**解决方案|原油市场中的重金属检测**

原油是一种粘稠的、深褐色（有时有点绿色的）液体，是石油刚开采出来未经提炼或加工的物质。主要由碳、氢、硫、氮、氧五种元素组成（质量分数）。此外，石油中还含有微量的钙、镁、铁、镍、铜、钒、砷、铝、硅等金属元素。这些金属元素虽然含量很少，但对炼油生产及催化剂失活等影响极大。

金属元素的检测方法主要有原子发射光谱法、原子吸收光谱法、高效液相色谱法，电化学分析法等。其中电感耦合等离子发射光谱法，因其具有操作简便、快速且可同时测定多种元素的优点，受到分析工作者的青睐。

本文利用 GBC Quantima ，湿法酸消解对原油中的金属元素进行检测，检测结果表明，该方法便捷、高效、准确度高，可以满足原油、炼油厂及下游装置的质量控制需求。

**实验步骤：**称取 1.0g（精确到万分之一）样品于烧杯中，加入 25mL 硝酸和 4mL 高氯酸，加盖表面皿，电热板 150 度低温加热 30min，调整温度至 200 度继续加热至溶液程淡黄色液体，取下冷却至室温，开盖，继续加热蒸至湿盐状，再加入 3mL 硝酸溶解，溶解后取下冷却，用去离子水转移定容至 25-50mL，摇匀，备用。

## 详细报告

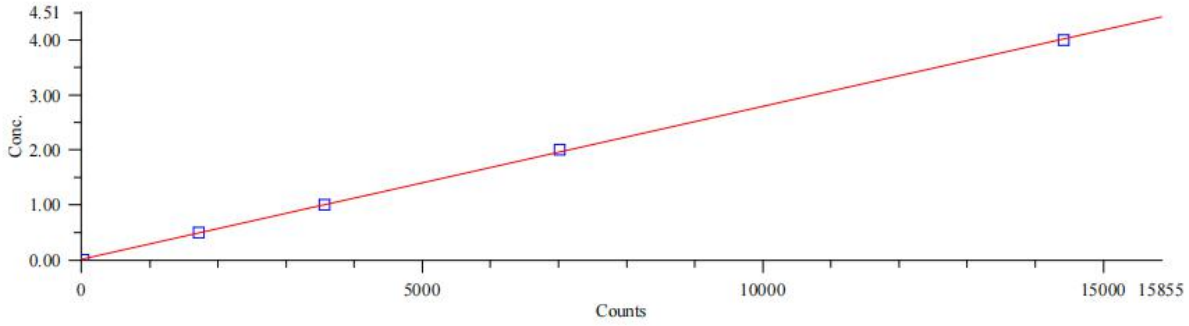
Method Name : 3

| El | | nm | Type | Mono | Order | Power (W) | Neb (L/min) | Height (mm) | Plasma (L/min) | Aux (L/min) | Pump (RPM) | PMT (V) | Int. (s) | Reps | Bkgd Corr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pb | II | 220.353 | An | 1 | 2 | 1000 | 0.80 | 8.0 | 10.0 | 0.5 | 10 | 600 | 0.50 | 3 | Fixed |

| | | | | |
|---|---|---|---|---|
| Standard 1 [Cal. Std] | Act Wt = 1 | Nom Wt = 1 | Dil = 1 | |
| Pb | Conc = 4.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 14413.5 |
| | Net Int %RSD = 2.69 | Peak Int = 15639.7 | | |
| Standard 2 [Cal. Std] | Act Wt = 1 | Nom Wt = 1 | Dil = 1 | |
| Pb | Conc = 2.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 7016.24 |
| | Net Int %RSD = 3.24 | Peak Int = 8247.67 | | |

| | | | | |
|---|---|---|---|---|
| Standard 3 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Pb | Conc = 1.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 3567.74 |
| | Net Int %RSD = 5.08 | Peak Int = 4744.33 | | |
| Standard 4 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Pb | Conc = 0.5000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 1719.34 |
| | Net Int %RSD = 5.25 | Peak Int = 2998.33 | | |
| Blank [Cal. Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Pb | Conc = 0 mg/L | Conc %RSD = | Flags = b | Net Int = 28.2572 |
| | Net Int %RSD = 376 | Peak Int = 1454.33 | | |

Pb II 220.353 nm (mg/L)




| Standard | Counts | Real Conc | Calc Conc | % Diff |
|---|---|---|---|---|
| Standard 1 | 14413.5 | 4.000 | 4.018 | 0.440 |
| Standard 2 | 7016.24 | 2.000 | 1.963 | -1.85 |
| Standard 3 | 3567.74 | 1.000 | 1.005 | 0.526 |
| Standard 4 | 1719.34 | 0.5000 | 0.4919 | -1.62 |
| Blank | 28.2572 | 0 | 0.02219 | *** |

| Calibration | C0 | C1 | R |
|---|---|---|---|
| Coefficients | 0.014343 | 2.777e-4 | 0.9998 |

| | | | | |
|---|---|---|---|---|
| Sample Blank [Sample Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Pb | Conc = 0.02944 mg/L | Conc %RSD = 180 | Flags = b | Net Int = 54.3430 |
| | Net Int %RSD = 351 | Peak Int = 1244.33 | | |
| 1-2 Act Wt = 1.6292 Nom Wt = 25 Dil = 1 | | | | |
| Pb | Conc = -0.2410 mg/L | Conc %RSD = 671 | Flags= | Net Int = -2.197 |
| | Net Int %RSD = 189 | Peak Int = 1119.00 | | |
| 1-1 Act Wt = 1.455 Nom Wt = 25 Dil = 1 | | | | |
| Pb | Conc = -0.7931 mg/L | Conc %RSD = -76 | Flags = b | Net Int = -111.846 |
| | Net Int %RSD = -1e2 | Peak Int = 1115.67 | | |
| 2-1 Act Wt = 1.401 Nom Wt = 25 Dil = 1 | | | | |

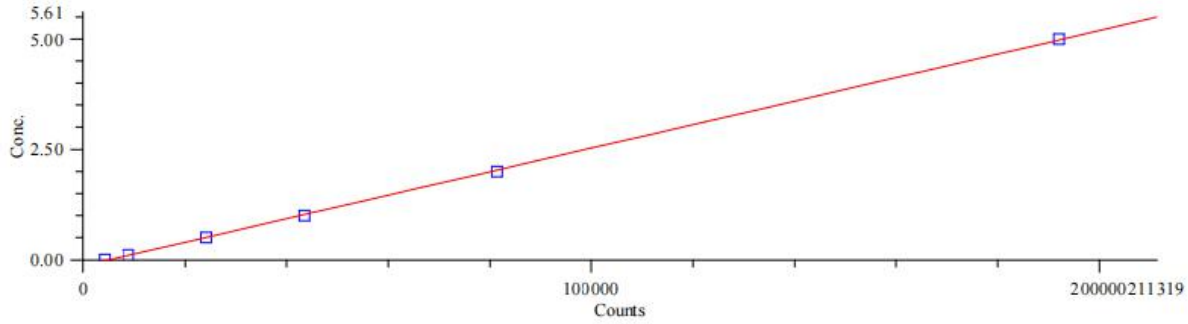
| | | | | |
|---|---|---|---|---|
| Pb | Conc = -0.5898 mg/L<br>%RSD = -2e2 | Conc %RSD = -1e2 Net Int<br>Peak Int = 1069.67 | Flags = b | Net Int = -64.6688 |
| 2-2 Act Wt = 1.5466 Nom Wt = 25 Dil = 1 | | | | |
| Pb | Conc = -1.146 mg/L<br>%RSD = -66 | Conc %RSD = -52 Net Int<br>Peak Int = 1041.67 | Flags = | Net Int = -200.965 |
| 3-1 Act Wt = 1.495 Nom Wt = 25 Dil = 1 | | | | |
| Pb | Conc = -0.6633 mg/L<br>%RSD = -2e2 | Conc %RSD = -1e2 Net Int<br>Peak Int = 1162.33 | Flags = b | Net Int = -88.4759 |
| 3-2 Act Wt = 1.3944 Nom Wt = 25 Dil = 1 | | | | |
| Pb | Conc = -0.6444 mg/L<br>%RSD = -32 | Conc %RSD = -18 Net Int<br>Peak Int = 1192.33 | Flags = | Net Int = -75.0675 |

Method Name :3

| El | nm | Type | Mono | Order | Power (W) | Neb (L/min) | Height (mm) | Plasma (L/min) | Aux (L/min) | Pump (RPM) | PMT (V) | Reps | Bkgd Corr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Na I | 588.995 | An | 1 | 1 | 1000 | 0.80 | 6.0 | 10.0 | 0.5 | 10 | 500 | 3 | Fixed |

| | | | |
|---|---|---|---|
| Standard 1 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Na | Conc = 5.000 mg/L<br>Net Int %RSD = 1.11 | Conc %RSD = 0.00<br>Peak Int = 200828 | Flags = | Net Int = 192108 |
| Standard 2 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Na | Conc = 2.000 mg/L<br>Net Int %RSD = 0.20 | Conc %RSD = 0.00<br>Peak Int = 90178.0 | Flags = | Net Int = 81421.0 |
| Standard 3 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Na | Conc = 1.000 mg/L<br>Net Int %RSD = 1.20 | Conc %RSD = 0.00<br>Peak Int = 52272.7 | Flags = | Net Int = 43484.4 |
| Standard 4 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Na | Conc = 0.5000 mg/L<br>Net Int %RSD = 2.59 | Conc %RSD = 0.00<br>Peak Int = 32587.3 | Flags = | Net Int = 24120.1 |
| Standard 5 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Na | Conc = 0.1000 mg/L<br>Net Int %RSD =2.72 | Conc %RSD = 0.00<br>Peak Int = 17264.0 | Flags = | Net Int = 8821.11 |
| Blank [Cal. Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Na | Conc = 0 mg/L<br>Net Int %RSD = 3.18 | Conc %RSD =<br>Peak Int = 13468.7 | Flags = b | Net Int = 4168.95 |

Na I 588.995 nm (mg/L)




| Standard | Counts | Real Conc | Calc Conc | % Diff |
|---|---|---|---|---|
| Standard 1 | 192108 | 5.000 | 4.983 | -0.335 |
| Standard 2 | 81421.0 | 2.000 | 2.031 | 1.54 |
| Standard 3 | 43484.4 | 1.000 | 1.019 | 1.89 |
| Standard 4 | 24120.1 | 0.5000 | 0.5024 | 0.482 |
| Standard 5 | 8821.11 | 0.1000 | 0.09433 | -5.67 |
| Blank | 4168.95 | 0 | -0.02976 | *** |

| Calibration Coefficients | C0 | C1 | R |
|---|---|---|---|
| | -0.14096 | 2.667e-5 | 0.9999 |

| | | | | |
|---|---|---|---|---|
| Sample Blank [Sample Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Na | Conc = 0.6925 mg/L | Conc %RSD = 0.68 | Flags = b | Net Int = 31246.0 |
| | Net Int %RSD = 0.57 | Peak Int = 41204.7 | | |
| 1-1 Act Wt = 0.8594 Nom Wt = 50 Dil = 2 | | | | |
| Na | Conc = 51.94 mg/L | Conc %RSD =3.24 | Flags= | Net Int = 47980.1 |
| | Net Int %RSD = 3.77 | Peak Int = 56578.0 | | |
| 1-2 Act Wt = 0.7595 Nom Wt = 50 Dil = 2 | | | | |
| Na | Conc = 51.41 mg/L | Conc %RSD = 2.88 | Flags = | Net Int = 45884.3 |
| | Net Int %RSD = 1.87 | Peak Int = 54825.3 | | |
| 2-1 Act Wt = 1.1685 Nom Wt = 50 Dil = 2 | | | | |
| Na | Conc = 21.21 mg/L | Conc %RSD = 2.80 | Flags = | Net Int = 40535.9 |
| | Net Int %RSD = 1.10 | Peak Int = 48992.0 | | |
| 2-2 Act Wt = 1.4356 Nom Wt = 50 Dil = 2 | | | | |
| Na | Conc = 21.09 mg/L | Conc %RSD = 2.92 | Flags = | Net Int = 42594.9 |
| | Net Int %RSD = 2.82 | Peak Int = 51894.0 | | |
| 3-1 Act Wt =1.086 Nom Wt = 50 Dil = 2 | | | | |
| Na | Conc =19.96 mg/L | Conc %RSD = 2.14 | Flags = | Net Int = 39374.9 |
| | Net Int %RSD = 2.02 | Peak Int = 47895.3 | | |
| 3-2 Act Wt =1.2581 Nom Wt = 50 Dil = 2 | | | | |
| Na | Conc = 21.83 mg/L | Conc %RSD = 3.00 | Flags = | Net Int = 41542.2 |
| | Net Int %RSD = 2.922 | Peak Int = 50174.7 | | |

Method Name :3

| El | | nm | Type | Mono | Order | Power (W) | Neb (L/min) | Height (mm) | Plasma (L/min) | Aux (L/min) | Pump (RPM) | PMT (V) | Int. (s) | Reps | Bkgd Corr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V | II | 311.838 | An | 1 | 1 | 1000 | 0.80 | 6.0 | 10.0 | 0.5 | 10 | 650 | 0.50 | 3 | Fixed |

Standard 1 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| V | Conc = 2.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 125422 |
| | Net Int %RSD = 2.50 | Peak Int = 133001 | | |

Standard 2 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| V | Conc = 1.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 65580.1 |
| | Net Int %RSD = 2.93 | Peak Int = 72892.7 | | |

Standard 3 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| V | Conc = 0.5000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 30547.6 |
| | Net Int %RSD = 1.96 | Peak Int = 37520.0 | | |

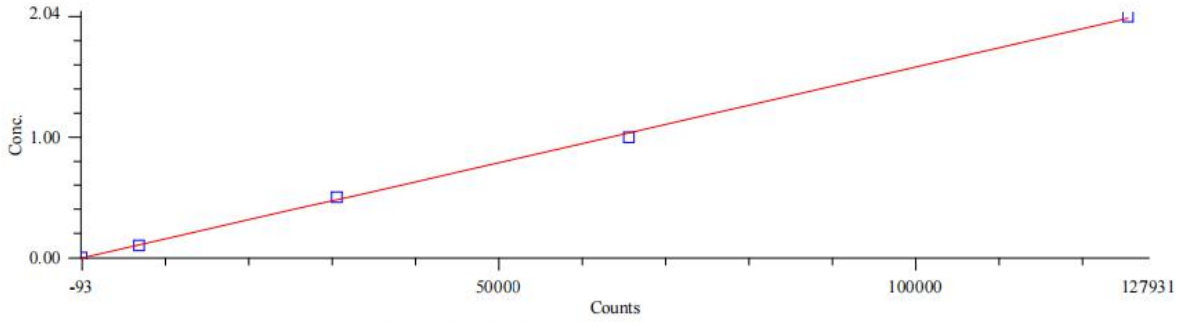
Standard 4 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| V | Conc = 0.1000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 6778.09 |
| | Net Int %RSD = 4.95 | Peak Int = 13830.7 | | |

Blank [Cal. Blank] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| V | Conc = 0 mg/L | Conc %RSD = | Flags = b | Net Int = -93.3638 |
| | Net Int %RSD = -12 | Peak Int = 6882.00 | | |

V II 311.838 nm (mg/L)




| Standard | Counts | Real Conc | Calc Conc | % Diff |
|---|---|---|---|---|
| Standard 1 | 125422 | 2.000 | 1.986 | -0.719 |
| Standard 2 | 65580.1 | 1.000 | 1.036 | 3.62 |
| Standard 3 | 30547.6 | 0.5000 | 0.4805 | -3.91 |
| Standard 4 | 6778.09 | 0.1000 | 0.1033 | 3.35 |
| Blank | -93.3638 | 0 | -0.005666 | *** |

| Calibration | C0 | C1 | R |
|---|---|---|---|
| Coefficients | -0.00418 | 1.586e-5 | 0.9993 |

| | | | | |
|---|---|---|---|---|
| Sample Blank [Sample Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| V | Conc == -0.008789 mg/L Net Int %RSD = -2e2 | Conc %RSD = -1e2 Peak Int = 6759.33 | Flags = b | Net Int = -290.217 |
| 1-1 Act Wt = 1.4546 Nom Wt = 25 Dil =1 | | | | |
| V | Conc = 0.6808 mg/L Net Int %RSD = 7.63 | Conc %RSD = 7.32 Peak Int = 8571.33 | Flags=b | Net Int = 2206.61 |
| 1-2 Act Wt = 1.6292 Nom Wt = 25 Dil = | | | | |
| V | Conc = 0.6360 mg/L Net Int %RSD =10.1 | Conc %RSD = 8.97 Peak Int = 8922.67 | Flags = b | Net Int = 2322.11 |
| 2-1 Act Wt = 1.4015 Nom Wt = 25 Dil = 1 | | | | |
| V | Conc = 1.883 mg/L Net Int %RSD = 2.86 | Conc %RSD = 2.73 Peak Int = 13048.0 | Flags = b | Net Int = 6364.76 |
| 2-2 Act Wt = 1.5466 Nom Wt = 25 Dil = 1 | | | | |
| V | Conc = 1.838 mg/L Net Int %RSD = 2.25 | Conc %RSD = 2.52 Peak Int = 13718.0 | Flags = | Net Int = 6878.35 |
| 3-1 Act Wt = 1.495 Nom Wt = 25 Dil = 1 | | | | |
| V | Conc = 5.473 mg/L Net Int %RSD = 3.19 | Conc %RSD = 3.14 Peak Int = 26582.7 | Flags = b | Net Int = 20339.6 |
| 3-2 Act Wt = 1.3944 Nom Wt = 25 Dil = 1 | | | | |
| V | Conc = 5.389 mg/L Net Int %RSD = 3.27 | Conc %RSD = 3.32 Peak Int = 25166.0 | Flags = | Net Int = 18655.1 |

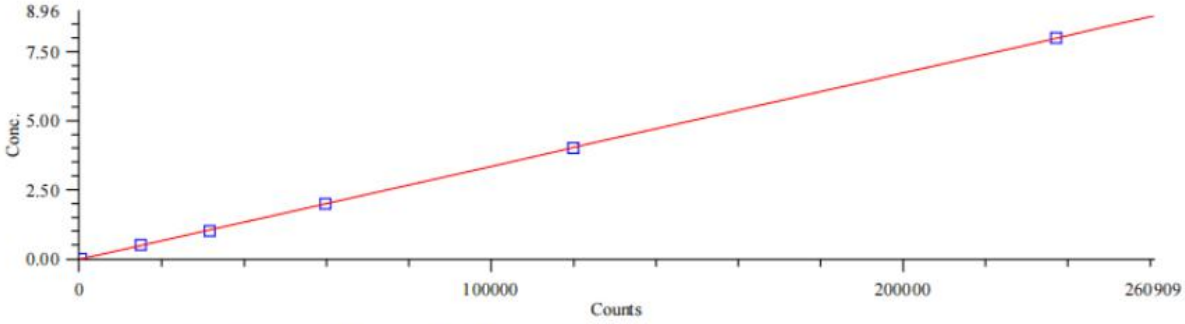
Method Name :3

| El | | nm | Type | Mono | Order | Power (W) | Neb (L/min) | Height (mm) | Plasma (L/min) | Aux (L/min) | Pump (RPM) | PMT (V) | Int. (s) | Reps | Bkgd Corr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Al | I | 396.152 | An | 1 | 1 | 1000 | 0.80 | 6.0 | 10.0 | 0.5 | 10 | 500 | 0.50 | 3 | Fixed |

| | | | |
|---|---|---|---|
| Standard 1 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Al | Conc = 8.000 mg/L Net Int %RSD = 0.57 | Conc %RSD = 0.00 Peak Int = 250679 | Flags = Net Int = 237190 |
| Standard 2 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Al | Conc = 4.000 mg/L Net Int %RSD = 0.13 | Conc %RSD = 0.00 Peak Int = 133219 | Flags = Net Int = 119890 |
| Standard 3 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Al | Conc = 2.000 mg/L Net Int %RSD = 2.25 | Conc %RSD = 0.00 Peak Int = 72880.7 | Flags = Net Int = 59725.7 |
| Standard 4 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Al | Conc = 1.000 mg/L Net Int %RSD = 2.07 | Conc %RSD = 0.00 Peak Int = 44546.7 | Flags = Net Int = 31654.9 |
| Standard 5 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |

| | | | | |
|---|---|---|---|---|
| Al | Conc = 0.5000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 14951.3 |
| | Net Int %RSD = 2.34 | Peak Int = 27805.3 | | |
| Blank [Cal. Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Al | Conc = 0 mg/L | Conc %RSD = | Flags = b | Net Int = -393.601 |
| | Net Int %RSD = 14.9 | Peak Int = 13115.3 | | |

Al I 396.152 nm (mg/L)




| Standard | Counts | Real Conc | Calc Conc | % Diff |
|---|---|---|---|---|
| Standard 1 | 237190 | 8.000 | 7.987 | -0.159 |
| Standard 2 | 119890 | 4.000 | 4.023 | 0.569 |
| Standard 3 | 59725.7 | 2.000 | 1.989 | -0.534 |
| Standard 4 | 31654.9 | 1.000 | 1.041 | 4.06 |
| Standard 5 | 14951.3 | 0.5000 | 0.4760 | -4.79 |
| Blank | 393.601 | 0 | -0.01600 | *** |

| Calibration Coefficients | C0 | C1 | R |
|---|---|---|---|
| | -0.02930 | 3.380e-5 | 0.9999 |

| | | | | |
|---|---|---|---|---|
| Sample Blank [Sample Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Al | Conc =-0.01329 mg/L | Conc %RSD = 11.6 | Flags = b | Net Int =473.804 |
| | Net Int %RSD = 9.75 | Peak Int = 13176.0 | | |
| 1-1 Act Wt = 0.8595 Nom Wt = 50 Dil =2 | | | | |
| Al | Conc =145.0 mg/L | Conc %RSD = 2.71 | Flags=b | Net Int = 37344.7 |
| | Net Int %RSD =2.66 | Peak Int = 50290.7 | | |
| 1-2 Act Wt = 0.7595 Nom Wt = 50 Dil =2 | | | | |
| Al | Conc = 149.3 mg/L | Conc %RSD = 2.36 | Flags = b | Net Int = 34014.5 |
| | Net Int %RSD =2.31 | Peak Int = 47451.3 | | |
| 2-1 Act Wt = 1.4356 Nom Wt = 50 Dil = 2 | | | | |
| Al | Conc = 3.847 mg/L | Conc %RSD = 3.84 | Flags = b | Net Int = 2107.72 |
| | Net Int %RSD = 3.86 | Peak Int = 15006.7 | | |
| 2-2 Act Wt = 1.1685 Nom Wt =50 Dil = 2 | | | | |
| Al | Conc = 4.403 mg/L | Conc %RSD =3.68 | Flags = | Net Int = 1996.22 |
| | Net Int %RSD = 3.86 | Peak Int = 14417.3 | | |
| 3-1 Act Wt = 1.0860Nom Wt = 50 Dil = 2 | | | | |

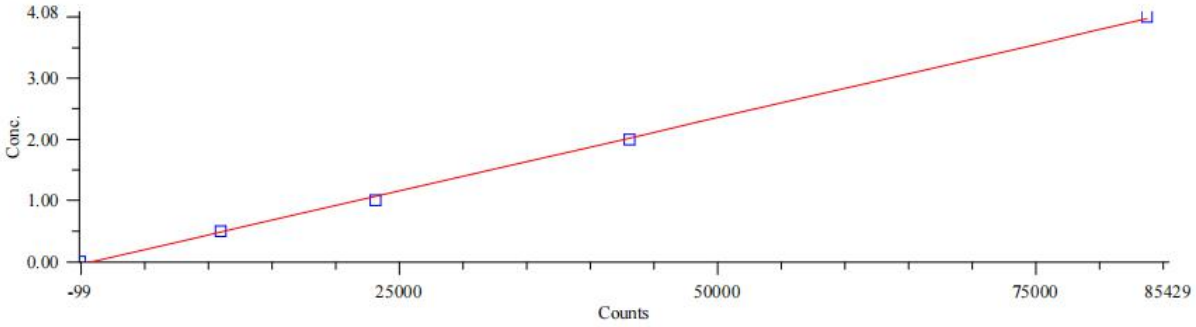
| | | | | |
|---|---|---|---|---|
| Al | Conc = 12.54 mg/L | Conc %RSD = 2.79 | Flags = b | Net Int = 4508.18 |
| | Net Int %RSD = 2.58 | Peak Int = 17316.0 | | |
| 3-2 Act Wt = 1.2581 Nom Wt = 50 Dil = 2 | | | | |
| Al | Conc = 12.19 mg/L | Conc %RSD =2.89 | Flags = | Net Int =5015.62 |
| | Net Int %RSD = 2.29 | Peak Int = 17440.0 | | |

Method Name :3

| El | | nm | Type | Mono | Order | Power (W) | Neb (L/min) | Height (mm) | Plasma (L/min) | Aux (L/min) | Pump (RPM) | PMT (V) | Int. (s) | Reps | Bkgd Corr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ni | II | 231.604 | An | 1 | 2 | 1000 | 0.80 | 6.0 | 10.0 | 0.5 | 10 | 550 | 0.50 | 3 | Fixed |

| | | | |
|---|---|---|---|
| Standard 1 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Ni | Conc = 4.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 83753.9 |
| | Net Int %RSD = 0.57 | Peak Int = 85982.0 | | |
| Standard 2 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Ni | Conc = 2.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 43082.7 |
| | Net Int %RSD = 2.81 | Peak Int = 45055.3 | | |
| Standard 3 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Ni | Conc = 1.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 23140.3 |
| | Net Int %RSD = 2.36 | Peak Int = 24982.0 | | |
| Standard 4 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Ni | Conc = 0.5000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 10969.5 |
| | Net Int %RSD = 1.47 | Peak Int = 12684.7 | | |
| Blank [Cal. Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Ni | Conc = 0 mg/L | Conc %RSD = | Flags = b | Net Int = -98.7501 |
| | Net Int %RSD = -76 | Peak Int = 1566.00 | | |

Ni II 231.604 nm (mg/L)




| Standard | Counts | Real Conc | Calc Conc | % Diff |
|---|---|---|---|---|
| Standard 1 | 83753.9 | 4.000 | 3.972 | -0.709 |
| Standard 2 | 43082.7 | 2.000 | 2.023 | 1.14 |
| Standard 3 | 23140.3 | 1.000 | 1.067 | 6.74 |
| Standard 4 | 10969.5 | 0.5000 | 0.4842 | -3.16 |
| Blank | -98.7501 | 0 | -0.04611 | *** |

| Calibration Coefficients | C0 | C1 | R |
|---|---|---|---|
| | -0.04137 | 4.791e-5 | 0.9992 |

| | | | | |
|---|---|---|---|---|
| Sample Blank [Sample Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Ni | Conc =-0.04455 mg/L | Conc %RSD = -5.5 | Flags = b | Net Int =-66.2425 |
| | Net Int %RSD = -78 | Peak Int = 1673.33 | | |
| 1-1 Act Wt = 1.4546 Nom Wt = 25 Dil =1 | | | | |
| Ni | Conc =19.90 mg/L | Conc %RSD = 2.57 | Flags=b | Net Int = 24099.3 |
| | Net Int %RSD =2.54 | Peak Int = 25831.3 | | |
| 1-2 Act Wt = 1.6292 Nom Wt = 25 Dil = | | | | |
| Ni | Conc = 18.86 mg/L | Conc %RSD = 2.67 | Flags = b | Net Int = 25617.4 |
| | Net Int %RSD =2.68 | Peak Int = 27414.0 | | |
| 2-1 Act Wt = 1.4015 Nom Wt = 25 Dil = 1 | | | | |
| Ni | Conc = 11.68 mg/L | Conc %RSD = 1.86 | Flags = b | Net Int = 13598.4 |
| | Net Int %RSD = 1.87 | Peak Int = 15321.3 | | |
| 2-2 Act Wt = 1.5466 Nom Wt = 25 Dil = 1 | | | | |
| Ni | Conc = 11.08 mg/L | Conc %RSD = 2.34 | Flags = | Net Int = 14243.0 |
| | Net Int %RSD = 2.36 | Peak Int = 15978.0 | | |
| 3-1 Act Wt = 1.4949 Nom Wt = 25 Dil = 1 | | | | |
| Ni | Conc = 14.35 mg/L | Conc %RSD = 1.24 | Flags = b | Net Int = 17846.5 |
| | Net Int %RSD = 1.25 | Peak Int = 19551.3 | | |
| 3-3 Act Wt = 1.5796 Nom Wt = 25 Dil = 1 | | | | |
| Ni | Conc = 14.03 mg/L | Conc %RSD =2.46 | Flags = | Net Int = 18429.1 |
| | Net Int %RSD = 2.47 | Peak Int = 20140.0 | | |

Method Name :3

| El | | nm | Type | Mono | Order | Power (W) | Neb (L/min) | Height (mm) | Plasma (L/min) | Aux (L/min) | Pump (RPM) | PMT (V) | Int. (s) | Reps | Bkgd Corr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fe | II | 238.204 | An | 1 | 2 | 1000 | 0.80 | 6.0 | 10.0 | 0.5 | 10 | 550 | 0.50 | 3 | Fixed |

Standard 1 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Fe | Conc = 5.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int =1035240 |
| | Net Int %RSD = 2.37 | Peak Int = 1048960 | | |

Standard 2 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Fe | Conc = 2.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 428150 |
| | Net Int %RSD = 2.59 | Peak Int = 438885 | | |

Standard 3 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Fe | Conc = 1.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 216089 |
| | Net Int %RSD = 2.66 | Peak Int = 225648 | | |

Standard 4 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Fe | Conc = 0.5000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 101647 |
| | Net Int %RSD = 3.00 | Peak Int = 110499 | | |

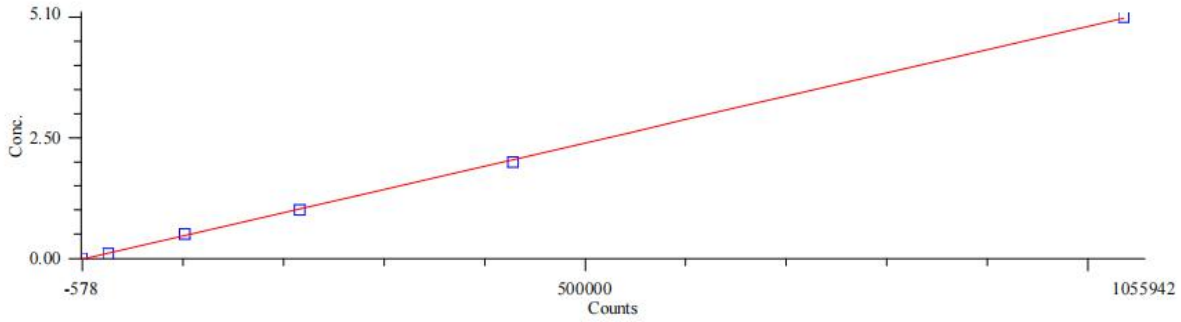
Standard 5 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Fe | Conc = 0.1000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 25768.9 |
| | Net Int %RSD = 1.59 | Peak Int = 34231.3 | | |

Blank [Cal. Blank] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Fe | Conc = 0 mg/L | Conc %RSD = | Flags = b | Net Int =-577.697 |
| | Net Int %RSD = -12 | Peak Int = 7847.33 | | |

Fe II 238.204 nm (mg/L)




| Standard | Counts | Real Conc | Calc Conc | % Diff |
|---|---|---|---|---|
| Standard 1 | 1035240 | 5.000 | 4.979 | -0.430 |
| Standard 2 | 428150 | 2.000 | 2.047 | 2.35 |
| Standard 3 | 216089 | 1.000 | 1.023 | 2.31 |
| Standard 4 | 101647 | 0.5000 | 0.4705 | -5.91 |
| Standard 5 | 25768.9 | 0.1000 | 0.1041 | 4.06 |
| Blank | -577.697 | 0 | -0.02316 | *** |

| Calibration | C0 | C1 | R |
|---|---|---|---|
| Coefficients | -0.02037 | 4.829e-6 | 0.9997 |

| | | | | | |
|---|---|---|---|---|---|
| Sample Blank [Sample Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | | |
| Fe | Conc =-0.003268 mg/L | Conc %RSD = -46 | Flags = b | Net Int =3540.96 | |
| | Net Int %RSD = 8.71 | Peak Int = 12056.7 | | | |
| 1-1 Act Wt =0.8595 Nom Wt = 50 Dil =2 | | | | | |
| Fe | Conc =38.29 mg/L | Conc %RSD = 1.55 | Flags= | Net Int = 71688.4 | |
| | Net Int %RSD =1.47 | Peak Int = 80541.3 | | | |
| 1-2 Act Wt = 0.7595 Nom Wt = 50 Dil = 2 | | | | | |
| Fe | Conc = 36.28 mg/L | Conc %RSD = 2.92 | Flags = | Net Int = 60601.1 | |
| | Net Int %RSD =2.75 | Peak Int = 69412.7 | | | |
| 2-1 Act Wt = 1.4356 Nom Wt =50 Dil = 2 | | | | | |
| Fe | Conc = 9.059 mg/L | Conc %RSD = 3.08 | Flags = b | Net Int = 30475.0 | |
| | Net Int %RSD = 1.87 | Peak Int = 15321.3 | | | |
| 2-2 Act Wt = 1.1685 Nom Wt = 50 Dil = 2 | | | | | |
| Fe | Conc = 9.703 mg/L | Conc %RSD = 2.70 | Flags = | Net Int = 27021.2 | |
| | Net Int %RSD = 2.35 | Peak Int = 36548.0 | | | |
| 3-1 Act Wt = 1.0860 Nom Wt = 50 Dil = 2 | | | | | |
| Fe | Conc =15.08 mg/L | Conc %RSD = 1.91 | Flags = | Net Int = 37449.4 | |
| | Net Int %RSD = 1.73 | Peak Int = 47198.7 | | | |
| 3-2 Act Wt = 1.2581 Nom Wt =50Dil =2 | | | | | |
| Fe | Conc = 13.56 mg/L | Conc %RSD =2.37 | Flags = | Net Int = 38865.5 | |
| | Net Int %RSD = 2.06 | Peak Int = 47578.7 | | | |

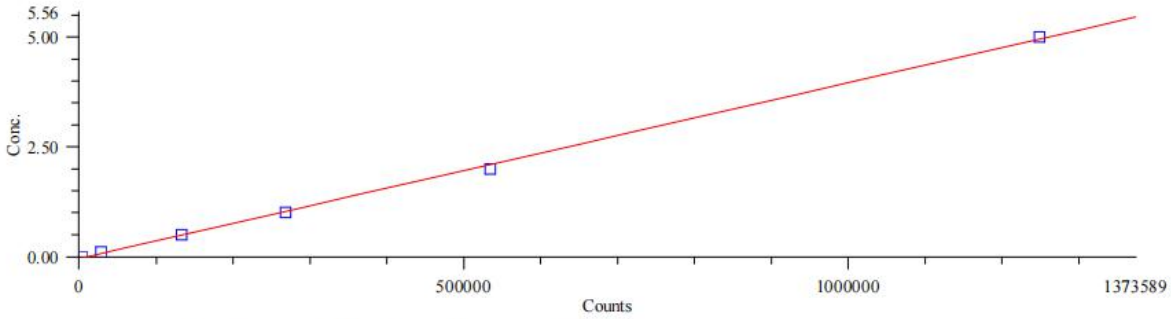
Method Name :3

| El | nm | Type | Mono | Order | Power (W) | Neb (L/min) | Height (mm) | Plasma (L/min) | Aux (L/min) | Pump (RPM) | PMT (V) | Int. (s) | Reps | Bkgd Corr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ca II | 393.366 | An | 1 | 1 | 1000 | 0.80 | 6.0 | 10.0 | 0.5 | 10 | 400 | 0.50 | 3 | Dyn |

| | | | | |
|---|---|---|---|---|
| Standard 1 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Ca | Conc = 5.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int =1248720 |
| | Net Int %RSD = 1.38 | Peak Int = 1250190 | | |
| Standard 2 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Ca | Conc = 2.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 534538 |
| | Net Int %RSD = 2.00 | Peak Int = 535346 | | |
| Standard 3 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Ca | Conc = 1.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 268688 |
| | Net Int %RSD = 0.82 | Peak Int = 269316 | | |
| Standard 4 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Ca | Conc = 0.5000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 133321 |
| | Net Int %RSD = 1.70 | Peak Int = 133854 | | |

| | | | | |
|---|---|---|---|---|
| Standard 5 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Ca | Conc = 0.1000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 28148.8 |
| | Net Int %RSD = 1.83 | Peak Int = 28546.3 | | |
| Blank [Cal. Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Ca | Conc = 0 mg/L | Conc %RSD = | Flags = b | Net Int =2974.89 |
| | Net Int %RSD = 0.92 | Peak Int = 3378.33 | | |

Ca II 393.366 nm (mg/L)




| Standard | Counts | Real Conc | Calc Conc | % Diff |
|---|---|---|---|---|
| Standard 1 | 1248720 | 5.000 | 4.955 | -0.897 |
| Standard 2 | 534538 | 2.000 | 2.095 | 4.74 |
| Standard 3 | 268688 | 1.000 | 1.030 | 3.00 |
| Standard 4 | 133321 | 0.5000 | 0.4878 | -2.44 |
| Standard 5 | 28148.8 | 0.1000 | 0.06658 | -33.4 |
| Blank | 2974.89 | 0 | -0.03424 | *** |

| Calibration Coefficients | C0 | C1 | R |
|---|---|---|---|
| | -0.04616 | 4.005e-6 | 0.9992 |

| | | | | |
|---|---|---|---|---|
| Sample Blank [Sample Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Ca | Conc =0.003954 mg/L | Conc %RSD = 27.6 | Flags = | Net Int =12511.8 |
| | Net Int %RSD = 2.18 | Peak Int = 12890.3 | | |
| 1-1 Act Wt =0.8595 Nom Wt = 50 Dil =2 | | | | |
| Ca | Conc =31.47 mg/L | Conc %RSD = 1.04 | Flags= | Net Int = 80043.9 |
| | Net Int %RSD =0.88 | Peak Int = 80537.0 | | |
| 1-2 Act Wt = 0.7595 Nom Wt = 50 Dil = 2 | | | | |
| Ca | Conc = 29.89 mg/L | Conc %RSD = 2.45 | Flags = | Net Int = 69184.6 |
| | Net Int %RSD =2.655 | Peak Int = 69625.0 | | |
| 2-1 Act Wt = 1.4356 Nom Wt =50 Dil = 2 | | | | |
| Ca | Conc = 5.138 mg/L | Conc %RSD = 2.50 | Flags = b | Net Int = 30929.7 |
| | Net Int %RSD = 1.49 | Peak Int = 31291.0 | | |
| 2-2 Act Wt = 1.1685 Nom Wt = 50 Dil = 2 | | | | |
| Ca | Conc = 5.638 mg/L | Conc %RSD = 0.61 | Flags = | Net Int = 28960.5 |
| | Net Int %RSD = 0.35 | Peak Int = 29361.7 | | |
| 3-1 Act Wt = 1.0860 Nom Wt = 50 Dil = 2 | | | | |
| Ca | Conc =7.179 mg/L | Conc %RSD = 2.40 | Flags = | Net Int = 31978.5 |
| | Net Int %RSD = 2.07 | Peak Int = 32335.0 | | |

3-2 Act Wt = 1.2581 Nom Wt =50Dil =2

| | | | | |
|---|---|---|---|---|
| Ca | Conc = 7.041 mg/L | Conc %RSD =1.57 | Flags = | Net Int = 34629.6 |
| | Net Int %RSD = 1.00 | Peak Int = 35053.0 | | |

Method Name :3

| El | nm | Type | Mono | Order | Power (W) | Neb (L/min) | Height (mm) | Plasma (L/min) | Aux (L/min) | Pump (RPM) | PMT (V) | Int. (s) | Reps | Bkgd Corr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mg II | 279.553 | An | 1 | 2 | 1000 | 0.80 | 6.0 | 10.0 | 0.5 | 10 | 500 | 0.50 | 3 | Dyn |

Standard 1 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Mg | Conc = 1.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int =1096130 |
| | Net Int %RSD = 2.15 | Peak Int = 1102040 | | |

Standard 2 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Mg | Conc = 0.5000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 527422 |
| | Net Int %RSD = 1.57 | Peak Int = 530994 | | |

Standard 3 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Mg | Conc = 0.1000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 112760 |
| | Net Int %RSD = 1.92 | Peak Int = 114506 | | |

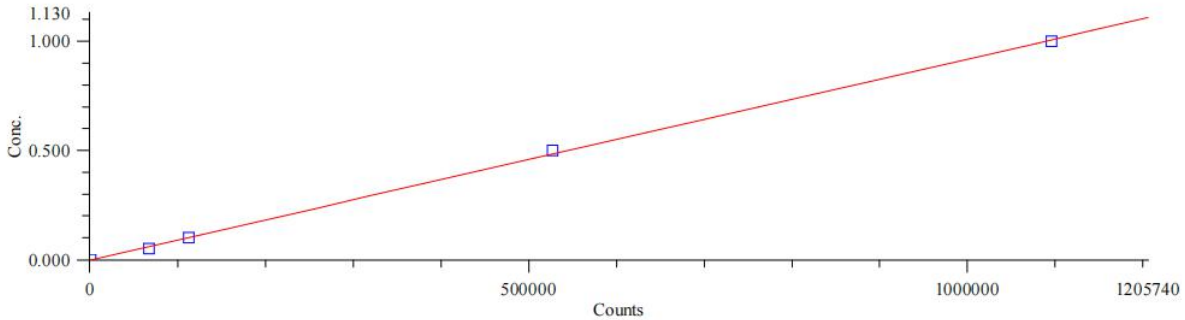
Standard 4 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Mg | Conc = 0.05000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 66841.7 |
| | Net Int %RSD = 0.75 | Peak Int = 68448.0 | | |

Blank [Cal. Blank] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Mg | Conc = 0 mg/L | Conc %RSD = | Flags = b | Net Int =437.311 |
| | Net Int %RSD = 22.1 | Peak Int = 1670.67 | | |

Mg II 279.553 nm (mg/L)




| Standard | Counts | Real Conc | Calc Conc | % Diff |
|---|---|---|---|---|
| Standard 1 | 1096130 | 1.000 | 1.007 | 0.719 |
| Standard 2 | 527422 | 0.5000 | 0.4835 | -3.30 |
| Standard 3 | 112760 | 0.1000 | 0.1017 | 1.67 |
| Standard 4 | 66841.7 | 0.05000 | 0.05939 | 18.8 |
| Blank | 437.311 | 0 | -0.001759 | *** |

| Calibration | C0 | C1 | R |
|---|---|---|---|
| Coefficients | -0.00216 | 9.208e-7 | 0.9994 |

Sample Blank [Sample Blank] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Mg | Conc =0.5148 mg/L | Conc %RSD = 1.76 | Flags = | Net Int =565843 |
| | Net Int %RSD = 1.75 | Peak Int = 569502 | | |

1-1 Act Wt =1.4546 Nom Wt = 25 Dil =1

| | | | | |
|---|---|---|---|---|
| Mg | Conc =3.464 mg/L | Conc %RSD = 2.33 | Flags= | Net Int = 781493 |
| | Net Int %RSD =045 | Peak Int = 795689 | | |

1-2 Act Wt = 1.6292 Nom Wt = 25 Dil = 1

| | | | | |
|---|---|---|---|---|
| Mg | Conc = 3.697 mg/L | Conc %RSD = 3.30 | Flags = | Net Int = 827479 |
| | Net Int %RSD =1.04 | Peak Int = 832205 | | |

2-1 Act Wt =1.4015 Nom Wt =25 Dil = 1

| | | | | |
|---|---|---|---|---|
| Mg | Conc = 1.210 mg/L | Conc %RSD = 2.93 | Flags = b | Net Int = 639519 |
| | Net Int %RSD = 2.38 | Peak Int = 643404 | | |

2-2 Act Wt = 1.5466 Nom Wt = 25 Dil = 1

| | | | | |
|---|---|---|---|---|
| Mg | Conc = 1.769 mg/L | Conc %RSD = 2.41 | Flags = | Net Int = 684710 |
| | Net Int %RSD = 2.44 | Peak Int = 688857 | | |

3-2 Act Wt = 1.3944 Nom Wt = 25 Dil = 1

| | | | | |
|---|---|---|---|---|
| Mg | Conc =2.303 mg/L | Conc %RSD =2.25 | Flags = | Net Int = 705331 |
| | Net Int %RSD = 2.47 | Peak Int = 709511 | | |

3-3 Act Wt = 1.5796 Nom Wt =25 Dil =1

| | | | | |
|---|---|---|---|---|
| Mg | Conc = 2.653 mg/L | Conc %RSD =2.38 | Flags = | Net Int = 747895 |
| | Net Int %RSD = 1.31 | Peak Int = 752318 | | |

Method Name :3

| El | | nm | Type | Mono | Order | Power (W) | Neb (L/min) | Height (mm) | Plasma (L/min) | Aux (L/min) | Pump (RPM) | PMT (V) | Int. (s) | Reps | Bkgd Corr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Si | I | 251.612 | An | 1 | 2 | 1000 | 0.80 | 6.0 | 10.0 | 0.5 | 10 | 500 | 0.50 | 3 | Fixed |

Standard 1 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Si | Conc = 4.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int =40416.5 |
| | Net Int %RSD = 0.70 | Peak Int = 42355.3 | | |

Standard 2 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Si | Conc = 2.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 20700.0 |
| | Net Int %RSD = 1.50 | Peak Int = 22565.3 | | |

Standard 3 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Si | Conc = 1.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 11384.9 |
| | Net Int %RSD = 1.82 | Peak Int = 13106.7 | | |

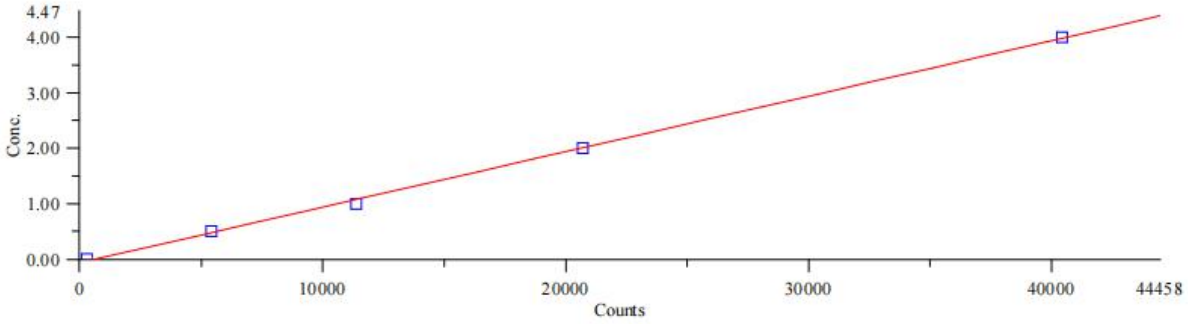
Standard 4 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Si | Conc = 0.5000 mg/L | Conc %RSD = 0.00 | Flags =0 | Net Int = 5419.18 |
| | Net Int %RSD = 2.58 | Peak Int = 7145.33 | | |

Blank [Cal. Blank] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| Si | Conc = 0 mg/L | Conc %RSD = | Flags = b | Net Int =291.363 |
| | Net Int %RSD = 37.7 | Peak Int = 2010.00 | | |

Si I 251.612 nm (mg/L)




| Standard | Counts | Real Conc | Calc Conc | % Diff |
|---|---|---|---|---|
| Standard 1 | 40416.5 | 4.000 | 3.979 | -0.515 |
| Standard 2 | 20700.0 | 2.000 | 2.006 | 0.308 |
| Standard 3 | 11384.9 | 1.000 | 1.074 | 7.39 |
| Standard 4 | 5419.18 | 0.5000 | 0.4769 | -4.63 |
| Blank | 291.363 | 0 | -0.03633 | *** |

| Calibration Coefficients | C0 | C1 | R |
|---|---|---|---|
| | -0.06549 | 1.001e-4 | 0.9992 |

| | | | | |
|---|---|---|---|---|
| Sample Blank [Sample Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Si | Conc =-0.01488 mg/L | Conc %RSD =-19 | Flags =b | Net Int =517.454 |
| | Net Int %RSD = 24.4 | Peak Int = 2251.33 | | |
| 1-1 Act Wt =1.4546 Nom Wt = 25 Dil =1 | | | | |
| Si | Conc =6.173 mg/L | Conc %RSD = 3.33 | Flags= | Net Int = 4103.45 |
| | Net Int %RSD =3.12 | Peak Int = 5752.00 | | |
| 1-2 Act Wt = 1.6292 Nom Wt = 25 Dil = 1 | | | | |
| Si | Conc = 5.706 mg/L | Conc %RSD = 2.30 | Flags = | Net Int = 4229.84 |
| | Net Int %RSD = 2.04 | Peak Int = 5829.85 | | |
| 2-1 Act Wt =1.4015 Nom Wt =25 Dil = 1 | | | | |
| Si | Conc = 1.193 mg/L | Conc %RSD = 3.93 | Flags = | Net Int = 1185.07 |
| | Net Int %RSD = 3.38 | Peak Int = 2830.00 | | |
| 2-2 Act Wt = 1.5466 Nom Wt = 25 Dil = 1 | | | | |
| Si | Conc = 1.254mg/L | Conc %RSD = 4.41 | Flags = | Net Int = 1292.19 |
| | Net Int %RSD = 4.44 | Peak Int = 2965.33 | | |
| 3-1Act Wt = 1.4949 Nom Wt = 25 Dil = 1 | | | | |
| Si | Conc =0.7304 mg/L | Conc %RSD =3.15 | Flags = | Net Int = 953.515 |
| | Net Int %RSD = 3.54 | Peak Int = 2568.00 | | |
| 3-3 Act Wt = 1.5796 Nom Wt =25 Dil =1 | | | | |
| Si | Conc = 0.6514 mg/L | Conc %RSD =2.38 | Flags = | Net Int = 928.381 |
| | Net Int %RSD = 2.31 | Peak Int = 2558.00 | | |

Method Name :W

| El | | nm | Type | Mono | Order | Power (W) | Neb (L/min) | Height (mm) | Plasma (L/min) | Aux (L/min) | Pump (RPM) | PMT (V) | Int. (s) | Reps | Bkgd Corr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| As | I | 228.812 | An | 1 | 2 | 1000 | 0.80 | 6.0 | 10.0 | 0.5 | 10 | 700 | 0.50 | 3 | Fixed |

Standard 1 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| As | Conc = 4.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int =65388.7 |
| | Net Int %RSD = 1.39 | Peak Int = 75174.7 | | |

Standard 2 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| As | Conc = 2.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 34146.0 |
| | Net Int %RSD = 2.44 | Peak Int =43705.3 | | |

Standard 3 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| As | Conc = 1.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 17525.6 |
| | Net Int %RSD = 3.83 | Peak Int = 26718.0 | | |

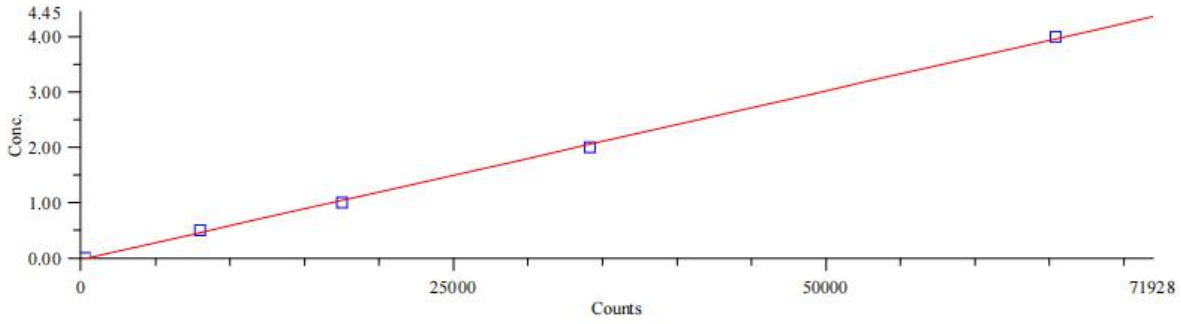
Standard 4 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| As | Conc = 0.5000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 7995.62 |
| | Net Int %RSD = 4.58 | Peak Int = 17240.7 | | |

Blank [Cal. Blank] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| As | Conc = 0 mg/L | Conc %RSD = | Flags = b | Net Int =233.629 |
| | Net Int %RSD = 31.6 | Peak Int = 9405.33 | | |

As I 228.812 nm (mg/L)




| Standard | Counts | Real Conc | Calc Conc | % Diff |
|---|---|---|---|---|
| Standard 1 | 65388.7 | 4.000 | 3.966 | -0.857 |
| Standard 2 | 34146.0 | 2.000 | 2.056 | 2.78 |
| Standard 3 | 17525.6 | 1.000 | 1.039 | 3.95 |
| Standard 4 | 7995.62 | 0.5000 | 0.4569 | -8.63 |
| Blank | 233.629 | 0 | -0.01769 | *** |

| Calibration Coefficients | C0 | C1 | R |
|---|---|---|---|
| | -0.03197 | 6.114e-5 | 0.9992 |

Sample Blank [Sample Blank] Act Wt = 1 Nom Wt = 1 Dil = 1

| | | | | |
|---|---|---|---|---|
| As | Conc =-0.02168 mg/L | Conc %RSD =-70 | Flags =b | Net Int =168.349 |
| | Net Int %RSD = 14.8 | Peak Int = 9382.67 | | |

1-1 Act Wt =1.4546 Nom Wt = 25 Dil =1

| | | | | |
|---|---|---|---|---|
| As | Conc =0.7537 mg/L | Conc %RSD = 10.7 | Flags= | Net Int = 904.944 |

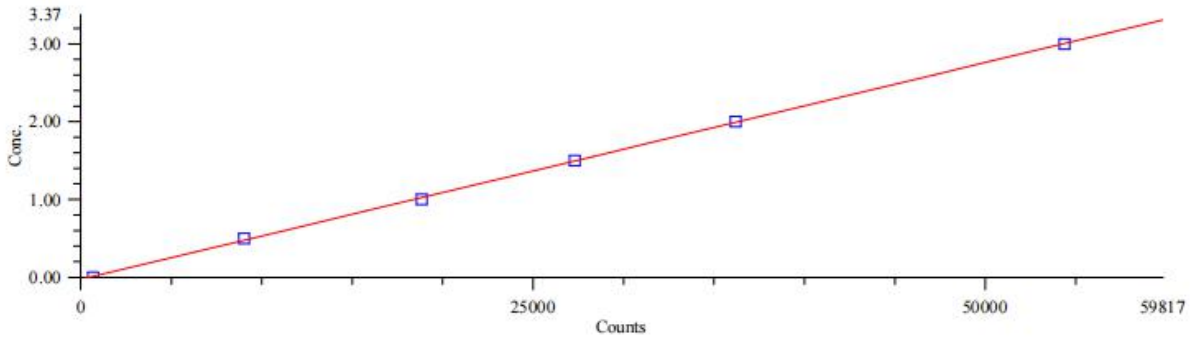
| | | | | |
|---|---|---|---|---|
| | Net Int %RSD =9.98 | Peak Int = 9776.67 | | |
| 1-2 Act Wt = 1.6292 Nom Wt = 25 Dil = 1 | | | | |
| As | Conc = 0.7990 mg/L | Conc %RSD = 5.30 | Flags = | Net Int = 1039.22 |
| | Net Int %RSD =5.04 | Peak Int = 10554.0 | | |
| 2-1 Act Wt =1.4015 Nom Wt =25 Dil = 1 | | | | |
| As | Conc = 0.02635 mg/L | Conc %RSD = 10.3 | Flags = | Net Int = 212.334 |
| | Net Int %RSD = 9.84 | Peak Int = 9418.67 | | |
| 2-2 Act Wt = 1.5466 Nom Wt = 25 Dil = 1 | | | | |
| As | Conc = 0.004426 mg/L | Conc %RSD = 9.41 | Flags = | Net Int = 192.667 |
| | Net Int %RSD = 8.44 | Peak Int = 9399.03 | | |
| 3-1 Act Wt = 1.4949 Nom Wt = 25 Dil = 1 | | | | |
| As | Conc =0.06684 mg/L | Conc %RSD =8.15 | Flags = | Net Int = 253.515 |
| | Net Int %RSD = 7.54 | Peak Int = 9460.52 | | |
| 3-3 Act Wt = 1.5796 Nom Wt =25 Dil =1 | | | | |
| As | Conc = 0.005447 mg/L | Conc %RSD =7.38 | Flags = | Net Int = 193.515 |
| | Net Int %RSD = 6.31 | Peak Int = 9400.47 | | |

Method Name :W

| El | | nm | Type | Mono | Order | Power (W) | Neb (L/min) | Height (mm) | Plasma (L/min) | Aux (L/min) | Pump (RPM) | PMT (V) | Int. (s) | Reps | Bkgd Corr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cu | I | 324.754 | An | 1 | 1 | 1000 | 0.50 | 6.0 | 10.0 | 0.5 | 10 | 500 | 0.50 | 3 | Dyn |

| | | | |
|---|---|---|---|
| Standard 1 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | |
| Cu | Conc = 3.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int =54379.0 |
| | Net Int %RSD = 1.44 | Peak Int = 58069.3 | | |
| Standard 2 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Cu | Conc = 2.000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 36193.9 |
| | Net Int %RSD = 1.23 | Peak Int =39798.7 | | |
| Standard 3 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Cu | Conc = 1.500 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 27294.0 |
| | Net Int %RSD =2.97 | Peak Int = 30877.3 | | |
| Standard 4 [Cal. Std] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Cu | Conc = 0.5000 mg/L | Conc %RSD = 0.00 | Flags = | Net Int = 18835.3 |
| | Net Int %RSD = 0.69 | Peak Int = 12570.0 | | |
| Blank [Cal. Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Cu | Conc = 0 mg/L | Conc %RSD = | Flags = b | Net Int = 679.034 |
| | Net Int %RSD = 14.9 | Peak Int = 4350.67 | | |

Cu I 324.754 nm (mg/L)




| Standard | Counts | Real Conc | Calc Conc | % Diff |
|---|---|---|---|---|
| Standard 1 | 54379.0 | 3.000 | 3.005 | 0.154 |
| Standard 2 | 36193.9 | 2.000 | 1.991 | -0.458 |
| Standard 3 | 27294.0 | 1.500 | 1.495 | -0.355 |
| Standard 4 | 18835.3 | 1.000 | 1.023 | 2.31 |
| Standard 5 | 9017.26 | 0.5000 | 0.4758 | -4.84 |
| Blank | 679.034 | 0 | 0.01094 | *** |

| Calibration Coefficients | C0 | C1 | R |
|---|---|---|---|
| | -0.02692 | 5.575e-5 | 0.9998 |

| | | | | |
|---|---|---|---|---|
| Sample Blank [Sample Blank] Act Wt = 1 Nom Wt = 1 Dil = 1 | | | | |
| Cu | Conc =-0.003589 mg/L | Conc %RSD =-68 | Flags =b | Net Int =418.503 |
| | Net Int %RSD = 10.4 | Peak Int = 4046.67 | | |
| 1-1 Act Wt =0.8594 Nom Wt = 50 Dil =1 | | | | |
| Cu | Conc =0.3255 mg/L | Conc %RSD = 6.78 | Flags= | Net Int = 524.449 |
| | Net Int %RSD =5.98 | Peak Int = 4328.67 | | |
| 1-2 Act Wt = 0.7595 Nom Wt = 50 Dil = 1 | | | | |
| Cu | Conc = 0.3626 mg/L | Conc %RSD = 7.30 | Flags = | Net Int = 522.898 |
| | Net Int %RSD =6.04 | Peak Int = 4216.67 | | |
| 2-1 Act Wt =1.4356 Nom Wt =50 Dil = 1 | | | | |
| Cu | Conc = 0.3343 mg/L | Conc %RSD = 6.20 | Flags = | Net Int = 596.263 |
| | Net Int %RSD = 5.84 | Peak Int = 4302.00 | | |
| 2-2 Act Wt = 1.1685 Nom Wt = 50 Dil = 1 | | | | |
| Cu | Conc = 0.3621 mg/L | Conc %RSD = 5.41 | Flags = | Net Int = 570.279 |
| | Net Int %RSD = 5.44 | Peak Int = 4361.33 | | |
| 3-1 Act Wt = 1.086 Nom Wt = 50 Dil = 1 | | | | |
| Cu | Conc =0.6141 mg/L | Conc %RSD =6.15 | Flags = | Net Int = 663.326 |
| | Net Int %RSD = 6.54 | Peak Int = 4313.33 | | |
| 3-2 Act Wt = 1.2581 Nom Wt =50 Dil =1 | | | | |
| Cu | Conc = 0.6831 mg/L | Conc %RSD =5.38 | Flags = | Net Int = 726.802 |
| | Net Int %RSD = 5.31 | Peak Int = 4320.67 | | |

**样品检测结果**

单位：mg/kg

| 元素 | 样品 1 | 样品 2 | 样品 3 |
|---|---|---|---|
| Cu | 0.34 | 0.35 | 0.65 |
| Pb | 未检出 | 未检出 | 未检出 |
| Fe | 37.29 | 9.38 | 14.32 |
| Ni | 19.38 | 11.38 | 14.19 |
| Na | 51.68 | 21.15 | 20.90 |
| Ca | 30.68 | 5.39 | 7.11 |
| Mg | 3.58 | 1.49 | 2.48 |
| Al | 147.15 | 4.13 | 12.37 |
| As | 0.78 | 未检出 | 未检出 |
| Si | 5.94 | 1.22 | 0.69 |
| V | 0.66 | 1.86 | 5.43 |