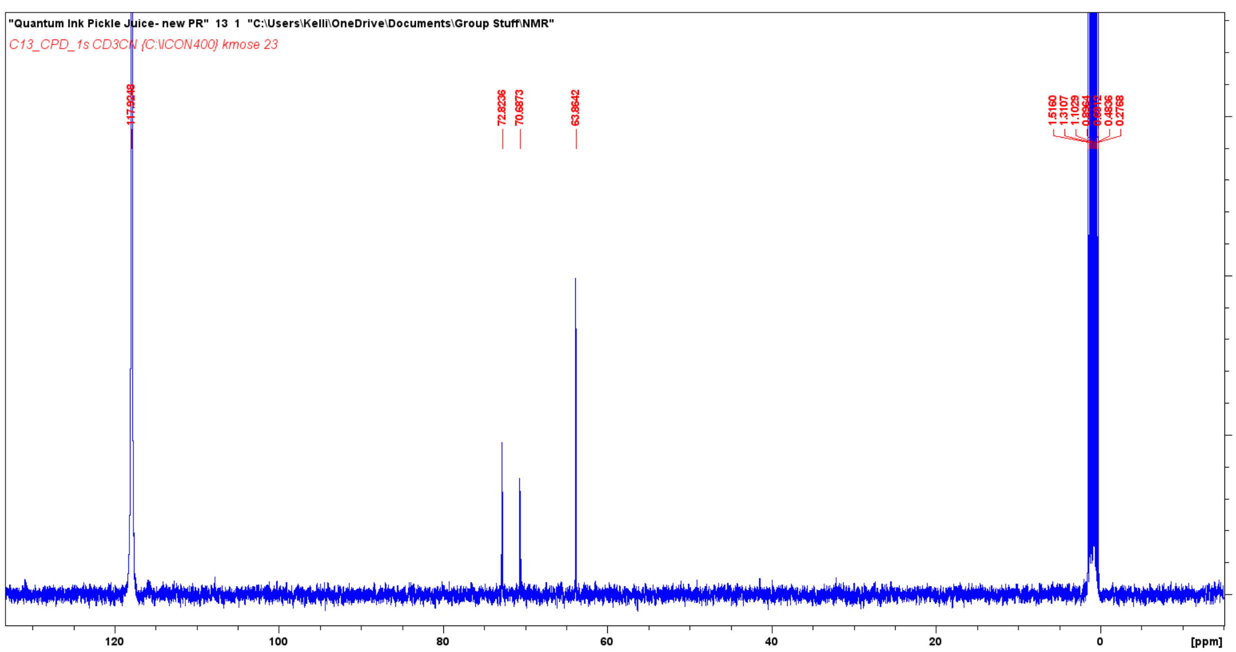

Figure S34. *[13]C NMR spectrum of Quantum Ink Pickle Juice pot residue in acetonitrile-d3*

Peaks at δ63.8642 ppm and δ72.8236 ppm support glycerol being in the sample. The peak at δ70.6873 ppm is likely produced by polyethylene glycol.

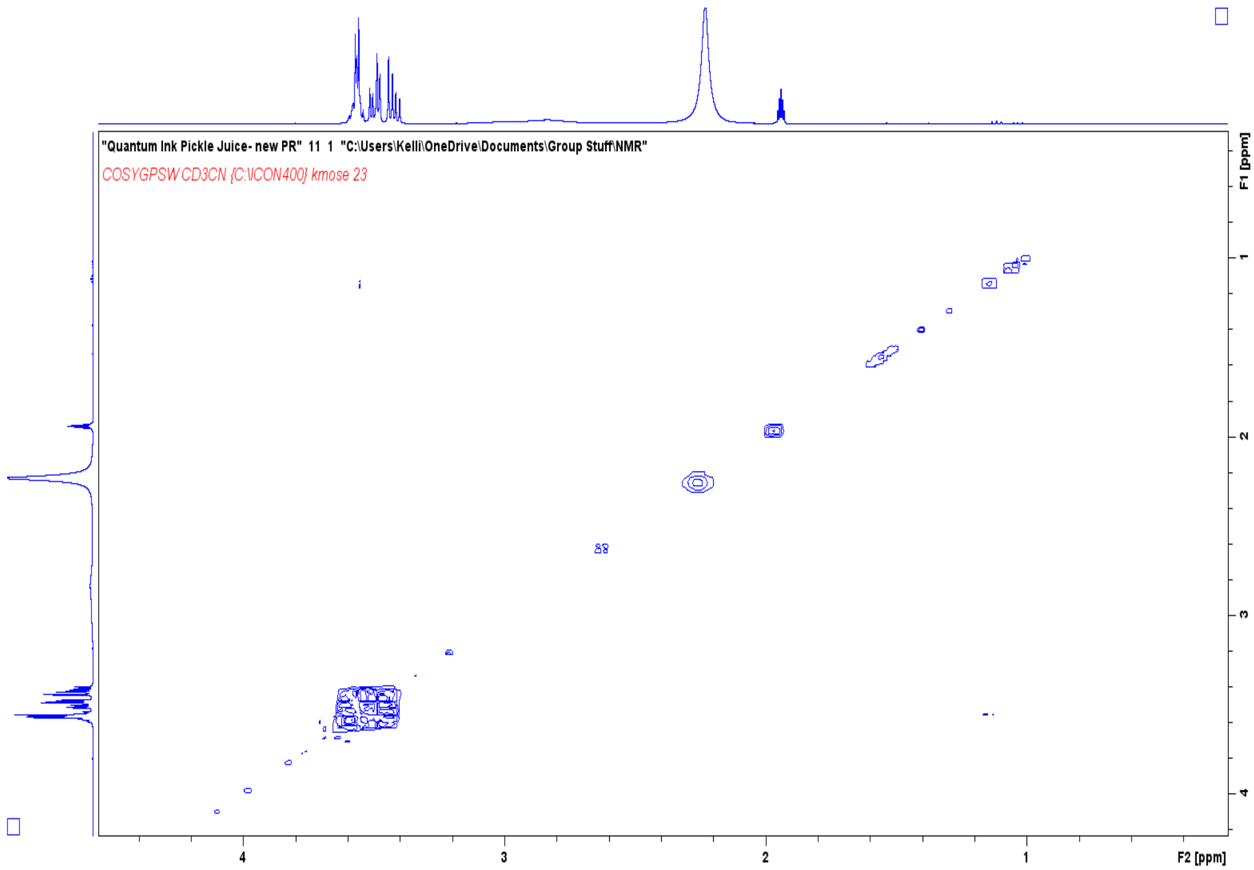

Figure S35. *[1]H-[1]H COSY spectrum of Quantum Pickle Juice pot residue in acetonitrile-d3*

Coupling occuring between peaks at δ3.4217 ppm and δ3.4960 ppm, as well to the peaks that overlap the ethanol peak at δ3.5618 ppm support glycerol being present in the sample.

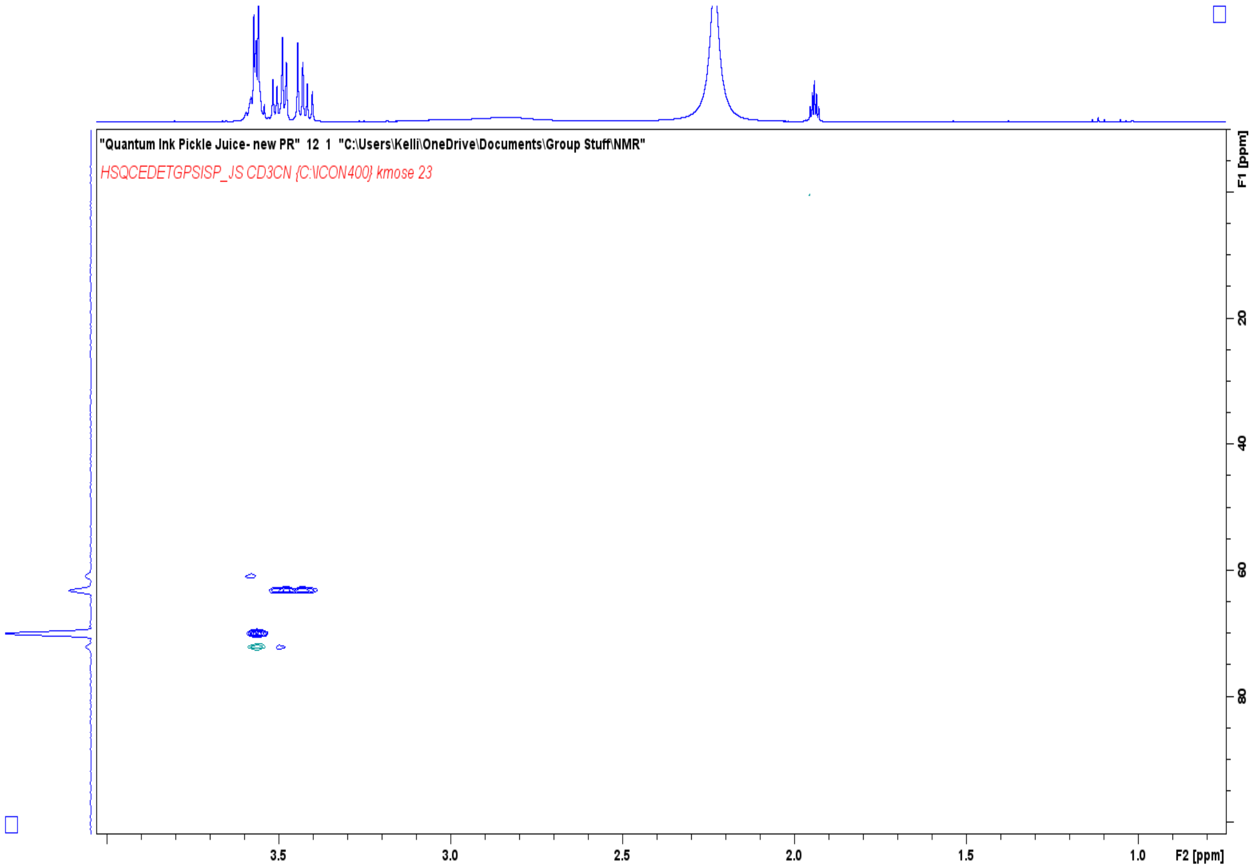

Figure S36. *^{1}H-^{13}C HSQC spectrum of Quantum Pickle Juice pot residue in acetonitrile-d3*

^{1}H peaks at δ3.4204 ppm, δ3.4965 ppm, and δ3.5685 ppm couple with ^{13}C peaks at δ63.8642 ppm and δ72.8236 ppm, supporting glycerol being present. There appears to be coupling between a ^{1}H peak at δ3.5578 ppm and a ^{13}C peak at δ70.6873 ppm, which is characteristic of polyethylene glycol.

2.4 Xtreme Ink

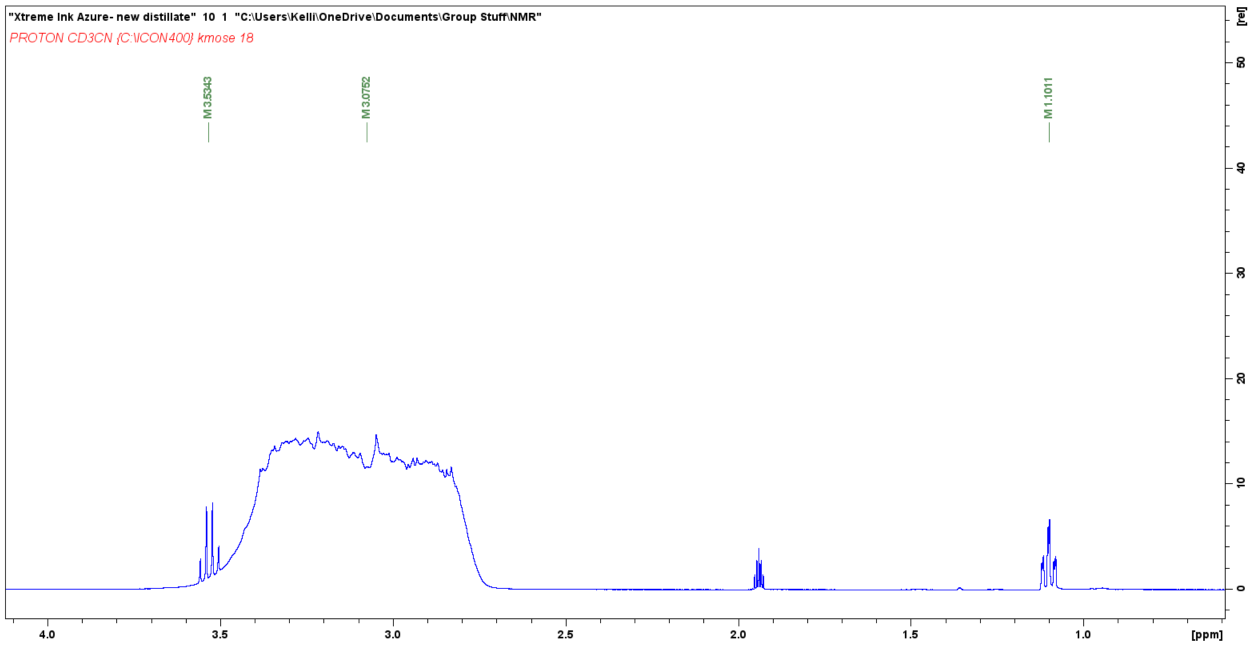

Figure S37. *[1]H NMR spectrum of Xtreme Ink Azure distillate in acetonitrile-d3*

Peaks at δ1.1011 ppm and δ3.5343 ppm are produced by ethanol. A broad peak centered at δ3.0752 ppm is attributed to water. The remaining peak is produced by the acetonitrile solvent.

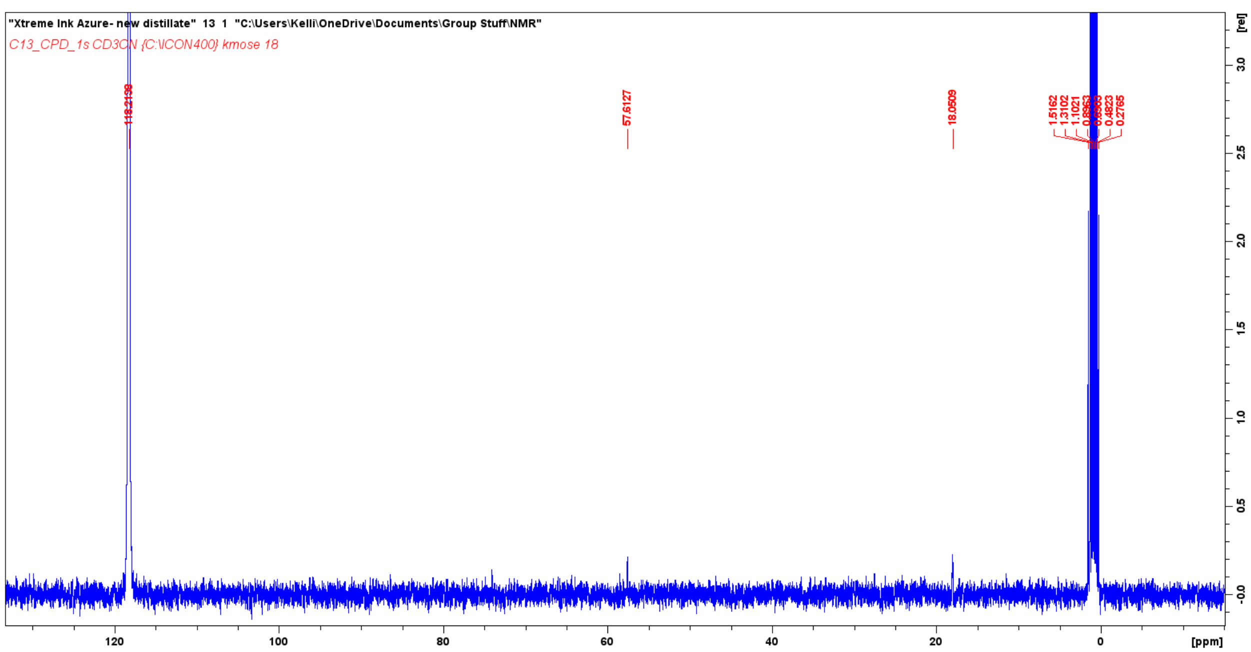

Figure S38. *[13]C NMR spectrum of Xtreme Ink Azure distillate in acetonitrile-d3*

Peaks at δ18.0509 ppm and δ57.6127 ppm are produced by ethanol. The remaining peaks are created by the solvent.

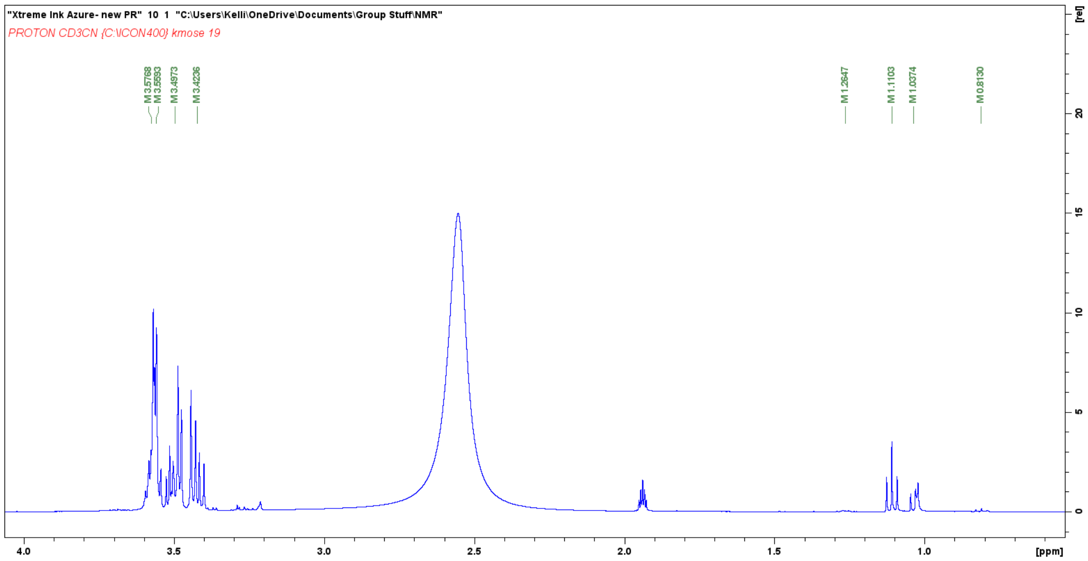

Figure S39. *^{1}H NMR spectrum of Xtreme Ink Azure pot residue in acetonitrile-d3*

Peaks at δ3.4236 ppm, δ3.4973 ppm, and δ3.5768 ppm are produced by glycerol. The triplet up field at δ1.1103 ppm and a peak overlapping with one from glycerol around δ3.57 ppm is likely from ethanol. A singlet at δ3.5593 ppm is likely from polyethylene glycol. Very small peaks appear at δ0.81 ppm (triplet) and δ1.26 ppm (quartet) which are characteristic of a long-chain alkane. The peak at δ1.0374 may be caused by small amounts of propylene glycol.

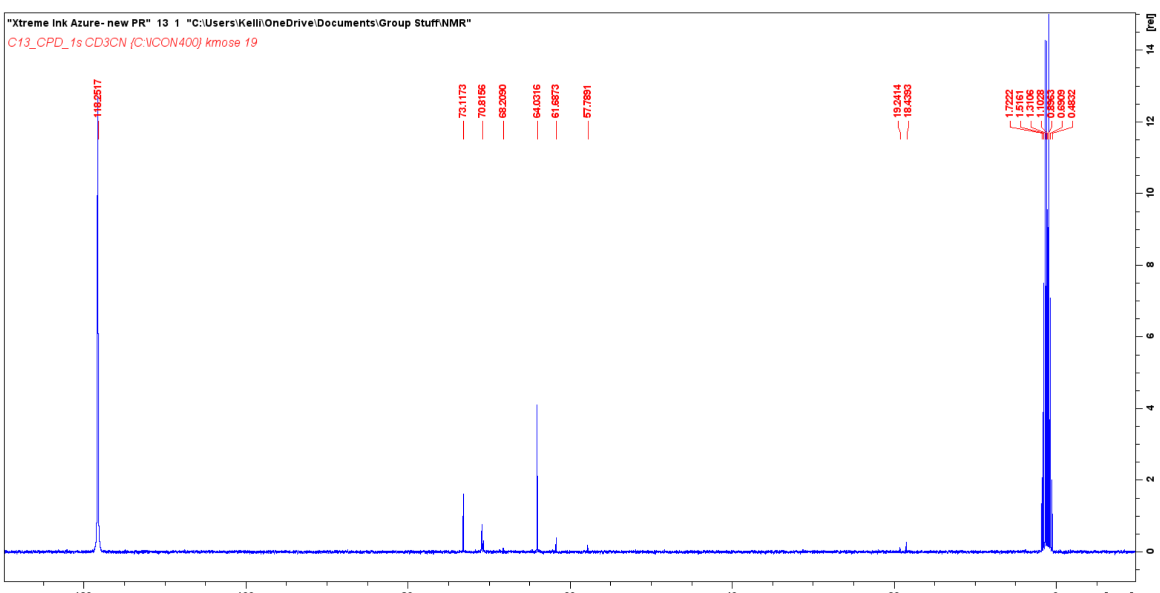

Figure S40. *^{13}C NMR spectrum of Xtreme Ink Azure pot residue in acetonitrile-d3*

Ethanol produces the peaks at δ18.4393 ppm and δ57.7891 ppm. Peaks at δ64.0316 ppm and δ73.1173 ppm are produced by glycerol. The peak at δ70.8156 ppm is characteristic of polyethylene glycol. The peaks at δ19.2414 ppm and δ68.2090 ppm are likely produced by propylene glycol. The peak at δ61.6833 ppm remains unidentified.

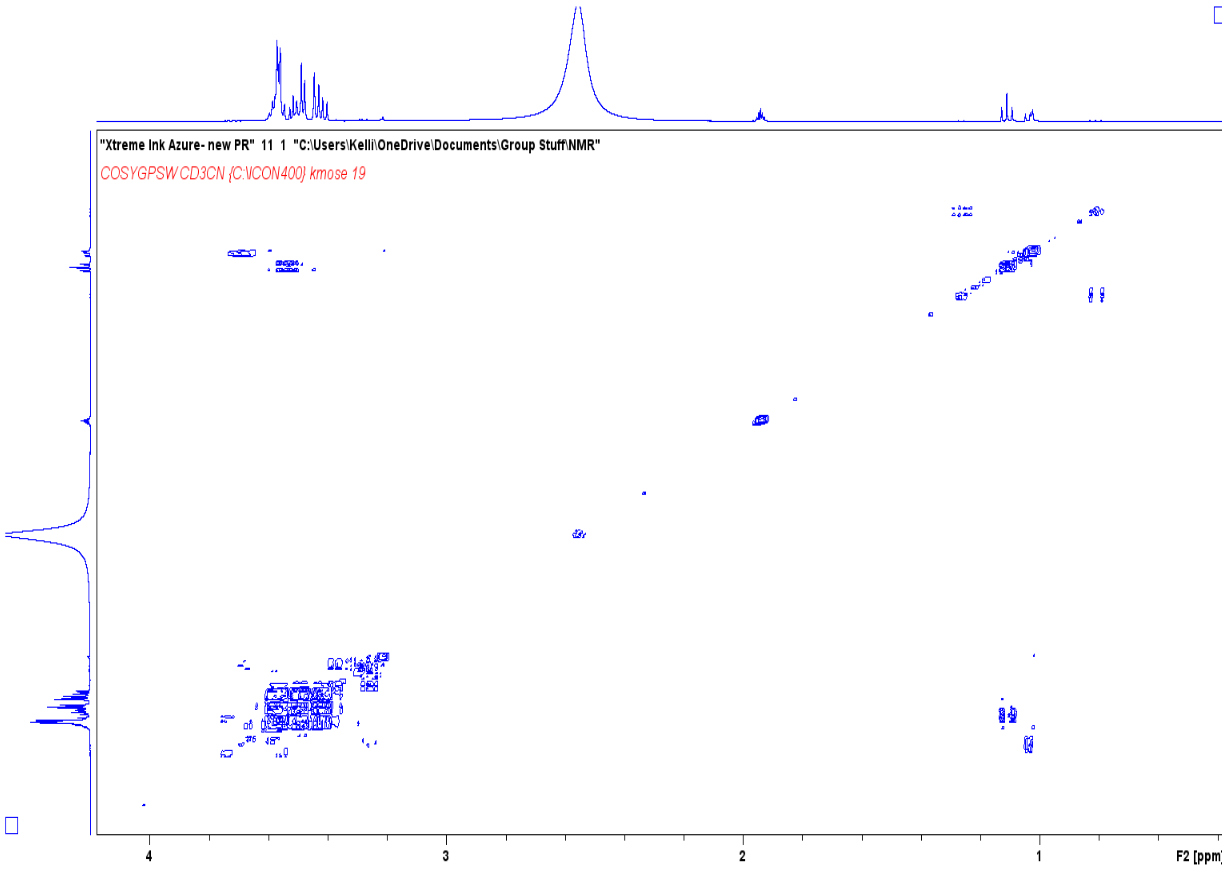

Figure S41. *¹H-¹H COSY spectrum of Xtreme Ink Azure pot residue in acetonitrile-d3*

Coupling occurs between δ0.81 ppm and δ1.2 ppm supports a long-chain alkane being present. Peaks at δ1.1103 ppm and one around δ3.5 ppm show coupling, indicating the presence of ethanol. Glycerol peaks at δ3.4236 ppm, δ3.4973 ppm, and δ3.5768 ppm exhibit coupling. Lastly, minor coupling occurs between small peaks at δ1.0374 ppm, δ3.262 ppm, δ3.381 ppm, and δ3.699 ppm which supports small amounts of propylene glycol being present in this sample.

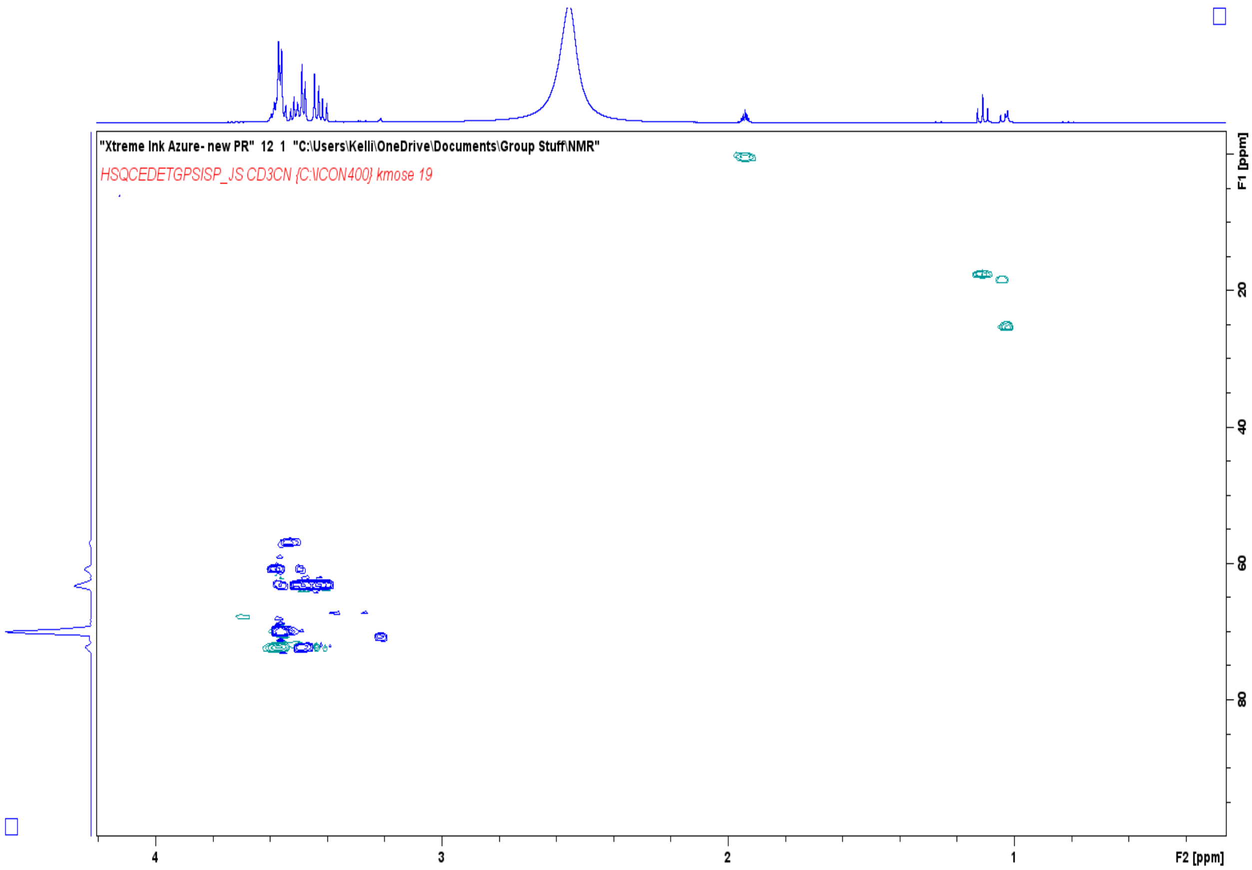

Figure S42. *^1H-^{13}C HSQC spectrum of Xtreme Ink Azure pot residue in acetonitrile-d3*

Coupling between a ^1H peak at δ1.1103 ppm and a ^{13}C peak at δ18.4393 ppm which may indicate ethanol being present. Coupling occurs between the ^1H peaks at δ3.4236 ppm, δ3.4973 ppm, and δ3.5768 ppm with the ^{13}C peak at δ64.0316 ppm, as well as between the ^1H peaks at δ3.4973 ppm, and δ3.568 ppm and the ^{13}C peak at δ73.1173 ppm; this gives strong support of glycerol being in the sample. There appears to be coupling between the ^1H peak around δ3.5593 ppm and the ^{13}C peak at around δ70.8156 ppm, which indicates the presence of polyethylene glycol. Lastly, coupling appears to occur between the ^1H peak around δ1.0374 ppm with the ^{13}C peak at δ19.2414. This, along with the coupling between small ^1H peaks at around δ3.271 ppm and δ3.371 ppm with the ^{13}C peak at δ68.209 ppm, as well as the ^1H peak at around δ3.693 ppm with the ^{13}C peak around δ68.5 ppm supports propylene glycol being in the sample.

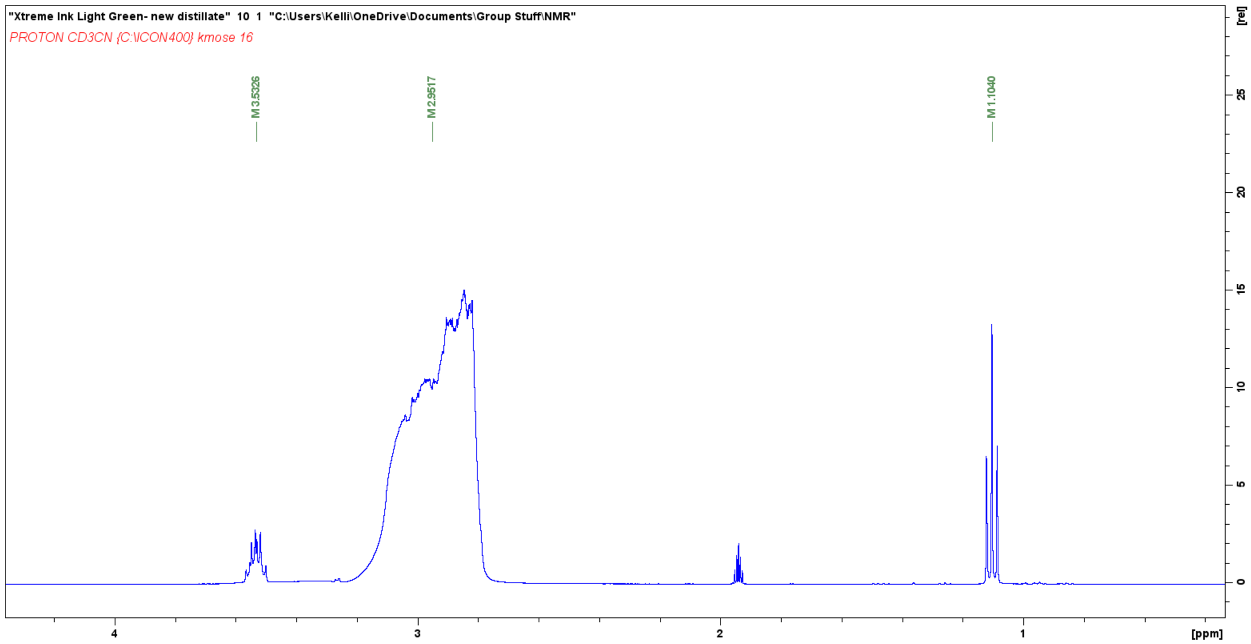

Figure S43. *[1]H NMR spectrum of Xtreme Ink Lime Green distillate in acetonitrile-d3*

A triplet at δ1.1040 ppm and quartet at δ3.5326 ppm are attributed to ethanol. The large peak at δ2.95 ppm is produced by water while the small peak at δ1.94 ppm is from the solvent.

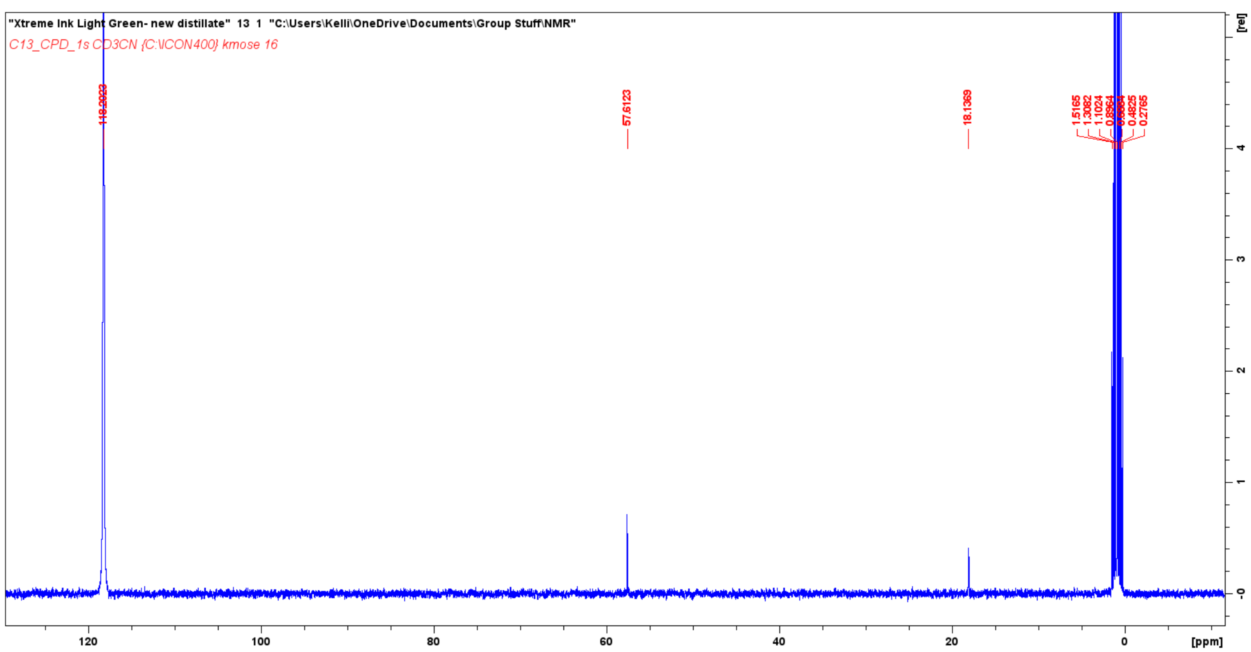

Figure S44. *[13]C NMR spectrum of Xtreme Ink Lime Green distillate in acetonitrile-d3*

Peaks at δ18.1369 ppm and δ57.6123 ppm support ethanol being present in the sample. All other signals are attributed to the solvent.

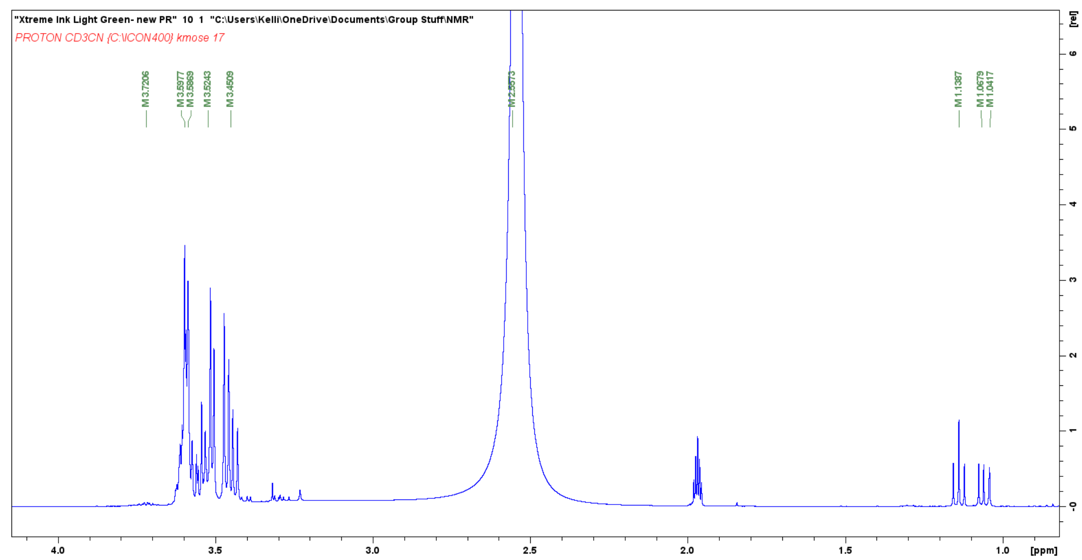

Figure S45. *[1]H NMR spectrum of Xtreme Ink Lime Green pot residue in acetonitrile-d3*

Peaks at δ3.4227 ppm, δ3.4961 ppm, and δ3.5695 ppm are produced by glycerol. A triplet at δ1.1105 ppm is likely produced by ethanol, although the peak that is expected downfield is apparently masked by the signals from glycerol. There are small peaks at δ3.2595 ppm, δ3.3796 ppm, and δ3.6923 ppm, as well as a prominent doublet at δ1.0396 ppm that are characteristic of propylene glycol. A singlet at δ1.0135 ppm remains unidentified.

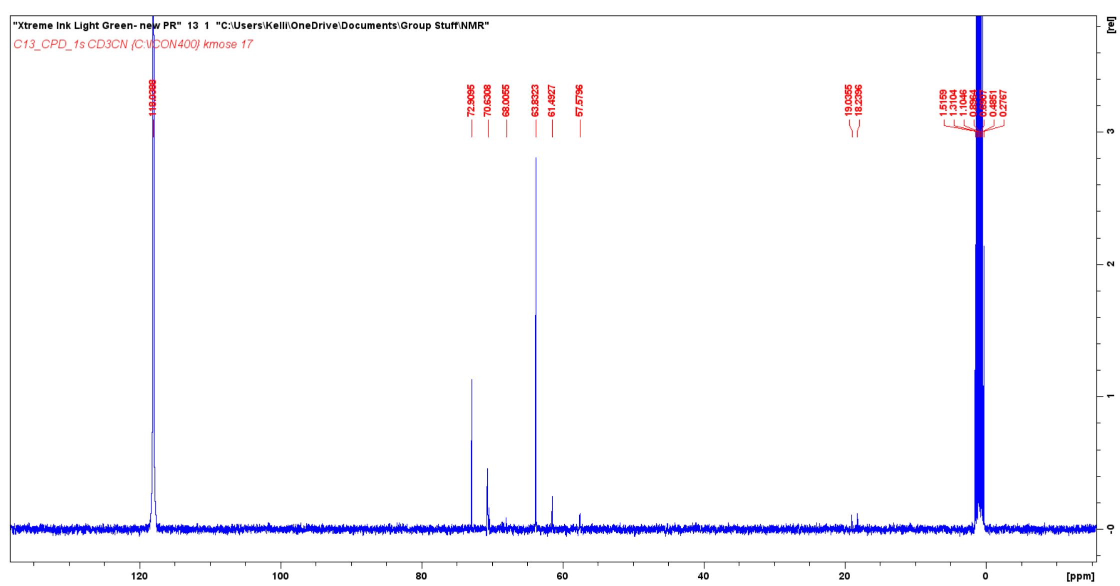

Figure S46. *[13]C NMR spectrum of Xtreme Ink Lime Green pot residue in acetonitrile-d3*

Ethanol produces signals at δ18.2396 ppm and δ57.5796 ppm. Propylene glycol shows characteristic peaks at δ19.0355 ppm, and δ68.0055 ppm; an additional peak would be expected around δ68 but does not appear due to low concentration. Peaks at δ63.8323 ppm and δ72.9095 ppm are attributed to glycerol while the peak at δ70.5887 ppm is attributed to polyethylene glycol. The remaining peak at δ61.1927 ppm remains unidentified.

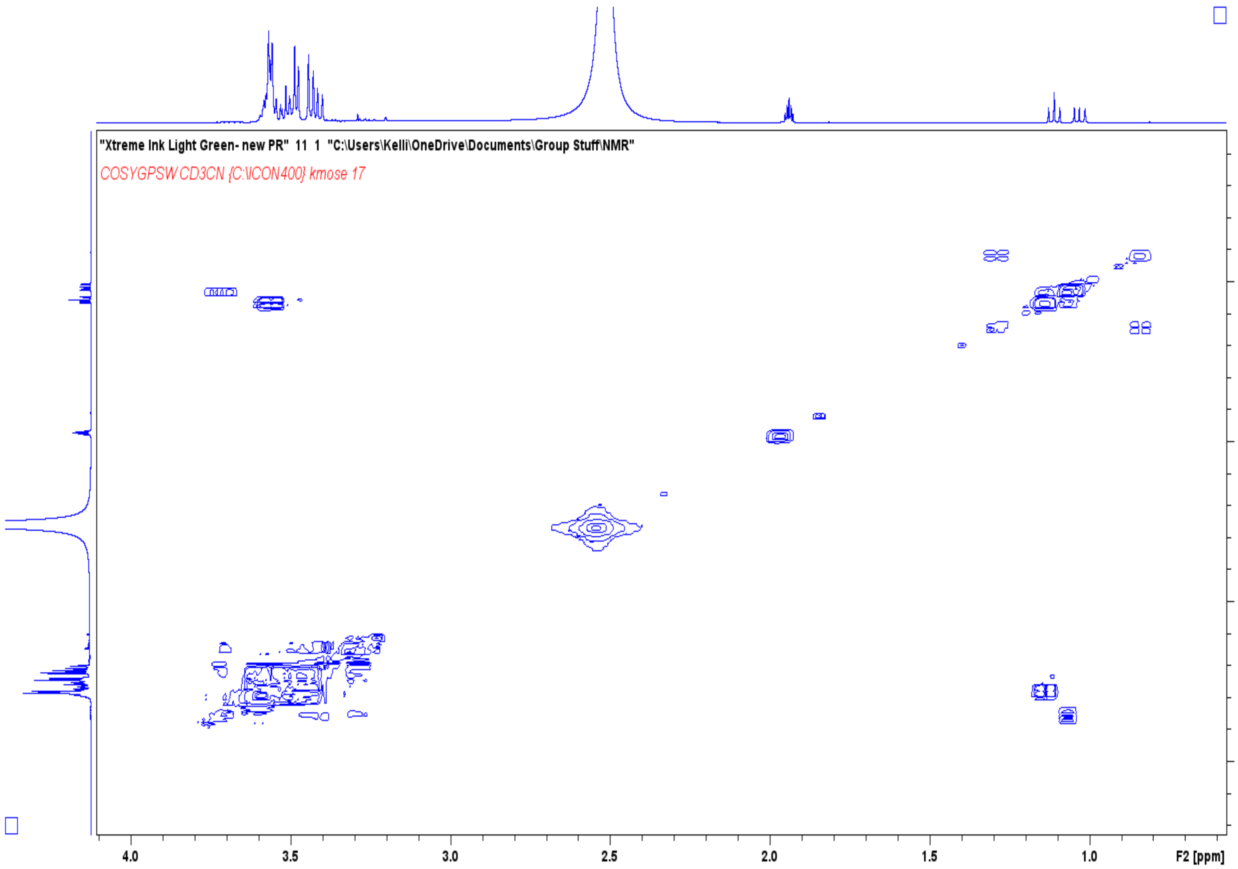

Figure S47. *[1]H-[1]H COSY spectrum of Xtreme Ink Lime Green pot residue in acetonitrile-d3*

Coupling between peaks at δ3.4227 ppm, δ3.4961 ppm, and δ3.5695 ppm supports the presence of glycerol. The peak at δ1.1079 ppm couples with a peak around δ3.53 ppm, indicating ethanol in the sample. Small amount of coupling occurring between peaks at δ3.26 ppm, δ3.37 ppm, δ3.70 ppm, and δ1.04 ppm supports the presence of propylene glycol in the ink.

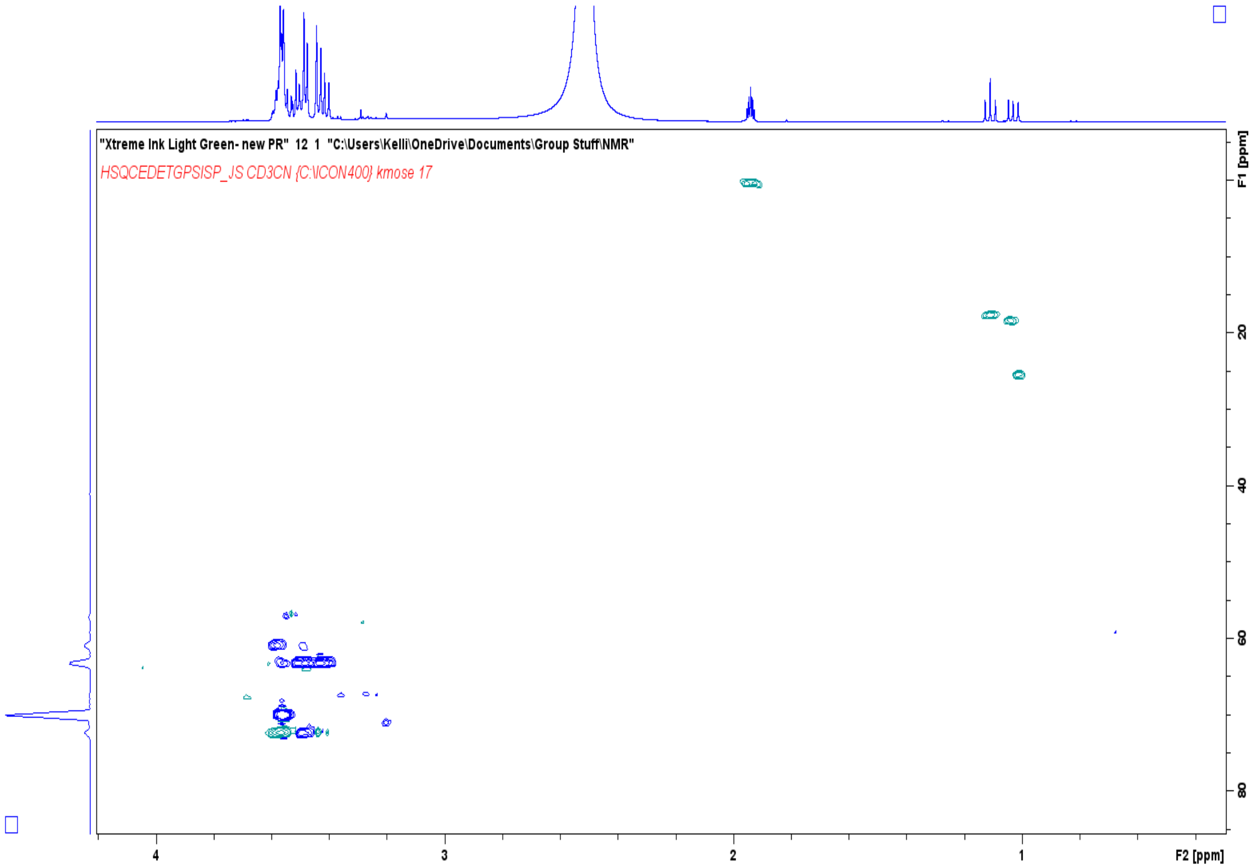

Figure S48. *^{1}H-^{13}C HSQC spectrum of Xtreme Ink Lime Green pot residue in acetonitrile-d3*

^{1}H-^{13}C coupling occurring between peaks at δ3.4227 ppm, δ3.4961 ppm, and δ3.5695 ppm and those at δ63.8323 ppm and δ72.9095 ppm support glycerol being present. Additionally, coupling occurs between the ^{1}H peaks at δ1.0396 ppm, δ3.273 ppm, δ3.365 ppm, and δ3.680 ppm and the ^{13}C peaks at δ19.035 ppm, δ67.8 ppm and δ68.0 ppm; this supports propylene glycol being in the sample. The coupling ^{1}H and ^{13}C signals at δ3.5587 ppm and δ70.6323 ppm, respectively, are attributed to polyethylene glycol. Ethanol shows coupling between ^{1}H peak at δ1.1079 ppm and around δ3.53 ppm with ^{13}C peaks at δ18.1991 ppm and δ57.5955 ppm, respectively. The remaining peaks remain unidentified.

2.5 BioTek

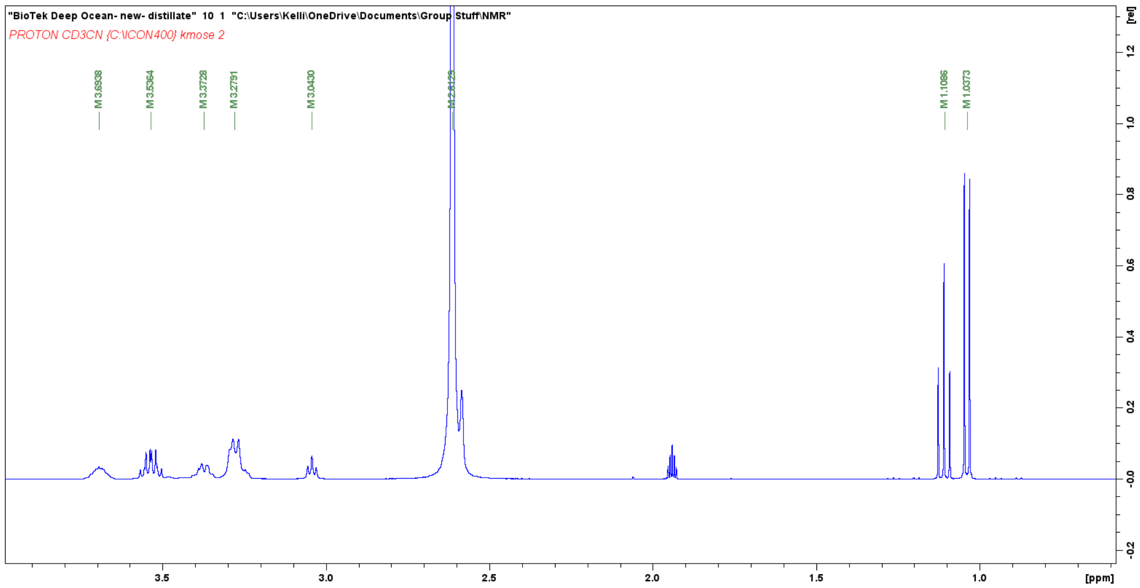

Figure S49. *[1]H NMR spectrum of BioTek Deep Ocean ink distillate in acetonitrile-d3*

Peaks at δ 1.1086 ppm, δ3.0430 ppm, and δ3.5364 ppm are produced by ethanol. Propylene glycol produces the signals at δ1.0373 ppm, δ3.2791 ppm, δ3.3728 ppm, and δ3.6939 ppm. Peaks at δ3.6129 ppm and δ1.94 ppm are from water and the acetonitrile solvent, respectively.

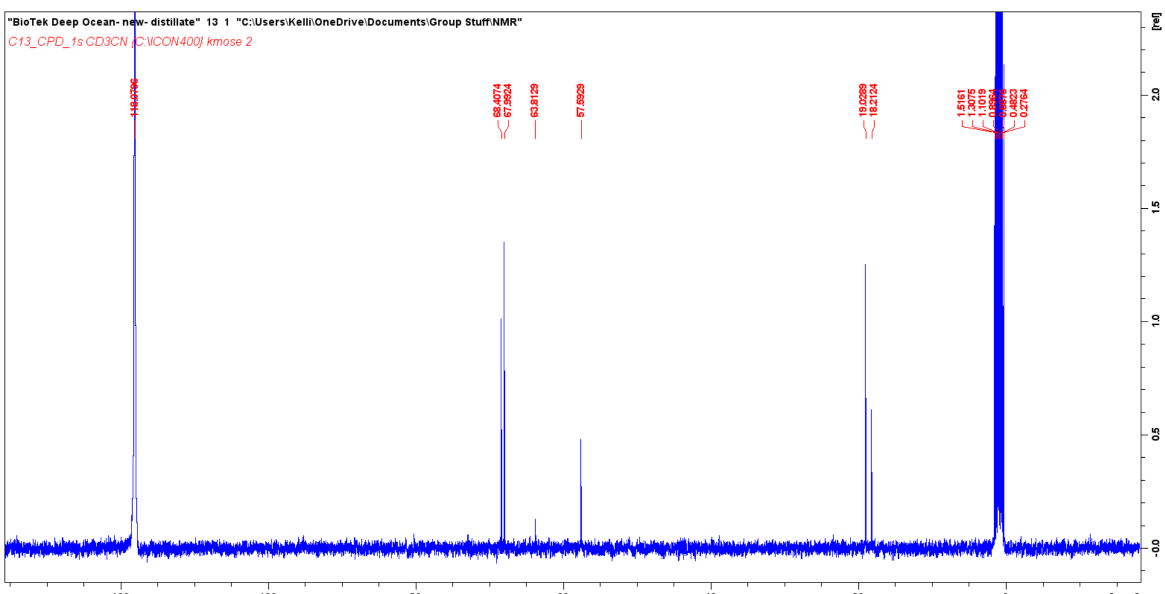

Figure S50. *[13]C NMR spectrum of BioTek Deep Ocean ink distillate in acetonitrile-d3*

Propylene glycol produces signals at δ19.0289 ppm, δ67.9924 ppm, and δ68.1074 ppm. Ethanol produces the signals at δ18.2124 ppm and δ57.5929 ppm. The peak at δ63.8129 ppm is likely from small amounts of glycerol in the distillate.

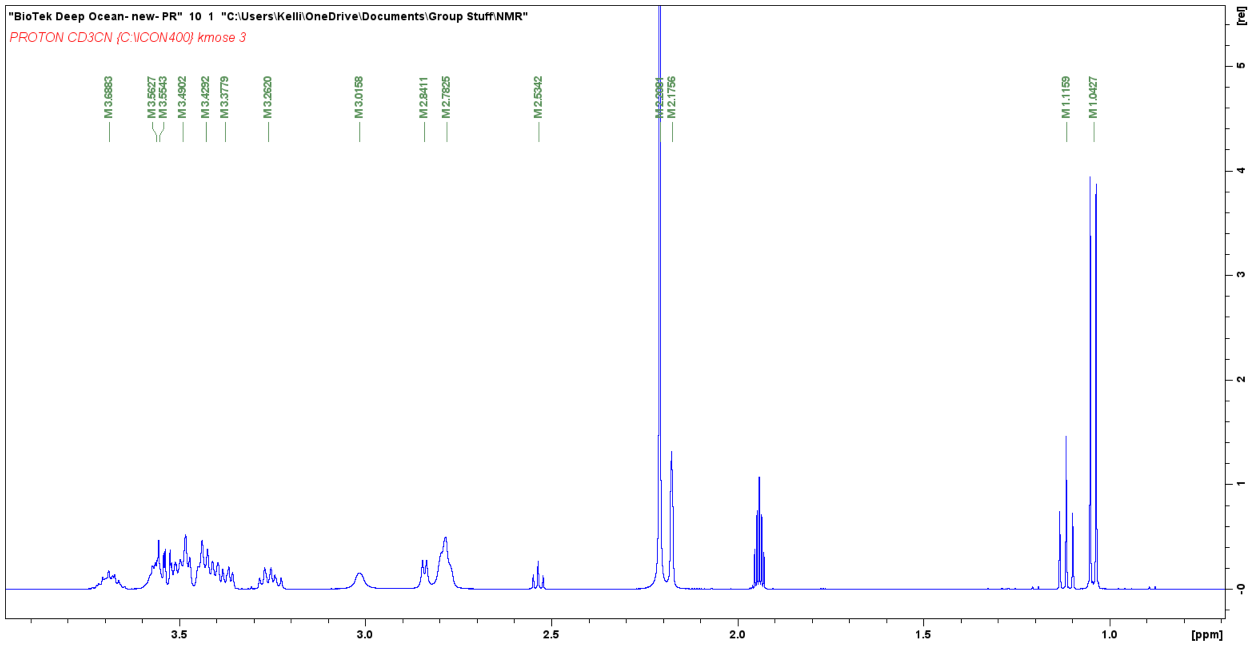

Figure S51. *[1]H NMR spectrum of BioTek Deep Ocean ink pot residue in acetonitrile-d3*

Peaks at δ1.0427 ppm, δ3.2620 ppm, δ3.3779 ppm, δ3.6883 ppm, δ2.7825 ppm, and δ2.841 ppm are attributed to propylene glycol, with the latter two peaks produced by the hydroxyl hydrogens. Ethanol produces the peaks at δ1.1159 ppm and δ2.5342 ppm; a third peak is expected around δ3.5 ppm but is masked by other signals. Glycerol peaks appear at δ3.4292 ppm, δ3.4902 ppm, and δ3.5627 ppm. A peak at δ3.5543 ppm is attributed to polyethylene glycol. Peaks at δ2.1756 ppm and δ3.0158 ppm remain unidentified.

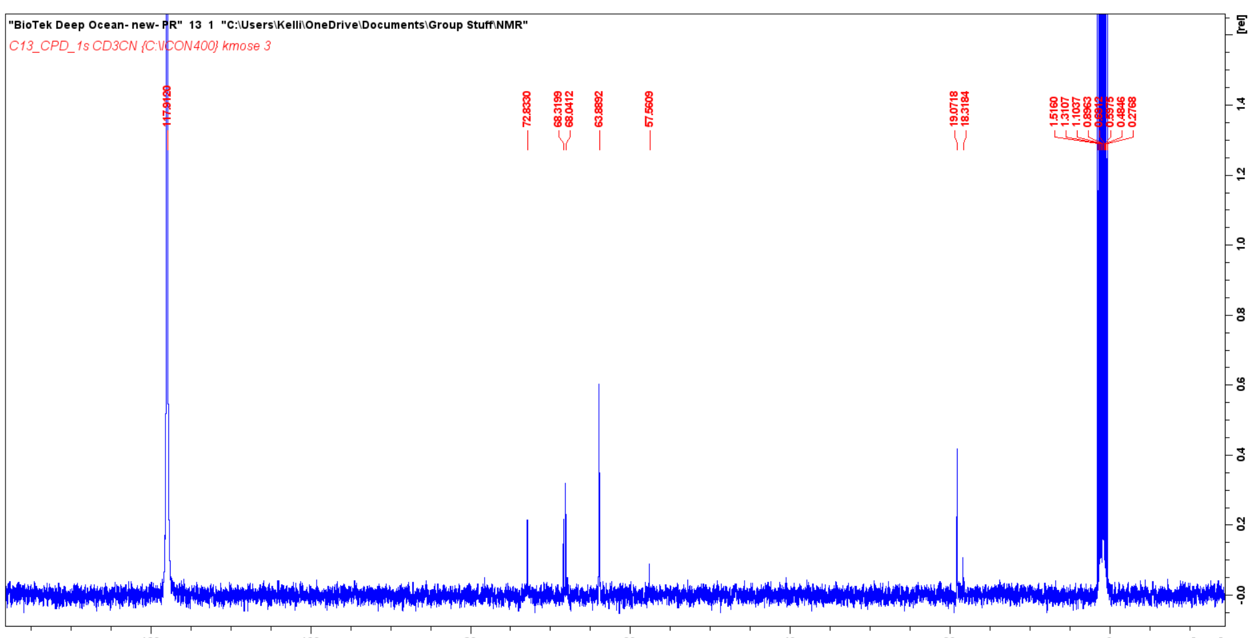

Figure S52. *^{13}C NMR spectrum of BioTek Deep Ocean ink pot residue in acetonitrile-d3*

Peaks at δ63.8892 ppm and δ72.8330 ppm are attributed to glycerol. Propylene glycol produces peaks at δ19.0718 ppm, δ68.0412 ppm, and δ68.3199 ppm. Ethanol produces the signals at δ18.3184 ppm and δ57.5609 ppm. The remaining peaks are from acetonitrile.

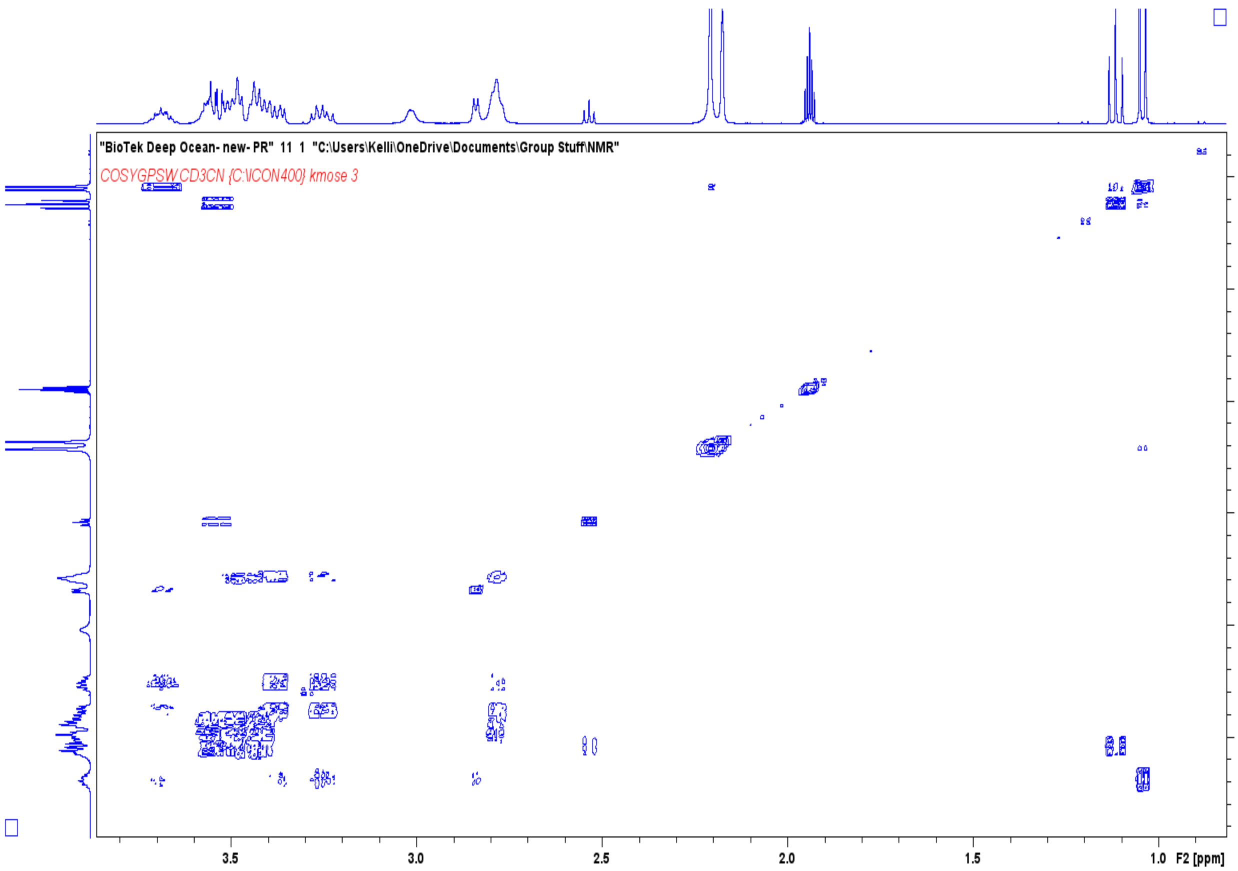

Figure S53. *^{1}H-^{1}H COSY spectrum of BioTek Deep Ocean ink pot residue in acetonitrile-d3*

Coupling occurring between peaks at δ1.0427 ppm, δ2.7825 ppm, δ2.8411 ppm, δ3.2620 ppm, δ3.3779 ppm, and δ3.6883 ppm supports propylene glycol being in the sample. Additionally, coupling occurs between peaks at δ3.4292 ppm, δ3.4902 ppm, and δ3.5627 ppm supporting the presence of glycerol. Lastly, coupling between peaks at δ1.1159 ppm and δ2.5342 ppm indicates ethanol being present.

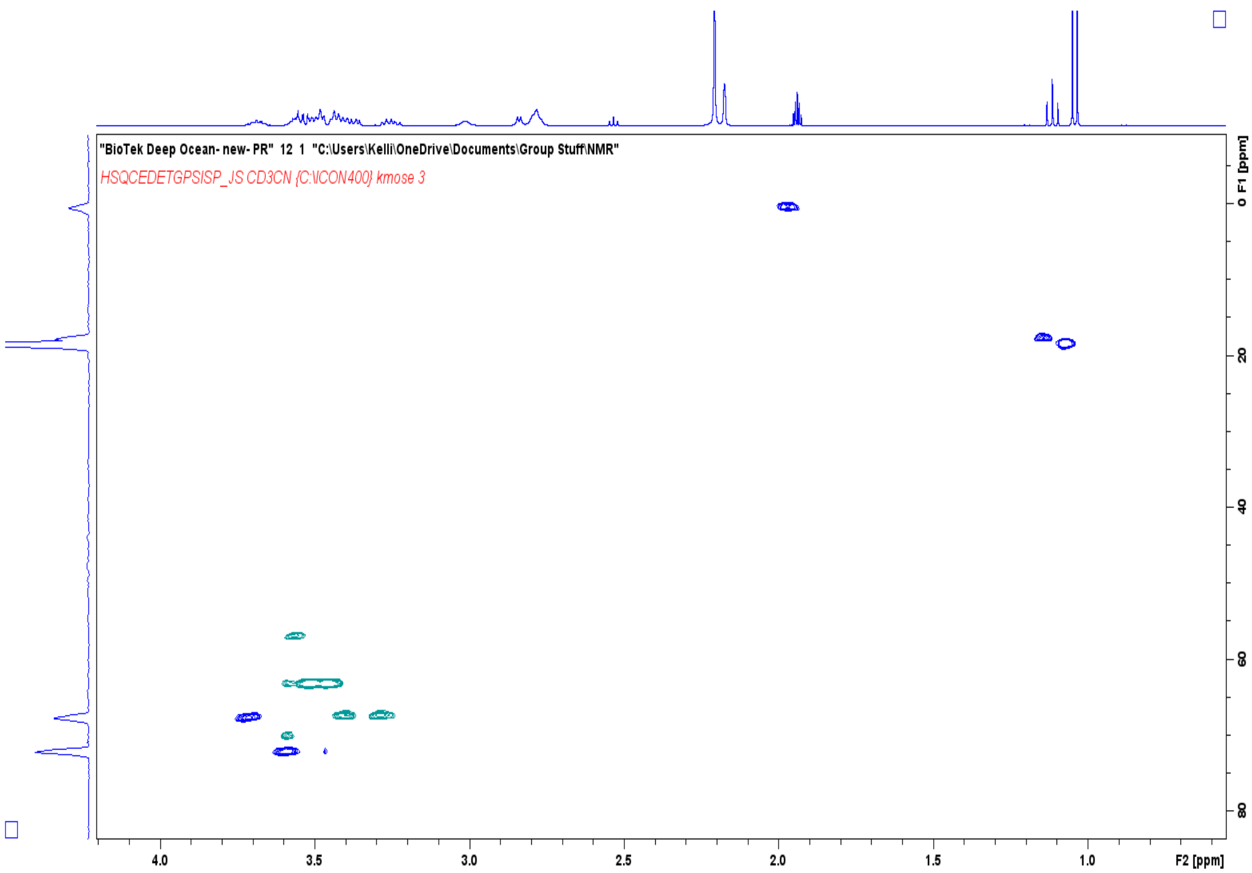

Figure S54. *^{1}H-^{13}C HSQC spectrum of BioTek Deep Ocean ink pot residue in acetonitrile-d3*

There is coupling between ^{1}H peaks at δ3.2620 ppm, δ3.3779 ppm, and δ3.6907 ppm and ^{13}C peaks at δ68.0412 ppm, and δ68.3199 ppm, as well as the doublet at δ1.0427 ppm coupling with the ^{13}C peak at δ19.0718 ppm further supports propylene glycol being on the sample. Glycerol exhibits coupling between ^{1}H peaks at δ3.4292 ppm, δ3.4902 ppm, and δ3.5627 ppm and ^{13}C peaks at δ63.8892 ppm and δ72.8330 ppm. Ethanol ^{1}H peaks at δ1.0427 ppm and δ3.534 ppm couple with ^{13}C peaks at δ18.3184 ppm, and δ57.5609 ppm, respectively. Polyethylene glycol

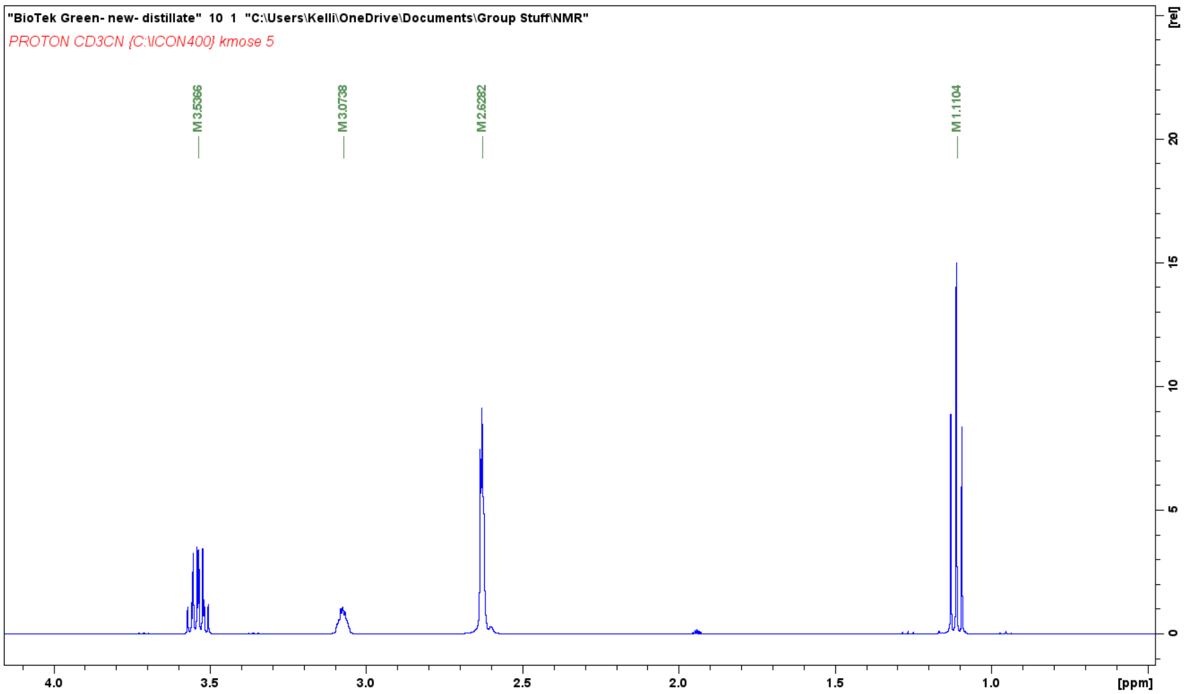

Figure S55. *^{1}H NMR spectrum of BioTek Green ink distillate in acetonitrile-d3*

Peaks at δ1.1104 ppm, δ3.0738 ppm, and δ3.5366 ppm are attributed to ethanol. The peak at δ2.62 ppm and δ1.94 ppm are produced by water and the acetonitrile solvent, respectively.

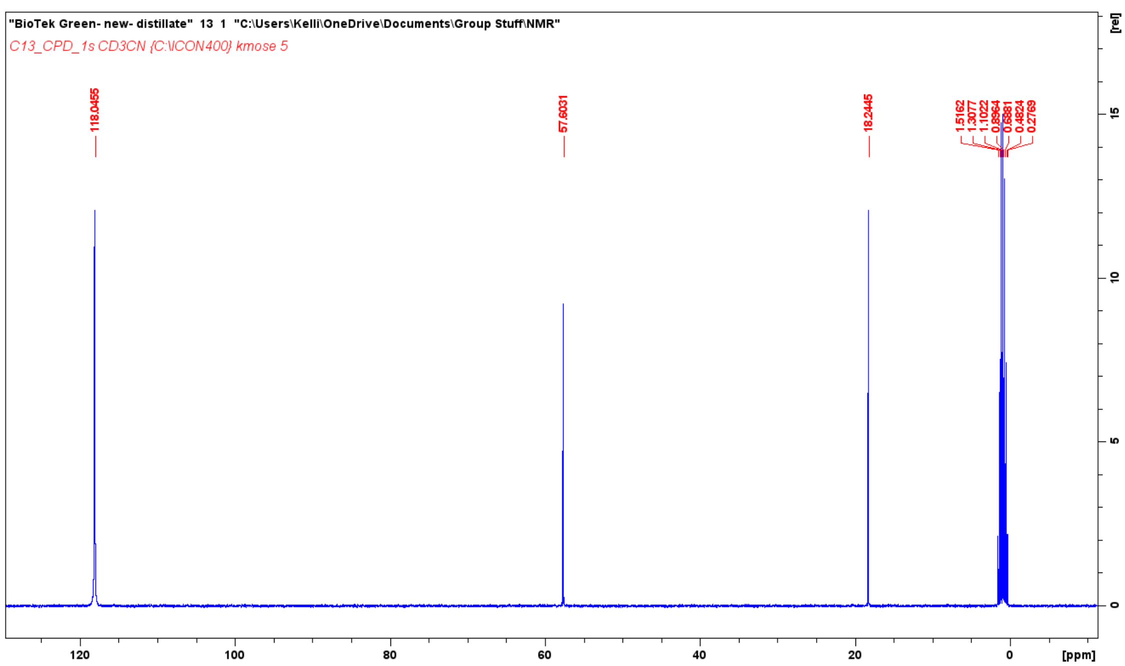

Figure S56. *^{13}C NMR spectrum of BioTek Green ink distillate in acetonitrile-d3*

Ethanol produced the signals at δ18.2445 ppm and δ57.6031 ppm. The remaining peaks are produced by the solvent.

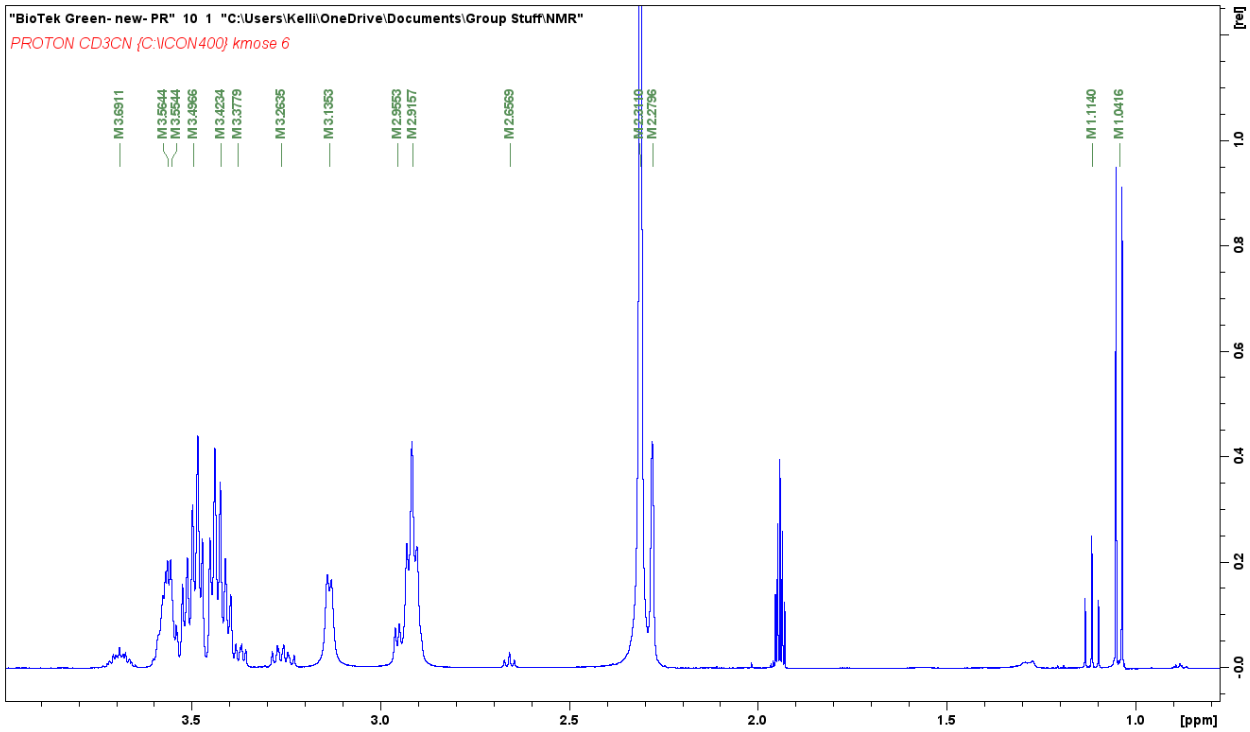

Figure S57. *[1]H NMR spectrum of BioTek Green ink pot residue in acetonitrile-d3*

Ethanol produces the peaks at δ 1.1140 ppm and δ 2.6569 ppm. An additional peak is expected around δ3.5 ppm but is overlapping with other signals. Propylene glycol produces peaks at δ1.0416 ppm, δ2.9553 ppm, δ3.2635 ppm, δ3.3779 ppm, and δ3.6911 ppm. Peaks at δ2.9157 ppm, δ3.1353 pm, δ3.4234 ppm, δ3.4966 ppm, and δ3.5644 ppm are attributed to glycerol. A peak at δ 3.5544 ppm is produced by polyethylene glycol. The large peak at δ2.3110 ppm is produced by water. The remaining peak at δ2.2796 ppm is unidentified.

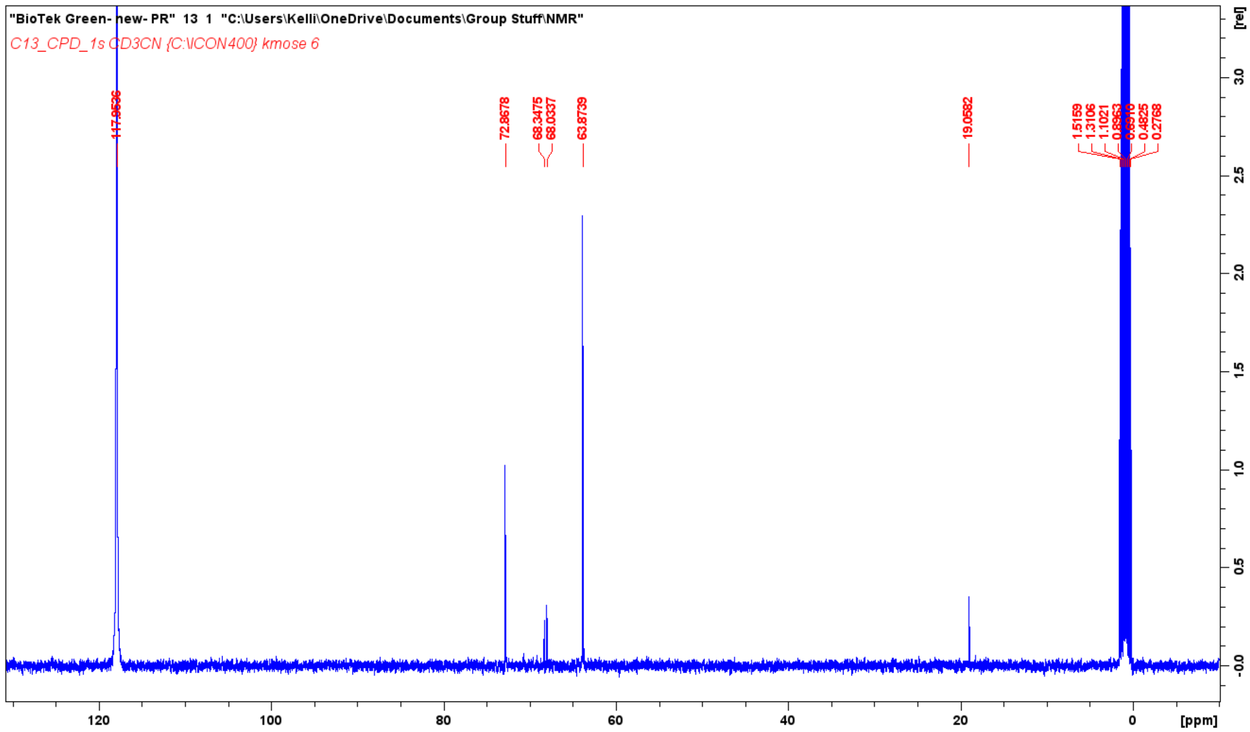

Figure S58. *^{13}C NMR spectrum of BioTek Green ink pot residue in acetonitrile-d3*

Peaks appearing at δ19.0582 ppm, δ68.0337 ppm, and δ68.3475 ppm are produced by propylene glycol. Glycerol produces peaks at δ63.8739 ppm and δ72.8678 ppm. Ethanol and polyethylene glycol peaks so not appear due to low concentration.

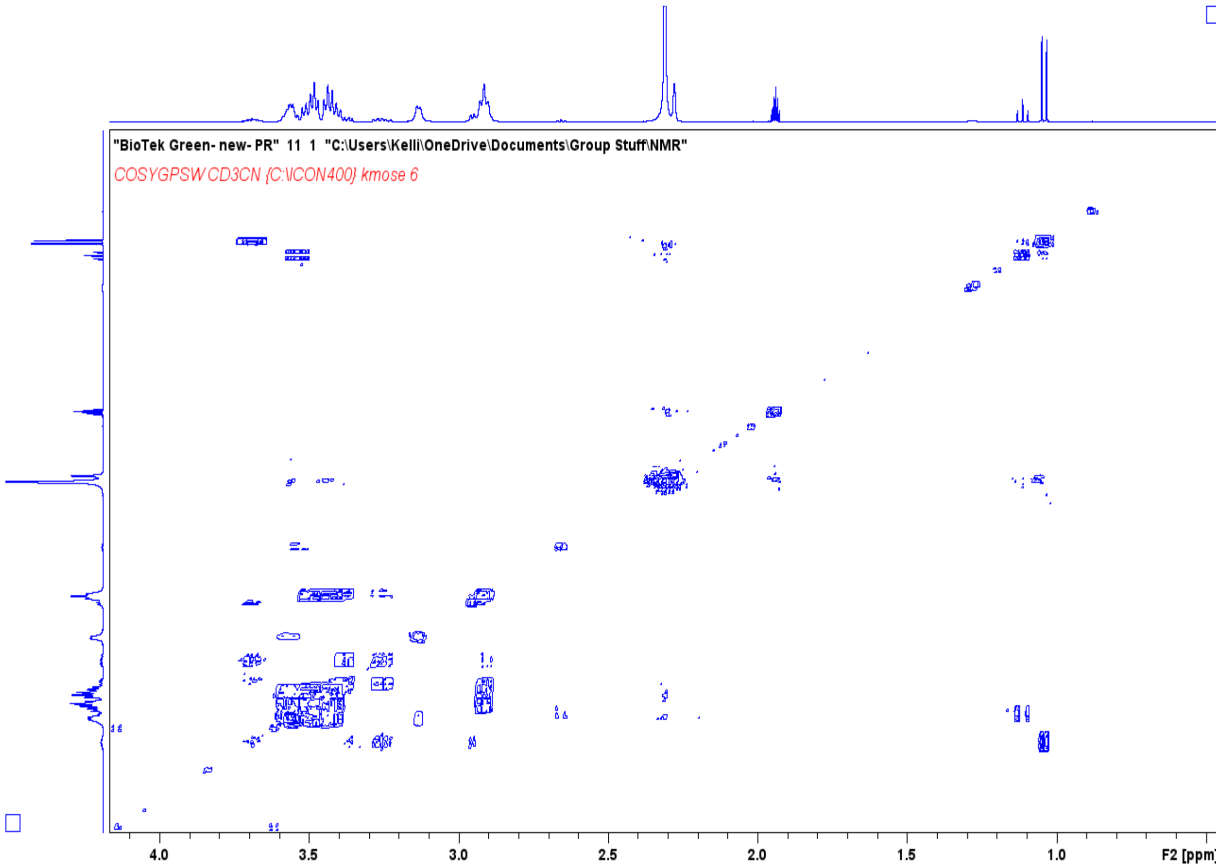

Figure S59. *^{1}H-^{1}H COSY spectrum of BioTek Green ink pot residue in acetonitrile-d3*

Propylene glycol peaks at δ1.0416 ppm, δ2.9553 ppm, δ3.2635 ppm, δ3.3779 ppm, and δ3.6911 ppm exhibit ^{1}H-^{1}H coupling, as well as glycerol peaks at δ2.9157 ppm, δ3.1353 ppm, δ3.4234 ppm, δ3.4966 ppm, and δ3.5644 ppm. Coupling between peaks at δ1.1140 ppm and δ2.6569 ppm support ethanol being in the sample.

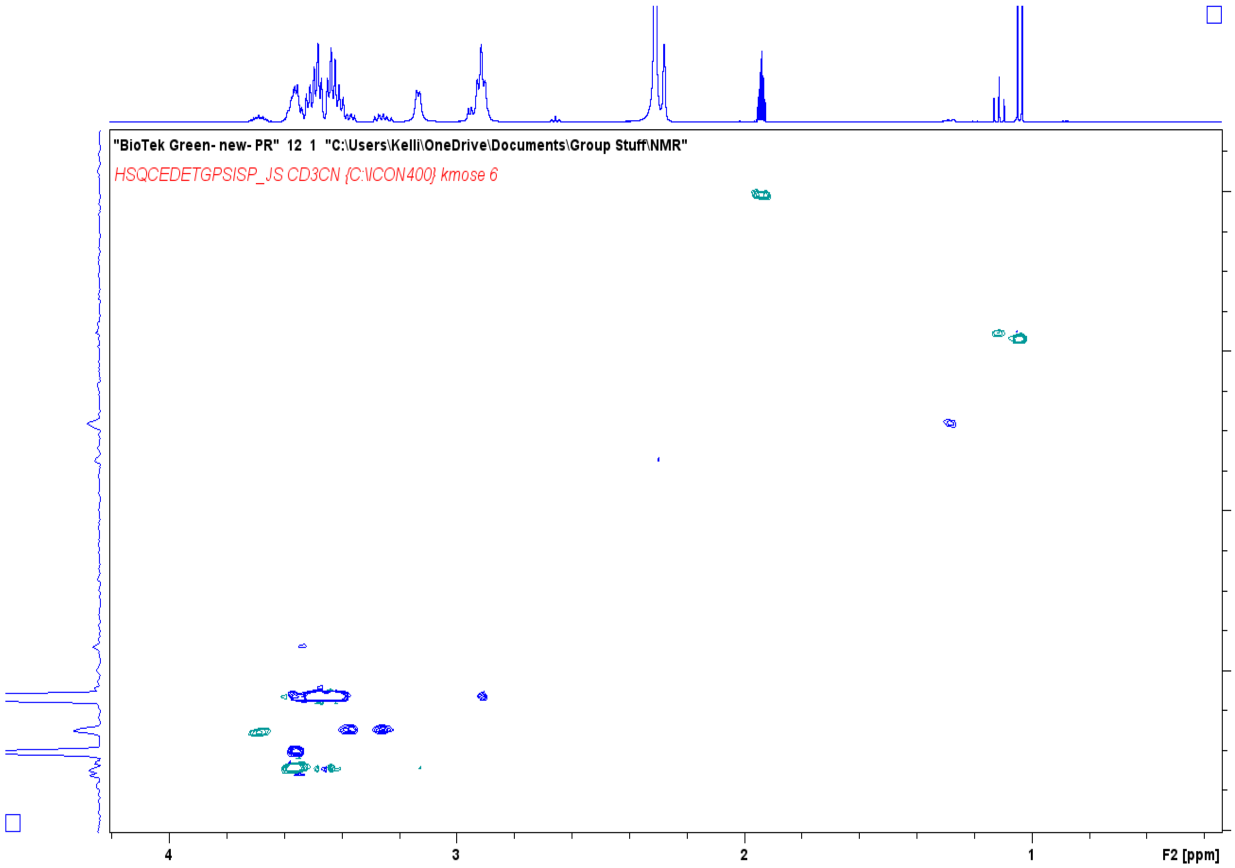

Figure S60. *[1]H-[13]C HSQC spectrum of BioTek Green ink pot residue in acetonitrile-d3*

^{1}H peaks at δ2.9157ppm, δ3.4234 ppm, δ3.4966 ppm, and δ3.5644 ppm couple with ^{13}C peaks at δ63.8739 ppm and δ72.85678 ppm which indicates the presence of glycerol. Peaks at δ3.2635 ppm, δ3.3779 ppm couple with the ^{13}C peak at δ68.0337 ppm and the ^{1}H peak at δ3.6911 ppm couples with the peak at δ68.3475 ppm; this along with coupling between signals at δ1.0416 ppm and δ19.0582 ppm support propylene glycol being present in the sample. Coupling between ^{1}H peaks at δ1.1140 ppm and δ3.53 ppm with ^{13}C peaks at δ17.7 ppm and δ56.8 ppm, respectively, supports ethanol being in the sample. Lastly, coupling between the ^{1}H peak at δ3.5544 ppm and a ^{13}C peak at δ70.1 ppm supports polyethylene glycol being in this ink.

3. Raman data

3.1 Intenze GenZ

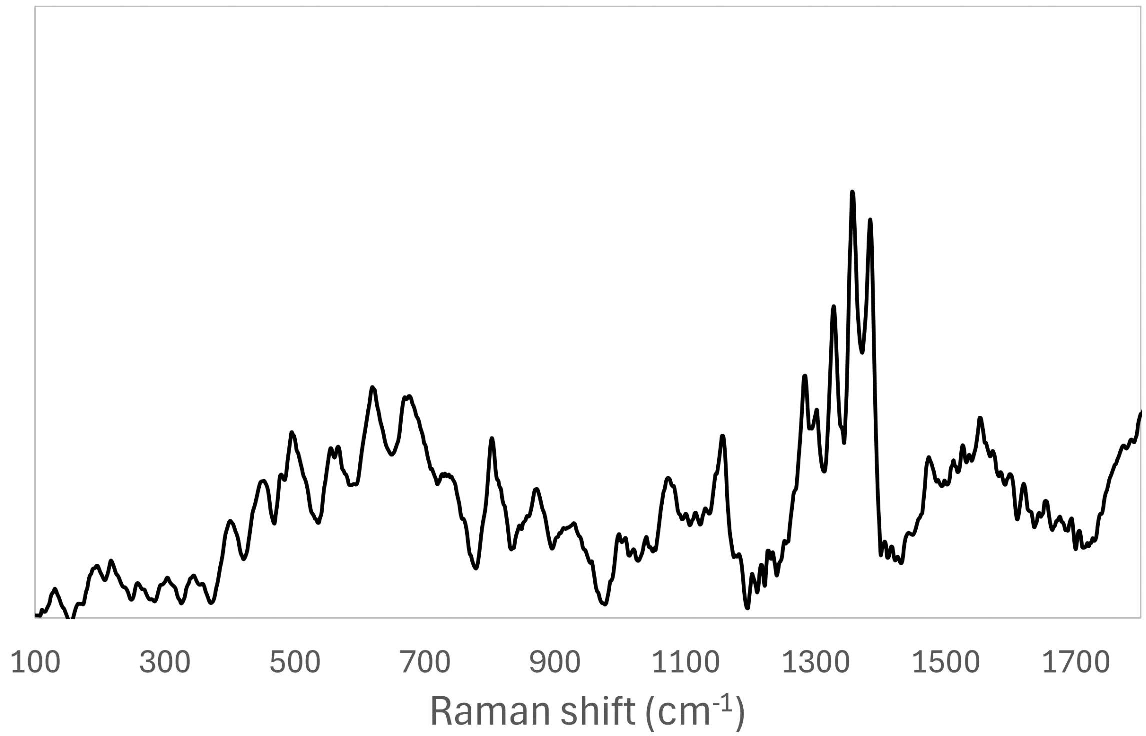

Figure S61. *Raman spectrum of Intenze GenZ Light Grass ink*

Parameters used to obtain this data include the following: 785 nm, 25 mW, 5 second integration, 2 average, 1 boxcar, auto-baseline on. Major peaks at 1384 cm^{-1}, 1356 cm^{-1}, 1328 cm^{-1}, 1284 cm^{-1}, and 1158 cm^{-1} are characteristic of Pigment Blue 60 (C.I. 69800).

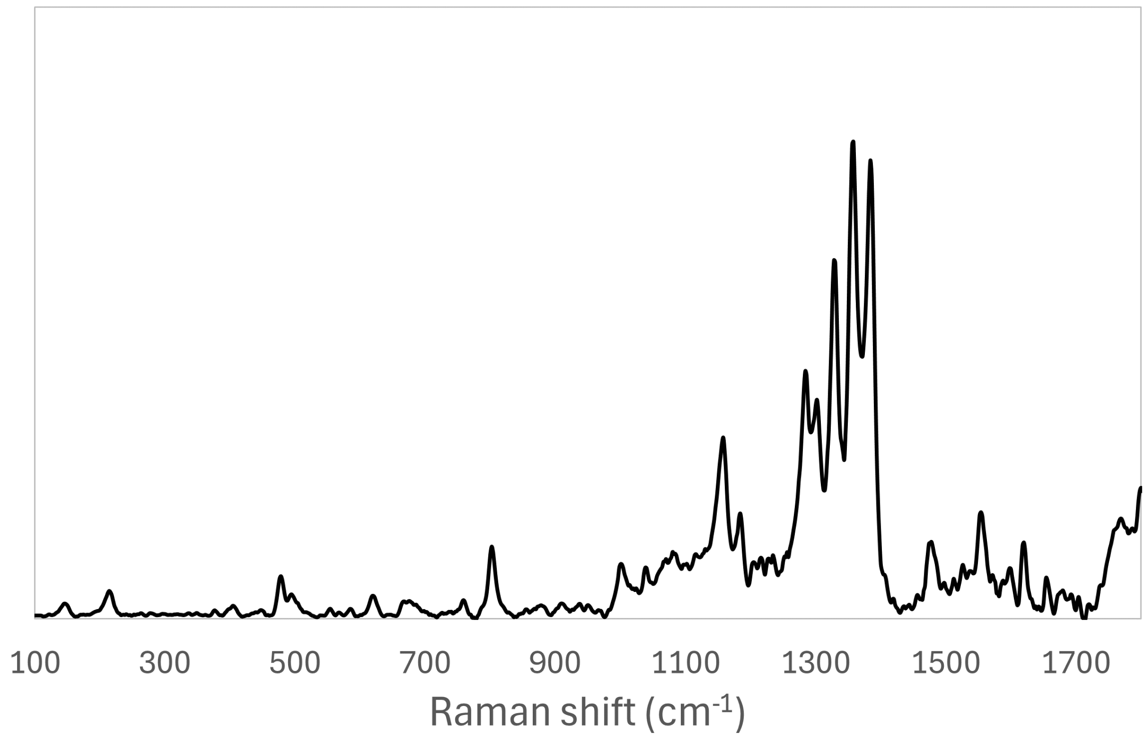

Figure S62. *Raman spectrum of Intenze GenZ Blue Sky ink*

Parameters used to obtain this data include the following: 785 nm, 25 mW, 5 second integration, 2 average, 1 boxcar, auto-baseline on. Characteristic peaks occurring at 1384 cm^{-1}, 1358 cm^{-1}, 1330 cm^{-1}, 1286 cm^{-1}, and 1156 cm^{-1} match those of Pigment Blue 60 (C.I. 69800).

3.2 Dynamic Viking

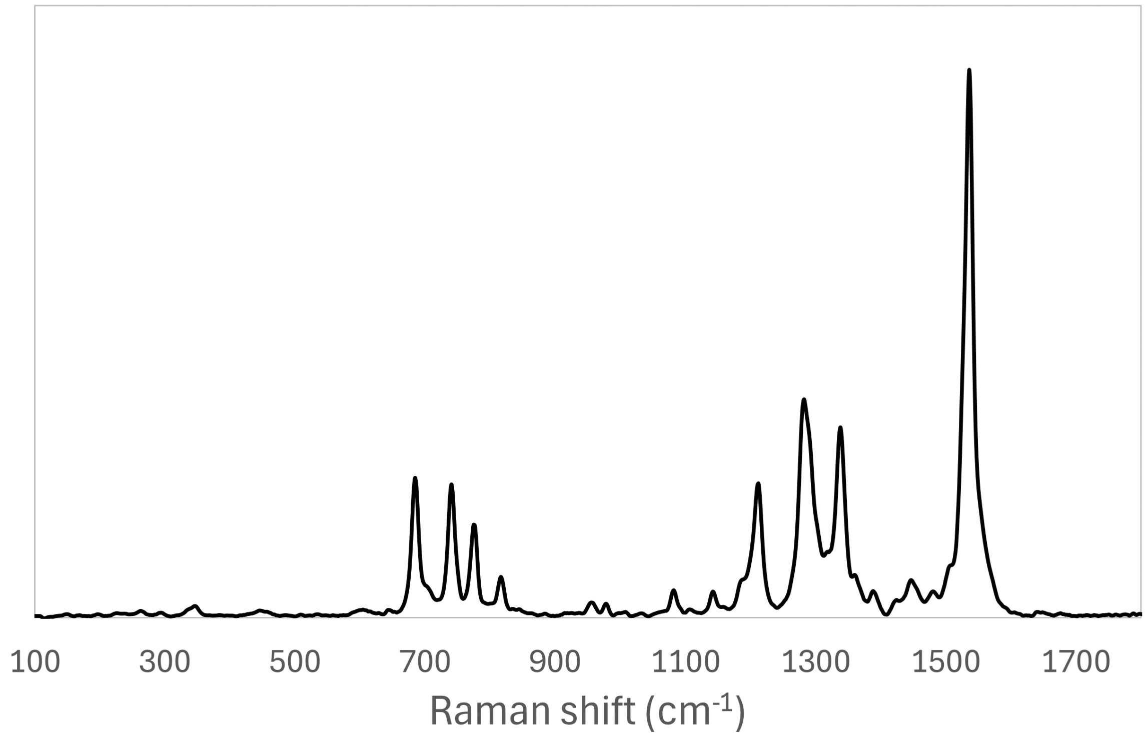

Figure S63. *Raman spectrum of Dynamic Platinum Baby Blue ink*

Parameters used to obtain this data include the following: 785 nm, 50 mW, 5 second integration, 2 average, 1 boxcar, auto-baseline on. Peaks at 1534 cm^{-1}, 1336 cm^{-1}, 1280 cm^{-1}, 1210 cm^{-1}, 774 cm^{-1}, 738 cm^{-1}, and 684 cm^{-1} are characteristic of Pigment Green 7.

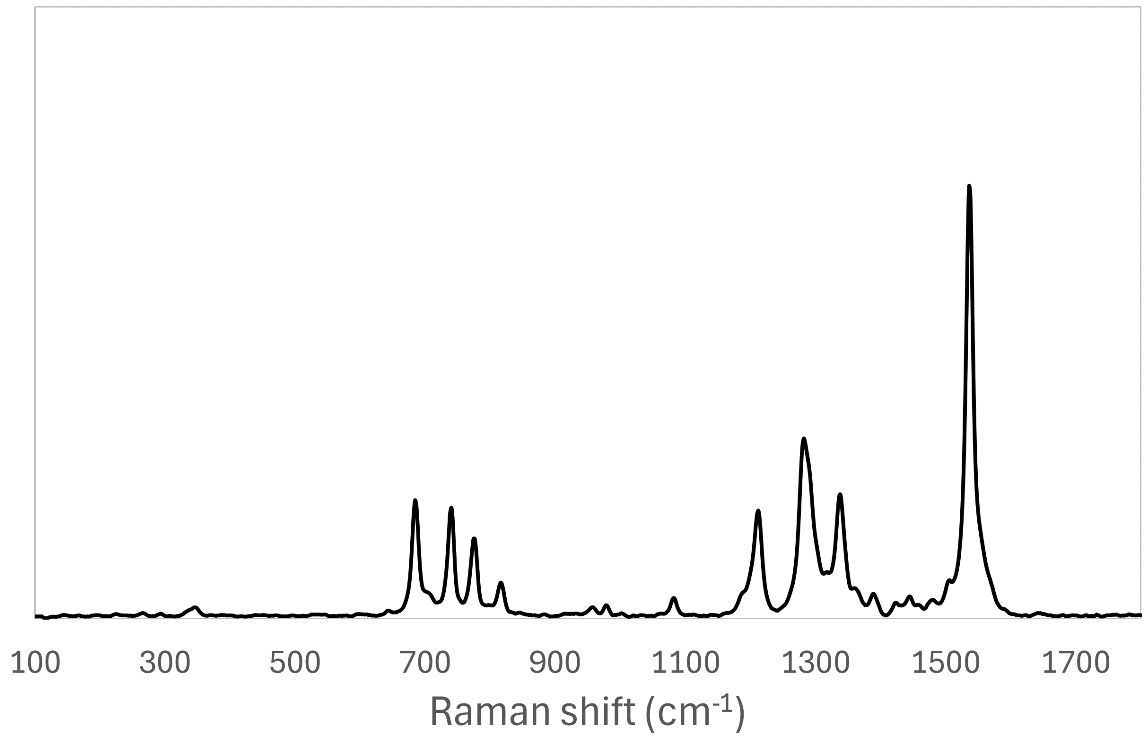

Figure S64. *Raman spectrum of Dynamic Platinum Emerald Green ink*

Parameters used to obtain this data include the following: 785 nm, 50 mW, 5 second integration, 2 average, 1 boxcar, auto-baseline on. Characteristic peaks at 1532 cm^{-1}, 1334 cm^{-1}, 1278 cm^{-1}, 1208 cm^{-1}, 774 cm^{-1}, 738 cm^{-1}, and 684 cm^{-1} match those of Pigment Green 7.

3.3 Quantum Ink

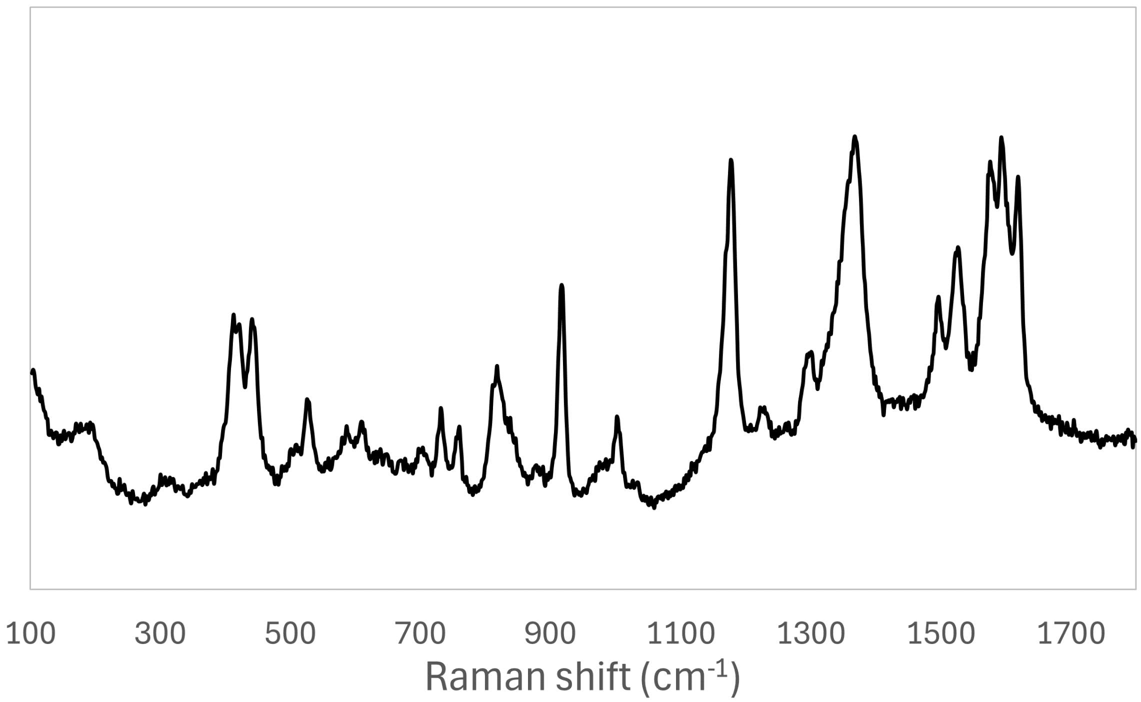

Figure S65. *Raman spectrum of Quantum Ink Grover*

Parameters used to obtain this data include the following: 532 nm, 0.1%, 4 accumulations ,20 second integration. Major peaks occurring at 1619 cm^{-1}, 1592 cm^{-1}, 1575 cm^{-1}, 1526 cm^{-1}, 1367 cm^{-1}, 1178 cm^{-1}, 1003 cm^{-1}, 916 cm^{-1}, 817 cm^{-1}, 526 cm^{-1}, 442 cm^{-1}, and 412 cm^{-1} are characteristic of alkali blue (C.I. 42765).

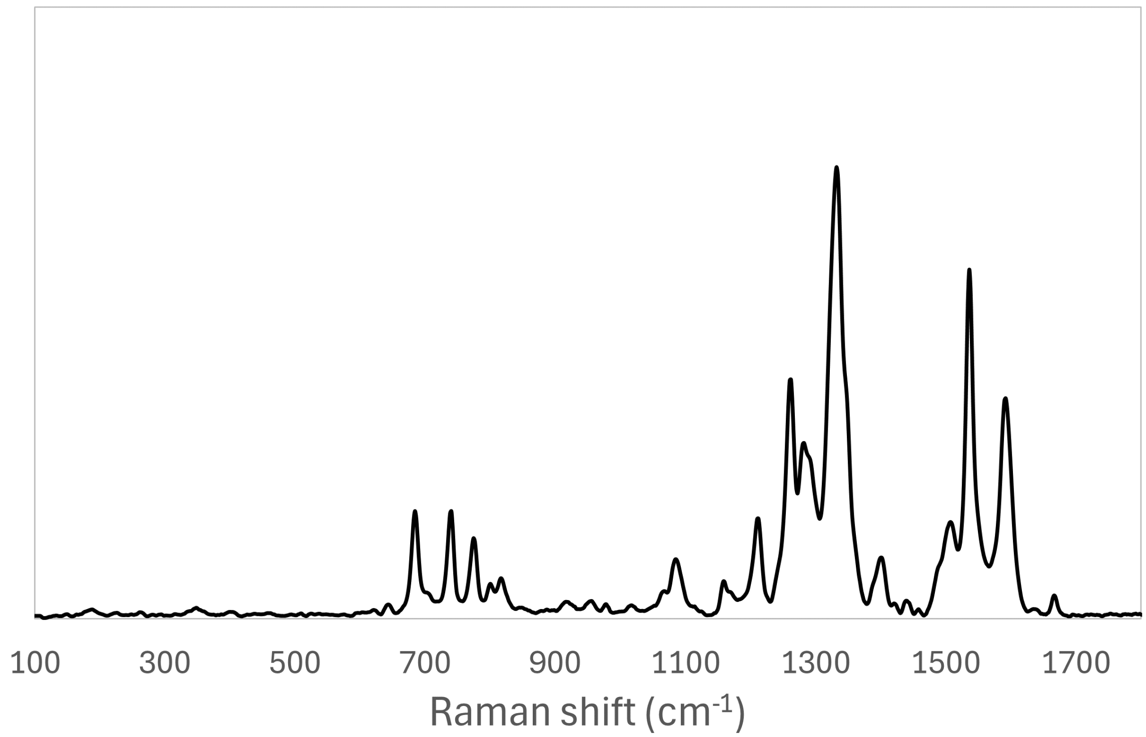

Figure S66. *Raman spectrum of Quantum Ink Pickle Juice*

Parameters used to obtain this data include the following: 785 nm, 50 mW, 5 second integration, 2 average, 1 boxcar, auto-baseline on. Major peaks occur at 1592 cm^{-1}, 1536 cm^{-1}, 1508 cm^{-1}, 1400 cm^{-1}, 1332 cm^{-1}, 1282 cm^{-1}, 1262 cm^{-1}, 1212 cm^{-1}, 1084 cm^{-1}, 774 cm^{-1}, 740 cm^{-1}, and 684 cm^{-1}. These peaks match those from both Pigment Green 7 and Pigment Yellow 74.

3.4 Xtreme Ink

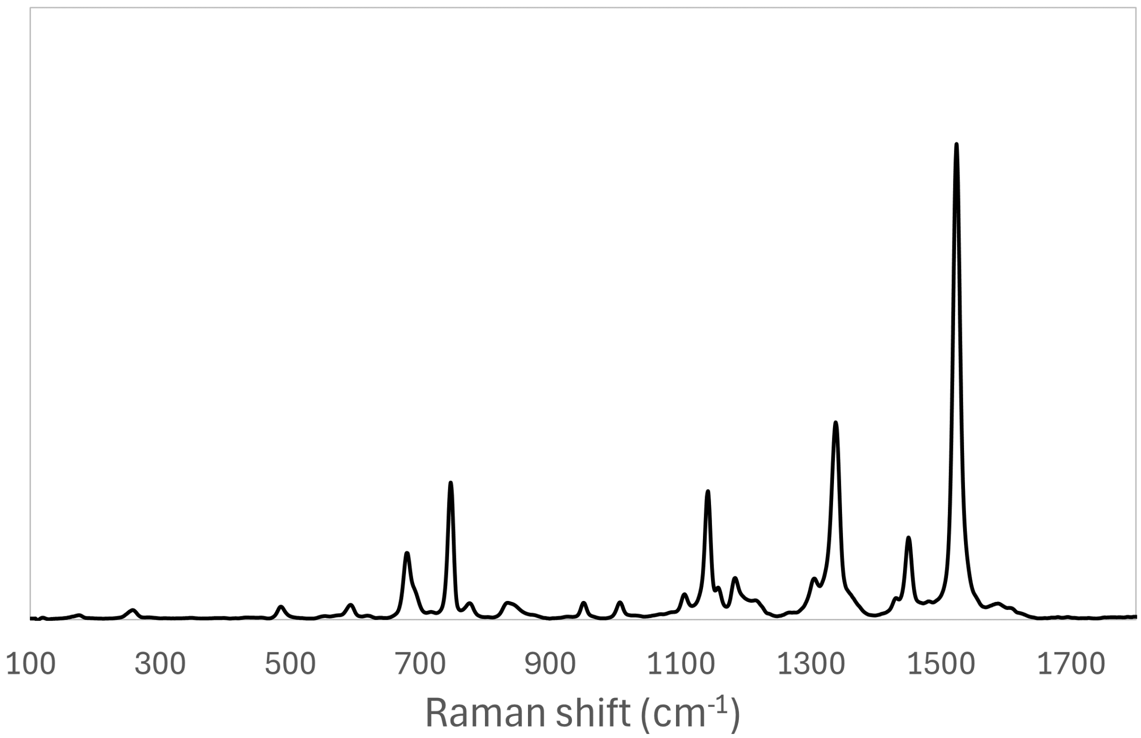

Figure S67. *Raman spectrum of Xtreme Ink Azure*

Parameters used to obtain this data include the following: 785 nm, 50 mW, 5 second integration, 2 average, 1 boxcar, auto-baseline on. Peaks occurring at 1524 cm^{-1}, 1450 cm^{-1}, 1338 cm^{-1}, 1142 cm^{-1}, 746 cm^{-1}, and 680 cm^{-1} match those of Pigment Blue 15.

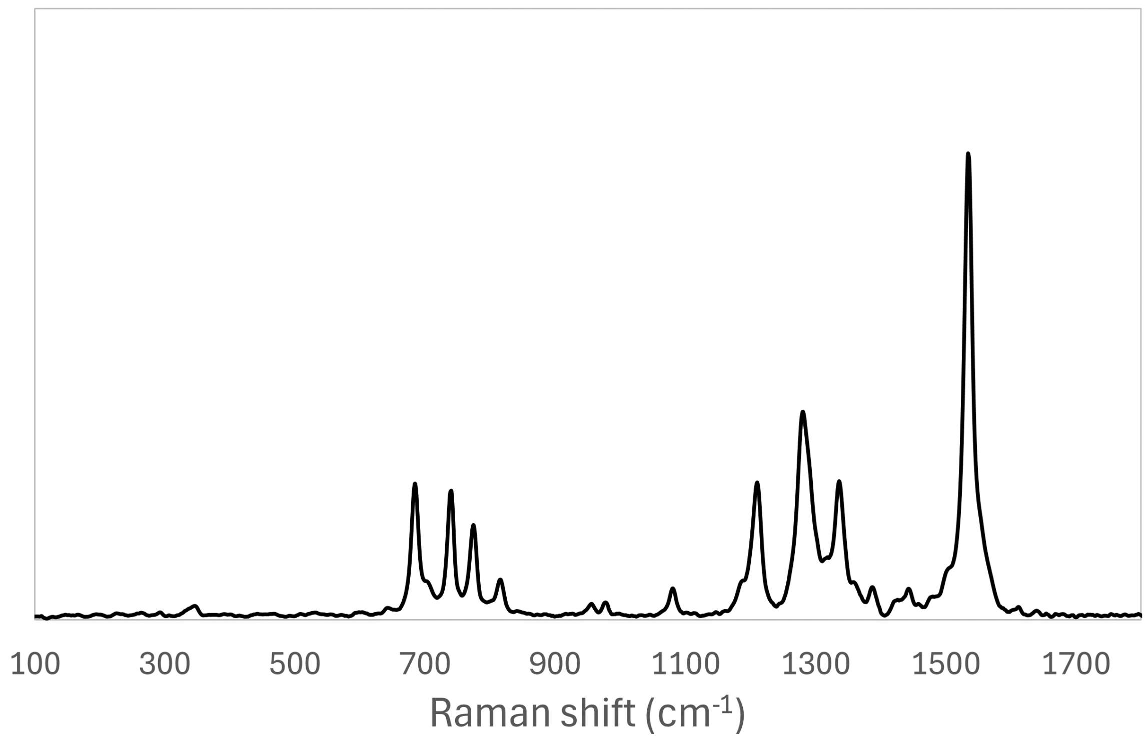

Figure S68. *Raman spectrum of Xtreme Ink Lime Green*

Parameters used to obtain this data include the following: 785 nm, 50 mW, 5 second integration, 2 average, 1 boxcar, auto-baseline on. Characteristic peaks at 1530 cm^{-1}, 1382 cm^{-1}, 1287 cm^{-1}, 1206 cm^{-1}, 772 cm^{-1}, 738 cm^{-1}, and 684 cm^{-1} match those produced by Pigment Green 7.

3.5 BioTek

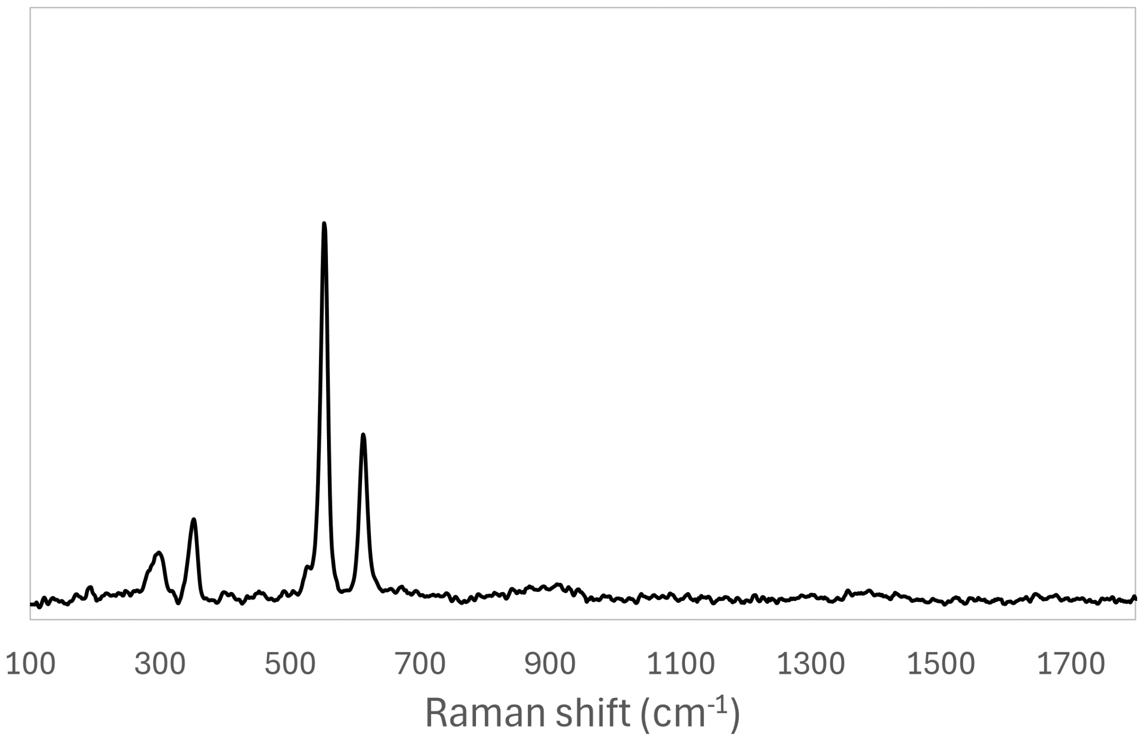

Figure S69. *Raman spectrum of BioTek Green ink*

Parameters used to obtain this data include the following: 785 nm, 175 mW, 5 second integration, 2 average, 1 boxcar, auto-baseline on. Peaks occurring at 614 cm^{-1}, 554 cm^{-1}, 352 cm^{-1}, and 300 cm^{-1} match peaks in chromium oxide green.[1]

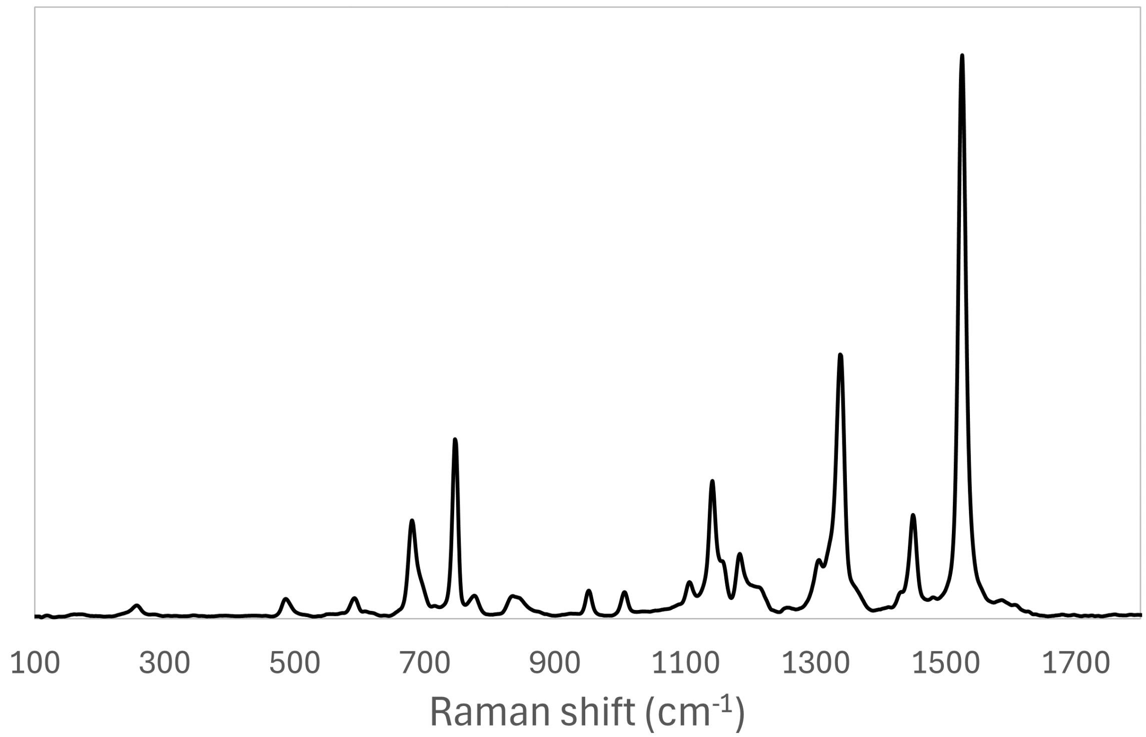

Figure S70. *Raman spectrum of BioTek Deep Ocean ink*

Parameters used to obtain this data include the following: 785 nm, 50 mW, 5 second integration, 2 average, 1 boxcar, auto-baseline on. Major peaks occurring at 1526 cm^{-1}, 1450 cm^{-1}, 1340 cm^{-1}, 1142 cm^{-1}, 746 cm^{-1}, and 682 cm^{-1} are characteristic of Pigment Blue 15.

3.6 Standard Pigments

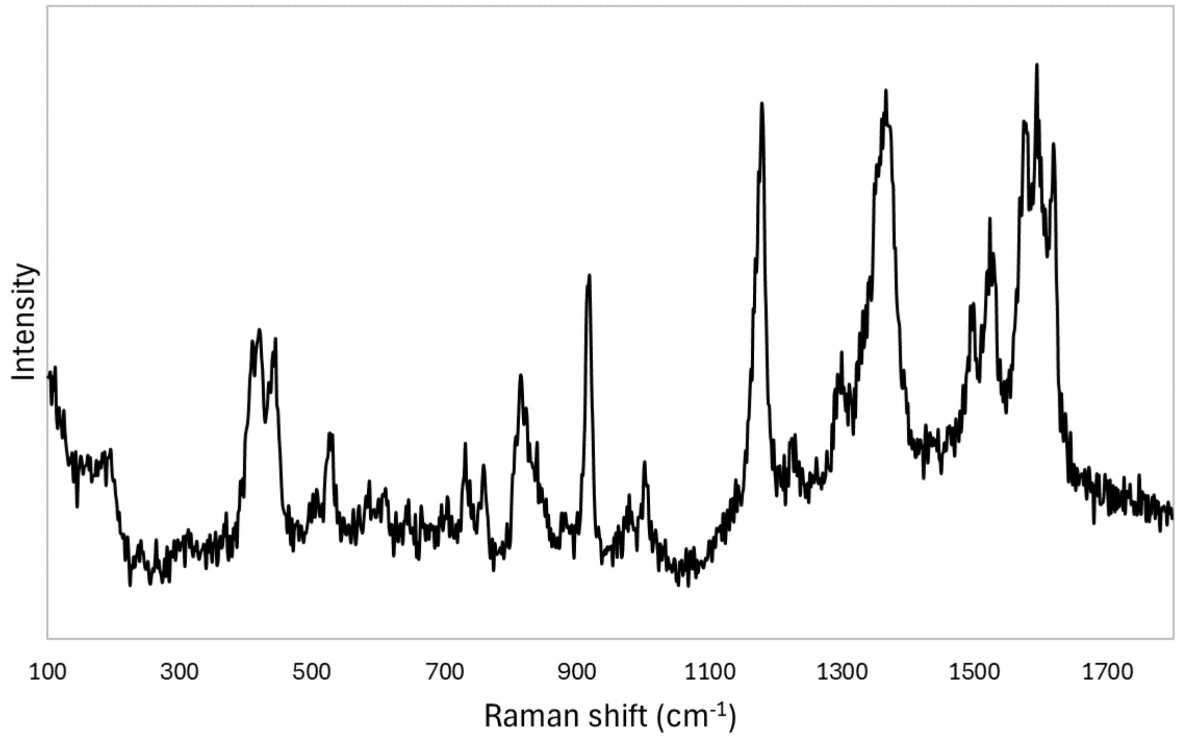

Figure S71. *Raman spectrum of Alkali Blue (C.I. 42765) pigment*

Parameters used to obtain this data include the following: 532 nm, 0.1%, 2 accumulations, 5 second integration. Major peaks occur at 1619 cm^{-1}, 1594 cm^{-1}, 1576 cm^{-1}, 1523 cm^{-1}, 1366 cm^{-1}, 1179 cm^{-1}, 1002 cm^{-1}, 918 cm^{-1}, 814 cm^{-1}, 530 cm^{-1}, 444 cm^{-1}, and 419 cm^{-1}.

4. XRF data

4.1 Intenze GenZ

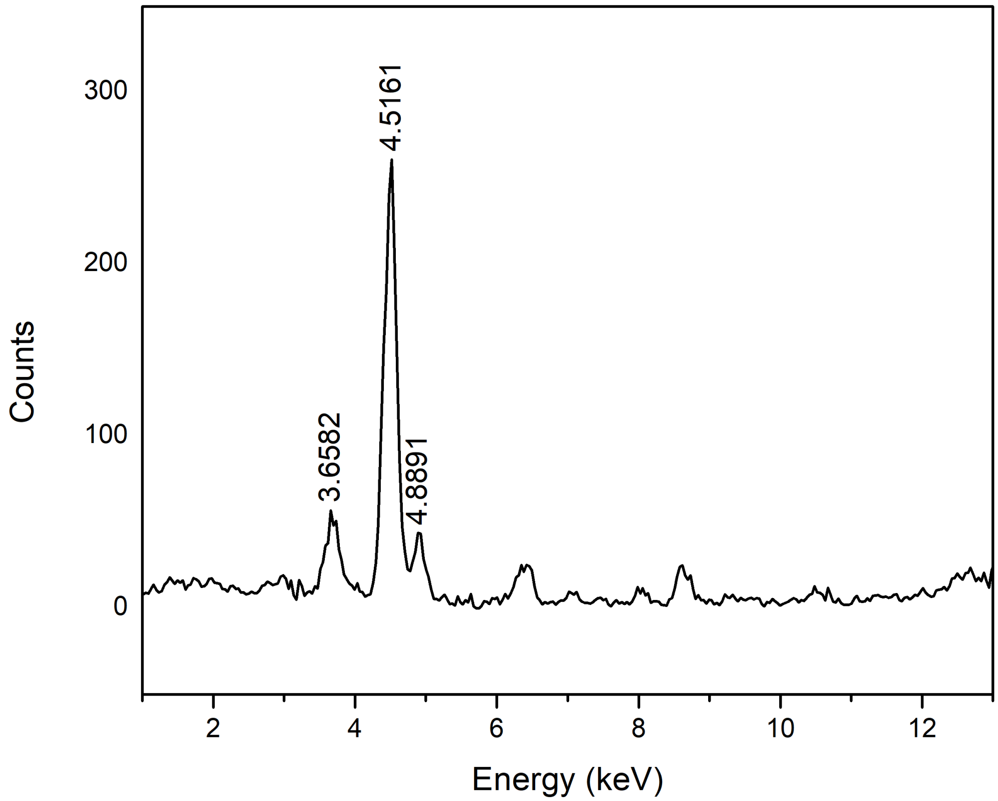

Figure S72. *XRF spectrum of Intenze GenZ Light Grass ink*

Peaks at 4.5161 keV and 4.8891 keV match the $K_{\alpha1}$ and $K_{\beta1}$ emission lines for titanium, supporting the presence of titanium dioxide (Pigment White 6). The peak at 3.6582 keV could correspond to the $K_{\alpha1}$ or $L_{\alpha1}$ emission line for calcium or tin, respectively, but there is no additional evidence that a calcium or tin-based pigment is present in the sample.

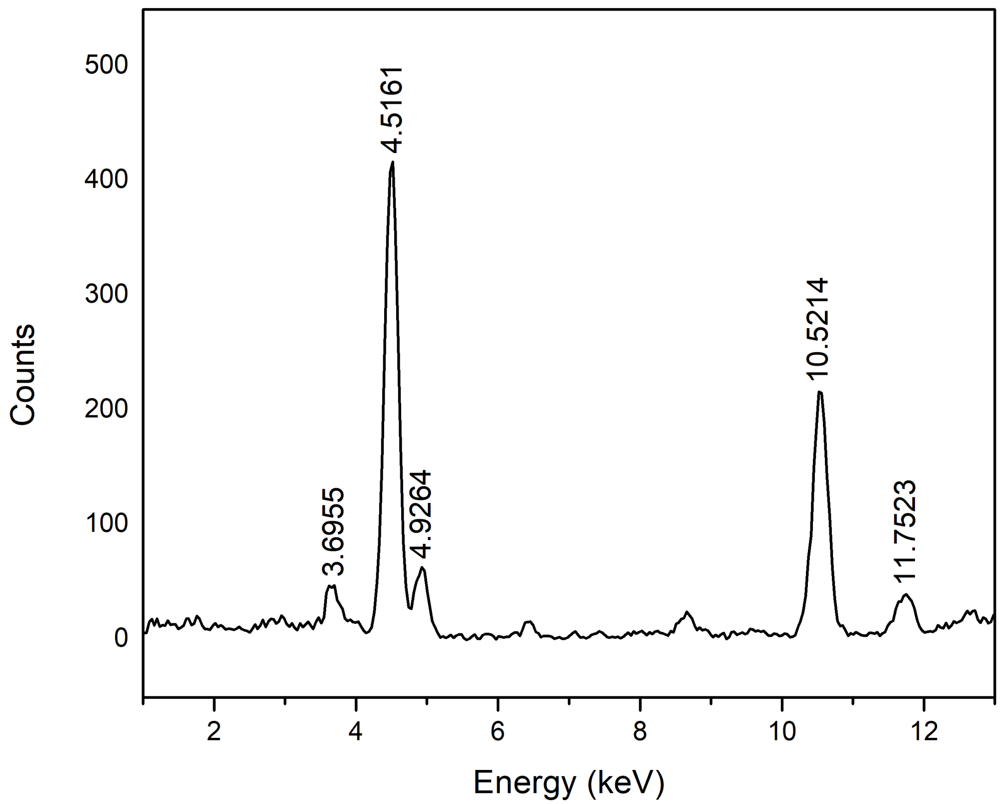

Figure S73. *XRF spectrum of Intenze GenZ Blue Sky ink*

Peaks at 4.5161 keV and 4.9264 keV suggest the presence of titanium, likely from Pigment White 6 (TiO_2). The peak pair at 10.5214 keV and 11.7523 keV match the $K_{\alpha1}$ and $K_{\beta1}$ emission lines for arsenic, which is likely from the arsenic found in glass microscope slide that the sample was prepared on. The peak at 3.6955 keV matches emission lines for either calcium or tin but there is no other evidence of a pigment containing these elements in the tattoo ink.

4.2 Dynamic Viking

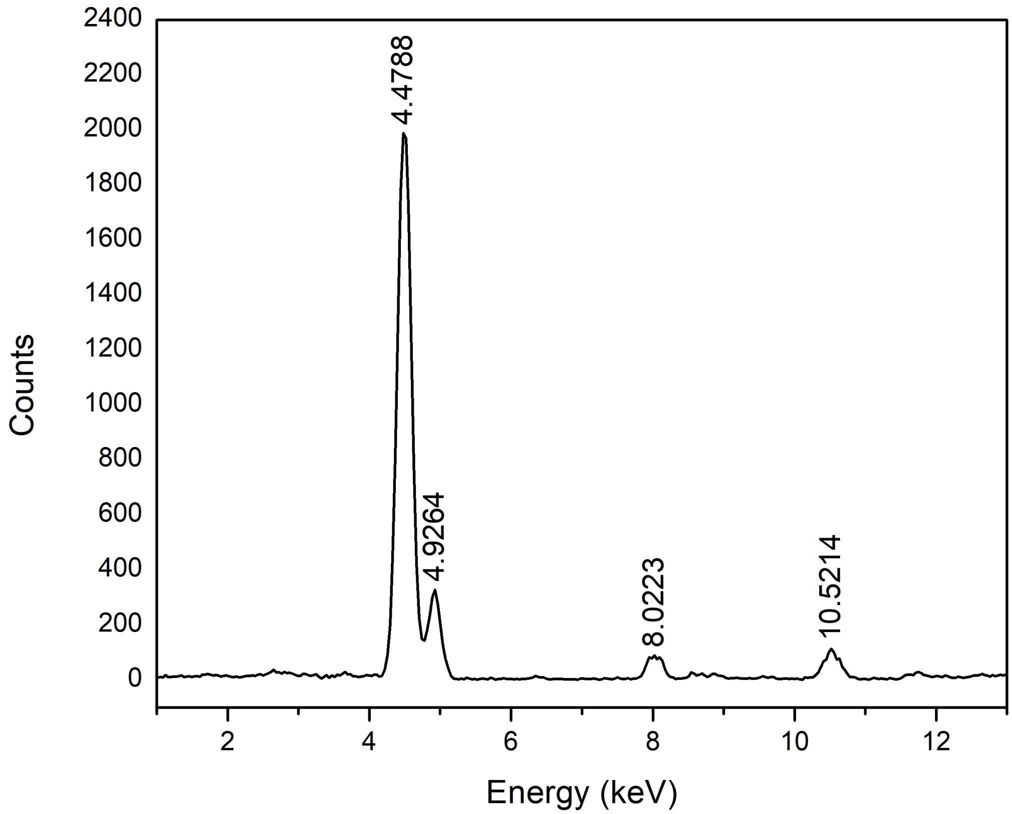

Figure S74. *XRF spectrum of Dynamic Platinum Baby Blue ink*

Peaks at 4.4788 keV and 4.9264 keV correspond to the $K_{\alpha 1}$ and $K_{\beta 1}$ emission lines of titanium, likely from Pigment White 6 (TiO_2). The peak at 8.0223 keV is likely produced by a copper containing pigment, likely Pigment Green 7. The peak at 10.5214 keV is likely produced by arsenic found in the glass microscope slide that the sample was prepared on.

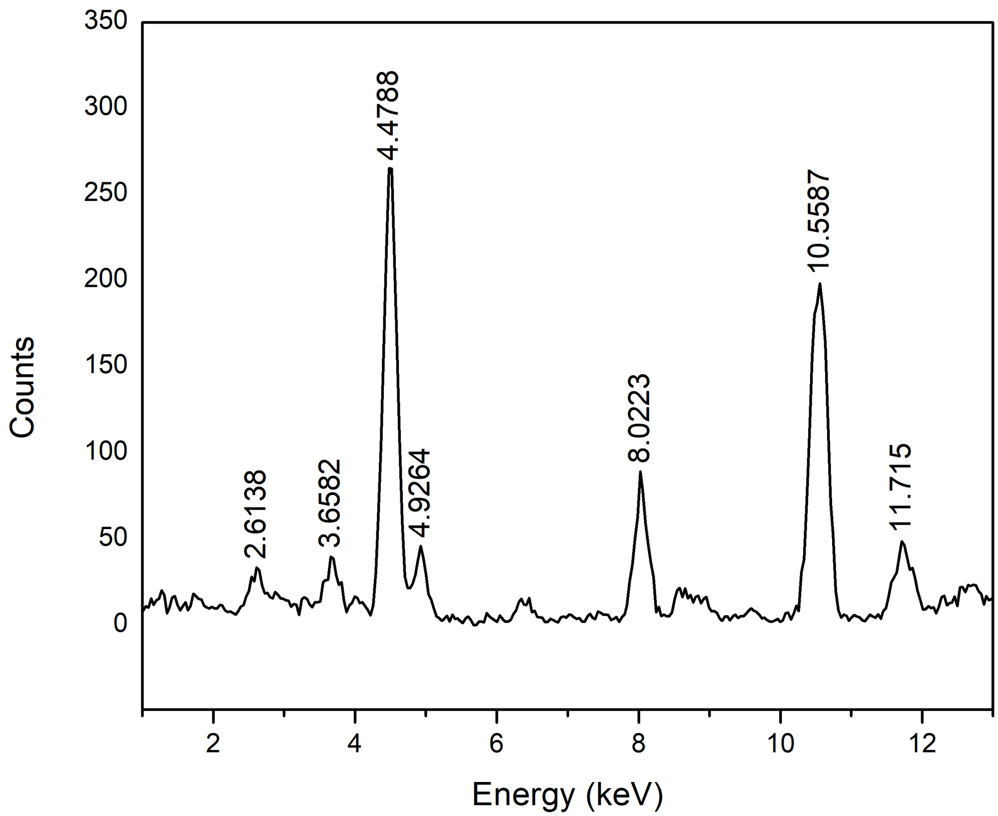

Figure S75. *XRF spectrum of Dynamic Platinum Emerald Green ink*

Peak pairings at 4.4788 keV and 4.9264 keV and at 8.0223 keV and 8.67 keV correspond to the $K_{\alpha 1}$ and $K_{\beta 1}$ emission lines of titanium and copper, respectively. This is likely due to the presence of titanium dioxide (Pigment White 6) and Pigment Green 7. There are additional peaks around 10.5 keV and 11.7 keV which is attributed to the arsenic found in the glass microscope slide that the sample was prepared on. Peaks at 2.6138 keV and 3.6582 keV match the $K_{\alpha 1}$ emission lines for chlorine and calcium, respectively. Pigment Green 7 does contain chlorine, although there is no other evidence of any calcium containing pigments in this sample.

4.3 Quantum Ink

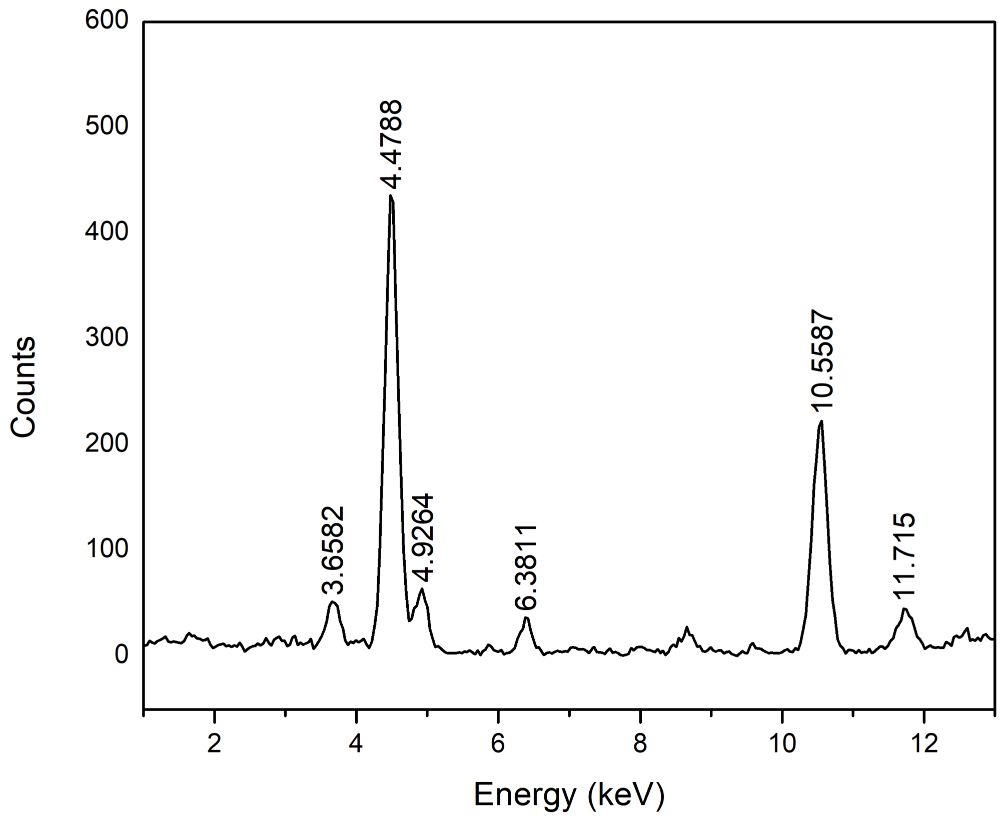

Figure S76. *XRF spectrum of Quantum Ink Grover*

A peak pair at 4.4788 keV and 4.9264 keV are attributed to titanium in the sample. This supports titanium dioxide (Pigment White 6) being present. Additionally, there is a peak pair around 10.5875 keV and 11.715 keV; this is due to the arsenic found in the glass microscope slide that the sample was prepared on. A small peak around 6.3811 keV may indicate a small amount of iron, likely from iron oxide. There is a small peak at 3.6582 keV which corresponds to the $K_{\alpha 1}$ emission line of calcium, although there is no other evidence of a calcium-based pigment being present.

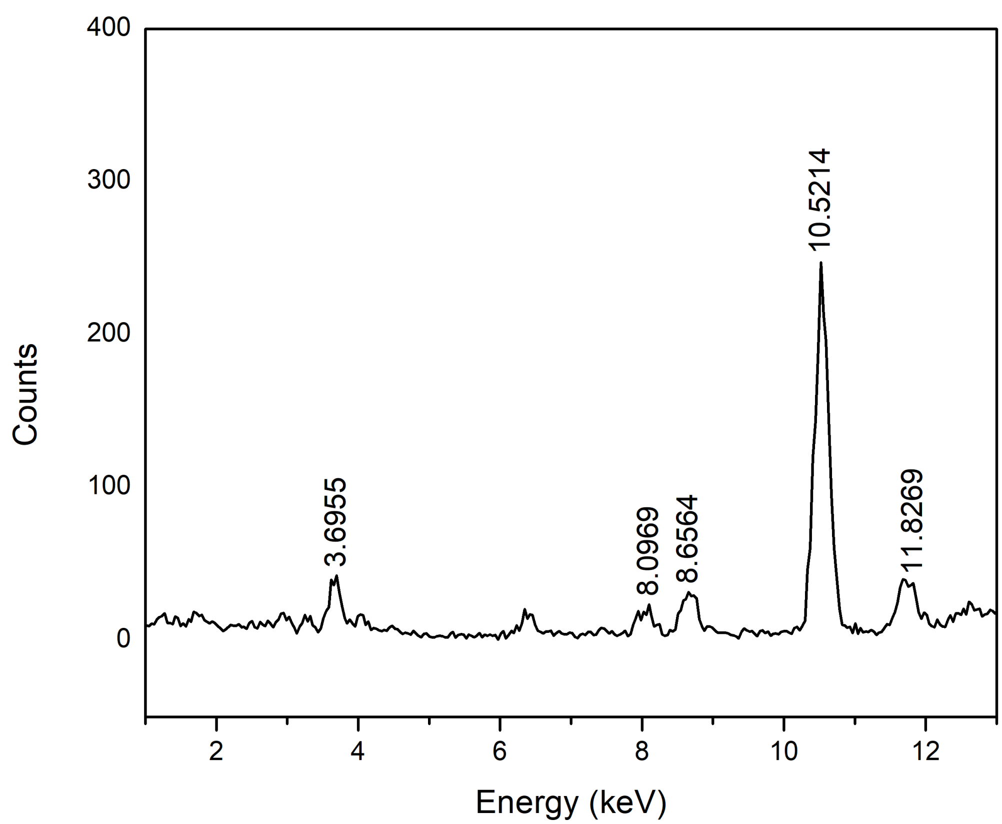

Figure S77. *XRF spectrum of Quantum Ink Pickle Juice*

Peaks at 8.0969 keV and 8.6564 keV is characteristic of copper, which supports Pigment Green 7 being present. A peak at 3.67 keV is typically characteristic of calcium, although no other evidence indicated a calcium-based pigment being present. There are peaks at 10.5214 keV and 11.8269 keV that correspond to arsenic; arsenic is commonly found in the glass microscope slides used to prepare this sample.

4.4 Xtreme Ink

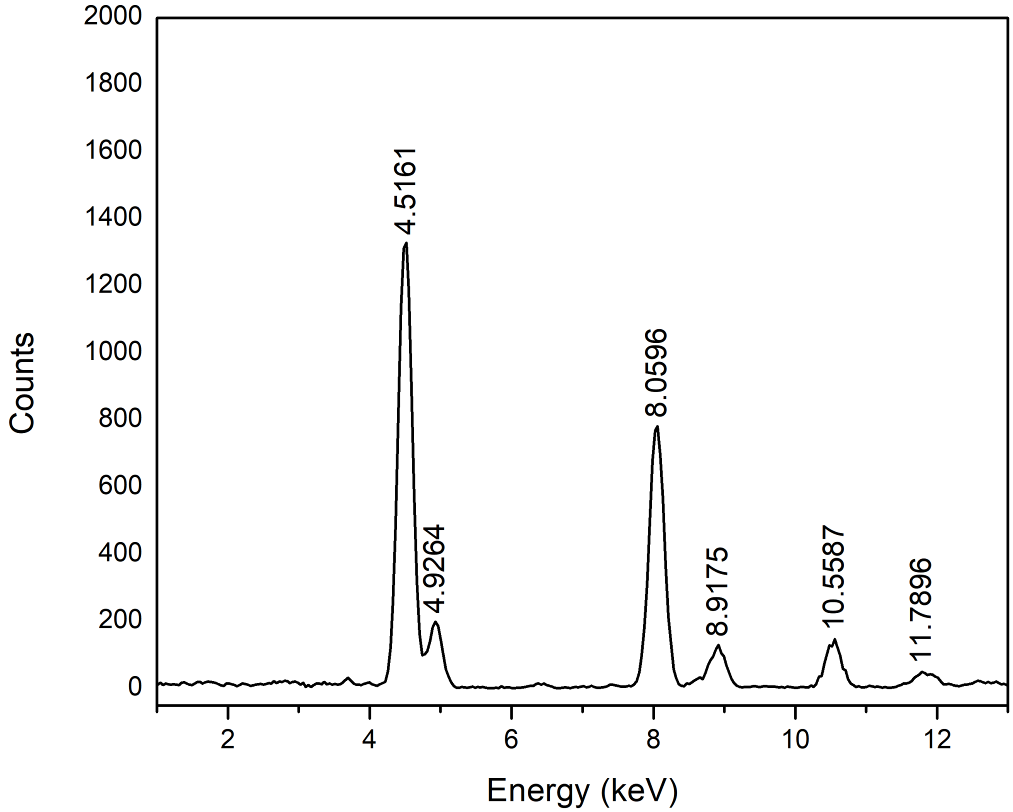

Figure S78. *XRF spectrum of Xtreme Ink Azure*

Peak pairs at 4.5161 keV and 4.9264 keV and at 8.0596 keV and 8.9175 keV correspond to $K_{\alpha1}$ and $K_{\beta1}$ emission lines of titanium and copper, respectively. The titanium is likely from titanium dioxide (Pigment White 6) while the copper is likely from Pigment Blue 15. Smaller peaks are present around 10.5 keV and 11.7 keV are attributed to arsenic present in the glass microscope slide that the sample was prepared on.

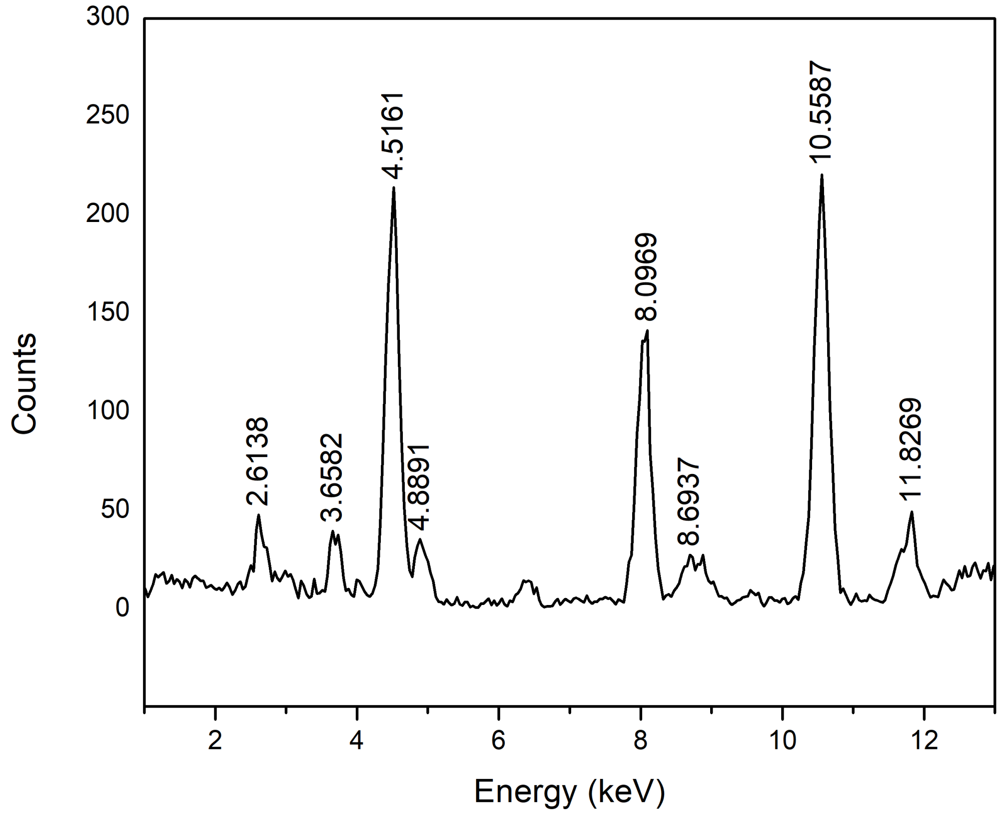

Figure S79. *XRF spectrum of Xtreme Ink Lime Green*

A peak pair at 4.5161 keV and 4.8891 keV corresponds to the $K_{\alpha 1}$ and $K_{\beta 1}$ emission lines of titanium, indicating that titanium dioxide (Pigment White 6) is present. There is another peak pair at 8.0969 keV and 8.6937 keV which indicates copper is present; this supports Pigment Green 7 being present. Additionally, a peak at 2.6138 keV may be produced by the $K_{\alpha 1}$ emission line of chlorine, which is part of the Pigment Green 7 structure. There is also an arsenic peak pair at 10.5 keV and 11.7 keV, which comes from the glass microscope slide that the sample is prepared on. A peak at 3.6582 keV matches the $K_{\alpha 1}$ emission line of calcium, although there is not other evidence of a calcium-based pigment in the ink.

4.5 BioTek

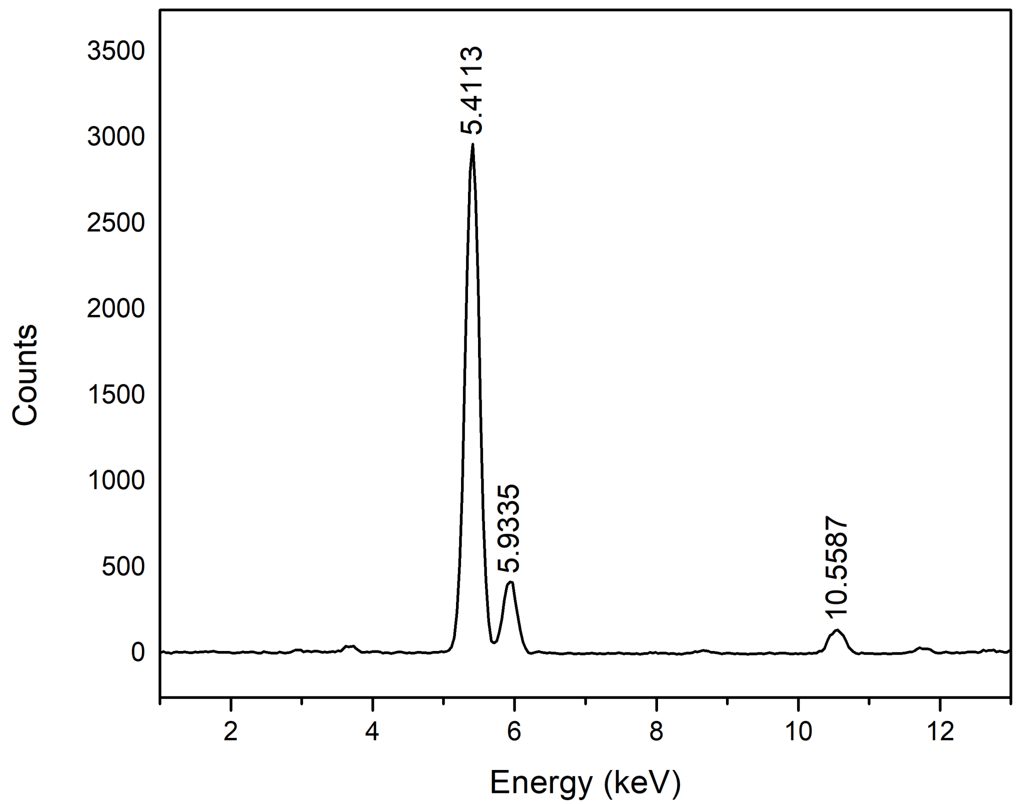

Figure S80. *XRF spectrum of BioTek Green*

The peaks at 5.4113 keV and 5.9335 keV correspond to the $K_{\alpha1}$ and $K_{\beta1}$ emission lines of chromium, supporting chromium oxide (C.I. 77288) being present in the tattoo ink. A peak at 10.5587 keV is from the $K_{\alpha1}$ emission line of arsenic, which is found in the glass microscope slide used to prepare the sample on.

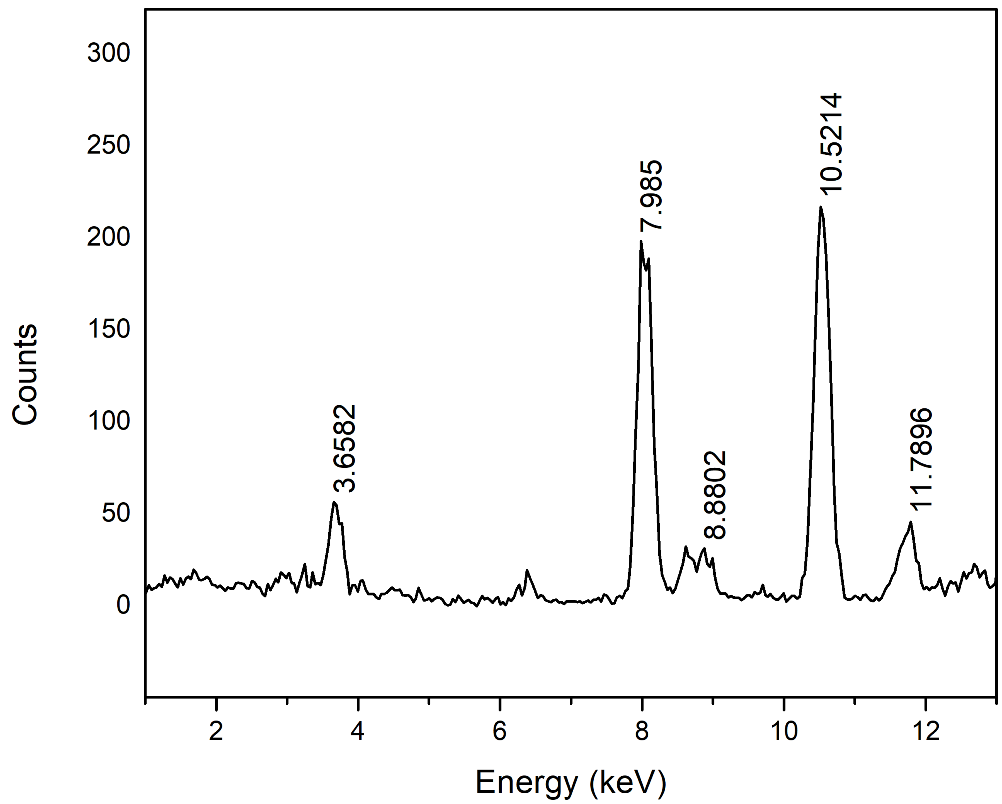

Figure S81. *XRF spectrum of BioTek Deep Ocean*

Peaks at 7.985 keV and 8.8802 keV correspond to copper's $K_{\alpha1}$ and $K_{\beta1}$ emission lines, supporting the presence of Pigment Blue 15. Peaks at 10.5214 keV and 11.7896 keV are from arsenic, which is found in the glass microscope slide that the sample was prepared on.

References

1. Hardcastle, F. D., & Wachs, I. E. (1988). *Raman spectroscopy of chromium oxide supported on Al2O3, TiO2 and SiO2: a comparative study. Journal of Molecular Catalysis, 46(1-3), 173–186.*