表1 海德乌拉铀矿床沥青铀矿电子探针主量元素分析结果及相关参数

Table 1 EPMA analysis results and related parameters of pitchblende in the Haidewula uranium deposit

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | UO2 | PbO | ThO2 | SiO2 | FeO | CaO | La2O3 | Ce2O3 | Pr2O3 | Nd2O3 | Sm2O3 | Gd2O3 | Dy2O3 | Ho2O3 | Er2O3 | Yb2O3 | Y2O3 | Total | LREE2O3 | HREE2O3 | REE2O3 |
| Test-1 | 85.19 | 3.33 | / | 0.41 | 0.40 | 2.99 | 0.05 | 0.65 | 0.07 | 0.11 | 0.20 | 0.12 | 0.42 | / | 0.08 | / | 0.24 | 94.94 | 1.08 | 0.61 | 1.70 |
| 3-1 | 84.46 | 3.53 | / | 0.54 | 0.60 | 2.97 | 0.19 | 0.51 | 0.11 | 0.14 | 0.22 | 0.08 | 0.31 | 0.09 | 0.17 | / | 0.18 | 94.84 | 1.17 | 0.64 | 1.81 |
| 3-2 | 85.80 | 3.82 | / | 0.58 | 0.66 | 2.66 | 0.13 | 0.58 | 0.17 | 0.34 | 0.21 | 0.04 | 0.33 | / | 0.03 | / | 0.18 | 96.26 | 1.43 | 0.41 | 1.84 |
| 3-3 | 85.91 | 3.48 | / | 0.44 | 0.40 | 3.14 | 0.14 | 0.63 | 0.25 | 0.09 | 0.04 | 0.01 | 0.39 | 0.09 | 0.19 | / | 0.18 | 96.05 | 1.15 | 0.69 | 1.83 |
| 3-5 | 87.45 | 3.64 | / | 0.55 | 0.63 | 2.35 | 0.10 | 0.62 | 0.12 | 0.15 | 0.10 | 0.24 | 0.36 | / | 0.07 | / | 0.24 | 97.24 | 1.10 | 0.68 | 1.77 |
| 3-6 | 88.38 | 3.68 | / | 0.32 | 0.24 | 2.23 | 0.08 | 0.35 | 0.29 | 0.21 | 0.18 | 0.37 | 0.04 | / | 0.12 | / | 0.24 | 97.36 | 1.10 | 0.53 | 1.63 |
| 3-7 | 87.68 | 3.36 | / | 0.39 | 0.32 | 2.60 | 0.11 | 0.55 | 0.26 | 0.16 | / | 0.14 | 0.27 | 0.08 | 0.01 | / | 0.24 | 96.92 | 1.08 | 0.49 | 1.57 |
| 3-8 | 87.46 | 3.68 | / | 0.50 | 0.42 | 2.40 | 0.12 | 0.54 | 0.07 | 0.16 | 0.16 | 0.15 | 0.14 | / | 0.04 | / | 0.22 | 96.82 | 1.06 | 0.33 | 1.39 |
| 3-9 | 88.81 | 2.95 | / | 0.37 | 0.27 | 3.17 | 0.19 | 0.65 | 0.07 | 0.34 | 0.18 | 0.14 | 0.30 | / | / | 0.03 | 0.20 | 98.28 | 1.42 | 0.46 | 1.88 |
| 3-10 | 87.97 | 3.24 | / | 0.46 | 0.34 | 3.18 | 0.14 | 0.42 | 0.35 | 0.38 | 0.19 | 0.21 | 0.43 | 0.04 | / | 0.09 | 0.18 | 98.43 | 1.48 | 0.76 | 2.24 |
| 3-11 | 87.68 | 3.16 | / | 0.40 | 0.27 | 2.80 | / | 0.63 | 0.25 | 0.02 | 0.21 | 0.16 | 0.27 | / | 0.01 | / | 0.21 | 96.80 | 1.10 | 0.45 | 1.55 |
| 3-12 | 87.13 | 3.58 | / | 0.55 | 0.41 | 2.57 | 0.16 | 0.60 | 0.05 | 0.15 | 0.07 | / | 0.28 | 0.02 | 0.11 | 0.11 | 0.20 | 96.69 | 1.02 | 0.52 | 1.53 |
| 3-14 | 83.47 | 3.10 | / | 0.47 | 0.28 | 3.27 | 0.14 | 0.53 | 0.26 | 0.09 | 0.13 | 0.24 | 0.36 | / | 0.09 | / | 0.26 | 93.40 | 1.15 | 0.69 | 1.84 |
| 3-15 | 83.05 | 3.18 | / | 0.40 | 0.56 | 2.81 | 0.05 | 0.59 | 0.03 | 0.26 | 0.15 | 0.21 | 0.33 | / | 0.02 | 0.09 | 0.18 | 92.51 | 1.07 | 0.65 | 1.72 |
| 3-16 | 86.66 | 3.44 | / | 0.49 | 0.46 | 2.59 | 0.05 | 0.58 | 0.22 | 0.24 | 0.01 | 0.14 | / | / | / | / | 0.23 | 96.06 | 1.09 | 0.14 | 1.24 |
| 3-17 | 86.47 | 3.22 | / | 0.40 | 0.37 | 3.00 | / | 0.63 | 0.13 | 0.08 | 0.14 | 0.18 | 0.29 | / | / | / | 0.22 | 95.90 | 0.98 | 0.48 | 1.46 |
| 3-18 | 85.97 | 3.40 | / | 0.43 | 0.24 | 2.59 | 0.22 | 0.47 | 0.18 | 0.26 | / | 0.12 | 0.21 | 0.15 | 0.04 | / | 0.15 | 95.09 | 1.12 | 0.52 | 1.64 |
| 3-20 | 86.25 | 3.62 | / | 0.33 | 0.27 | 2.31 | 0.09 | 0.45 | 0.17 | 0.23 | 0.12 | 0.10 | 0.39 | 0.04 | 0.02 | 0.08 | 0.18 | 95.21 | 1.06 | 0.63 | 1.69 |
| 3-21 | 85.07 | 3.54 | / | 0.46 | 0.64 | 3.30 | 0.06 | 0.57 | 0.05 | 0.09 | 0.04 | 0.12 | 0.44 | 0.01 | / | / | 0.23 | 95.27 | 0.81 | 0.58 | 1.39 |
| 3-22 | 83.38 | 3.14 | / | 0.33 | 0.17 | 3.35 | 0.03 | 0.30 | 0.12 | 0.11 | / | 0.08 | 0.25 | / | 0.10 | 0.01 | 0.14 | 92.16 | 0.56 | 0.43 | 0.99 |
| 3-23 | 84.32 | 3.37 | / | 0.39 | 0.25 | 2.78 | 0.13 | 0.51 | 0.12 | 0.20 | 0.04 | 0.26 | 0.06 | 0.12 | 0.27 | / | 0.23 | 93.68 | 0.99 | 0.70 | 1.68 |
| 3-25 | 89.27 | 3.52 | / | 0.47 | 0.40 | 2.27 | 0.14 | 0.66 | 0.20 | 0.19 | 0.04 | 0.20 | 0.35 | 0.26 | 0.01 | / | 0.23 | 99.00 | 1.23 | 0.82 | 2.05 |

注：“/”表示低于检测限。

续表1

Continued Table 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | UO2 | PbO | ThO2 | SiO2 | FeO | CaO | La2O3 | Ce2O3 | Pr2O3 | Nd2O3 | Sm2O3 | Gd2O3 | Dy2O3 | Ho2O3 | Er2O3 | Yb2O3 | Y2O3 | Total | LREE2O3 | HREE2O3 | REE2O3 |
| 3-26 | 85.48 | 3.38 | / | 0.43 | 0.78 | 3.02 | 0.16 | 0.81 | 0.15 | 0.44 | 0.11 | 0.28 | 0.47 | 0.10 | / | 0.14 | 0.33 | 96.74 | 1.67 | 0.99 | 2.66 |
| 3-27 | 86.05 | 2.88 | / | 0.38 | 0.26 | 3.43 | 0.05 | 0.31 | 0.35 | 0.19 | 0.10 | 0.09 | 0.17 | / | / | / | 0.18 | 95.22 | 0.99 | 0.27 | 1.26 |
| 3-29 | 86.32 | 3.02 | / | 0.47 | 0.19 | 2.84 | 0.21 | 0.50 | 0.03 | 0.11 | / | 0.00 | 0.20 | 0.14 | 0.04 | / | 0.19 | 94.81 | 0.86 | 0.38 | 1.24 |
| 3-30 | 87.52 | 3.09 | / | 0.33 | 0.26 | 2.80 | 0.12 | 0.40 | 0.29 | 0.11 | 0.12 | 0.22 | / | 0.03 | 0.07 | 0.25 | 0.22 | 96.34 | 1.04 | 0.56 | 1.60 |
| 3-32 | 86.30 | 3.28 | / | 0.34 | 0.29 | 3.14 | 0.13 | 0.41 | / | 0.19 | 0.19 | 0.04 | 0.13 | 0.13 | 0.03 | / | 0.09 | 95.26 | 0.91 | 0.32 | 1.24 |
| 3-33 | 84.30 | 3.22 | / | 0.36 | 0.21 | 2.90 | 0.10 | 0.44 | 0.16 | 0.06 | 0.23 | 0.23 | 0.31 | 0.12 | 0.15 | / | 0.25 | 93.68 | 0.99 | 0.80 | 1.79 |
| 3-35 | 86.00 | 4.14 | / | 0.40 | 0.27 | 2.84 | / | 0.52 | 0.29 | 0.29 | / | 0.19 | 0.35 | / | / | / | 0.22 | 96.01 | 1.10 | 0.53 | 1.63 |
| 3-36 | 85.84 | 2.92 | / | 0.33 | 0.25 | 3.05 | 0.01 | 0.51 | / | 0.21 | / | / | 0.11 | / | 0.18 | / | 0.18 | 94.12 | 0.73 | 0.29 | 1.02 |
| 3-37 | 87.11 | 3.71 | / | 0.47 | 0.43 | 2.62 | 0.02 | 0.57 | 0.03 | 0.20 | 0.06 | 0.15 | 0.01 | 0.05 | / | / | 0.25 | 96.42 | 0.87 | 0.21 | 1.08 |
| 3-38 | 87.20 | 3.31 | / | 0.38 | 0.38 | 2.95 | 0.06 | 0.58 | 0.18 | 0.16 | 0.38 | 0.19 | 0.18 | 0.06 | 0.13 | / | 0.20 | 96.94 | 1.37 | 0.55 | 1.92 |
| 3-40 | 87.61 | 3.46 | / | 0.38 | 0.36 | 2.67 | 0.16 | 0.49 | 0.16 | 0.36 | 0.25 | 0.01 | 0.27 | / | / | / | 0.19 | 96.98 | 1.42 | 0.27 | 1.69 |
| 3-44 | 87.59 | 3.67 | / | 0.36 | 0.41 | 2.79 | 0.15 | 0.58 | 0.10 | 0.30 | 0.17 | 0.10 | 0.27 | 0.02 | 0.03 | / | 0.23 | 97.42 | 1.29 | 0.42 | 1.71 |
| 3-53 | 85.09 | 3.29 | / | 0.77 | 0.36 | 2.73 | 0.01 | 0.74 | 0.26 | 0.17 | 0.16 | 0.32 | 0.15 | 0.07 | / | / | 0.22 | 94.86 | 1.34 | 0.54 | 1.88 |
| 3-54 | 85.44 | 3.46 | / | 0.81 | 0.40 | 2.82 | 0.13 | 0.65 | 0.04 | 0.06 | 0.10 | 0.23 | 0.23 | / | / | / | 0.27 | 95.22 | 0.99 | 0.46 | 1.45 |
| 3-55 | 84.41 | 3.55 | / | 1.51 | 0.48 | 3.22 | 0.21 | 0.61 | 0.16 | / | 0.19 | 0.24 | 0.07 | 0.12 | 0.08 | / | 0.31 | 95.80 | 1.17 | 0.51 | 1.68 |
| 3-57 | 84.57 | 3.45 | / | 0.59 | 0.72 | 2.72 | / | 0.68 | 0.14 | 0.16 | 0.11 | 0.18 | 0.45 | / | 0.17 | 0.00 | 0.30 | 94.95 | 1.09 | 0.81 | 1.90 |
| 3-58 | 87.35 | 3.40 | / | 0.59 | 0.49 | 2.73 | 0.13 | 0.77 | 0.38 | 0.17 | 0.23 | 0.19 | 0.06 | 0.05 | / | 0.22 | 0.29 | 97.87 | 1.68 | 0.52 | 2.19 |
| 3-60 | 86.65 | 3.66 | / | 0.49 | 0.42 | 2.62 | 0.12 | 0.57 | 0.23 | 0.49 | 0.17 | 0.25 | 0.28 | 0.07 | / | 0.06 | 0.28 | 97.00 | 1.57 | 0.65 | 2.23 |
| 3-63 | 85.67 | 3.60 | / | 0.52 | 0.67 | 2.66 | 0.09 | 0.98 | 0.18 | 0.22 | 0.14 | 0.16 | 0.29 | 0.01 | 0.02 | / | 0.26 | 96.16 | 1.61 | 0.48 | 2.10 |
| 3-64 | 85.57 | 3.42 | / | 0.58 | 0.66 | 2.74 | 0.05 | 0.83 | 0.14 | 0.25 | 0.26 | 0.31 | 0.30 | 0.13 | / | / | 0.17 | 96.17 | 1.53 | 0.74 | 2.27 |
| 3-66 | 85.90 | 3.44 | / | 0.77 | 0.49 | 2.71 | 0.00 | 0.79 | / | 0.36 | / | 0.21 | 0.33 | 0.31 | / | / | 0.24 | 96.15 | 1.15 | 0.85 | 2.00 |
| 3-70 | 86.88 | 3.62 | / | 0.90 | 0.49 | 2.71 | 0.15 | 0.66 | 0.20 | 0.50 | 0.18 | 0.34 | 0.20 | 0.15 | / | / | 0.36 | 98.06 | 1.68 | 0.68 | 2.37 |

续表1

Continued Table 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | UO2 | PbO | ThO2 | SiO2 | FeO | CaO | La2O3 | Ce2O3 | Pr2O3 | Nd2O3 | Sm2O3 | Gd2O3 | Dy2O3 | Ho2O3 | Er2O3 | Yb2O3 | Y2O3 | Total | LREE2O3 | HREE2O3 | REE2O3 |
| 3-85 | 89.19 | 3.32 | / | 0.26 | 0.21 | 2.90 | 0.25 | 0.41 | 0.34 | 0.04 | 0.22 | 0.11 | 0.28 | 0.05 | 0.09 | 0.05 | 0.24 | 98.55 | 1.26 | 0.58 | 1.84 |
| 3-86 | 87.92 | 3.57 | / | 0.50 | 0.28 | 2.77 | 0.00 | 0.50 | 0.35 | 0.16 | 0.34 | 0.10 | 0.14 | 0.10 | / | / | 0.26 | 97.70 | 1.35 | 0.34 | 1.68 |
| 3-87 | 88.48 | 3.09 | / | 0.42 | 0.24 | 2.71 | 0.10 | 0.53 | 0.33 | 0.31 | / | 0.01 | 0.20 | 0.15 | 0.10 | / | 0.24 | 97.51 | 1.27 | 0.46 | 1.73 |
| 3-88 | 87.23 | 2.68 | / | 0.45 | 0.25 | 3.36 | 0.09 | 0.56 | 0.04 | 0.20 | / | 0.06 | 0.60 | 0.03 | 0.13 | 0.03 | 0.25 | 96.71 | 0.88 | 0.84 | 1.73 |
| 3-89 | 87.61 | 2.90 | / | 0.31 | 0.29 | 3.13 | 0.22 | 0.36 | 0.22 | 0.24 | 0.06 | 0.17 | 0.44 | 0.03 | 0.08 | 0.24 | 0.24 | 97.13 | 1.09 | 0.95 | 2.04 |
| 3-90 | 87.97 | 2.87 | / | 0.53 | 0.32 | 2.60 | 0.07 | 0.49 | 0.20 | 0.09 | 0.09 | 0.25 | 0.28 | 0.02 | 0.13 | / | 0.25 | 96.64 | 0.95 | 0.68 | 1.63 |

表2 海德乌拉铀矿床沥青铀矿钍和稀土元素组成（ppm）

Table 2 Th and REE compositions of pitchblende in the Haidewula uranium deposit (ppm)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | 探针编号 | La | Ce | Pr | Nd | Sm | Eu | Gd | Tb | Dy | Ho | Er | Tm | Yb | Lu | Th | ∑REE | (LREE/HREE)N | δEU |
| KS-01 | Test-1 | 1747 | 4106 | 590 | 2581 | 957 | 136 | 845 | 168 | 895 | 126 | 252 | 28 | 151 | 14 | 48 | 12593 | 1.836 | 0.45 |
| KS-03 | 3-1 | 1656 | 4182 | 653 | 2635 | 1058 | 158 | 969 | 187 | 963 | 136 | 290 | 31 | 164 | 16 | 58 | 13098 | 1.726 | 0.47 |
| KS-05 | 3-4 | 1577 | 3731 | 532 | 2203 | 825 | 123 | 779 | 152 | 829 | 116 | 228 | 24 | 134 | 13 | 24 | 11265 | 1.789 | 0.46 |
| KS-08 | 3-8 | 1508 | 4090 | 589 | 2454 | 975 | 143 | 866 | 183 | 964 | 142 | 251 | 29 | 154 | 15 | 29 | 12365 | 1.673 | 0.47 |
| KS-10 | 3-9 | 1792 | 4515 | 639 | 2545 | 974 | 139 | 900 | 178 | 924 | 133 | 267 | 29 | 158 | 15 | 35 | 13208 | 1.813 | 0.45 |
| KS-15 | 3-15 | 1387 | 3531 | 490 | 2039 | 761 | 106 | 752 | 140 | 691 | 106 | 194 | 23 | 119 | 11 | 21 | 10351 | 1.803 | 0.42 |
| KS-16 | 3-16 | 1752 | 4423 | 620 | 2561 | 966 | 136 | 901 | 170 | 851 | 125 | 247 | 28 | 146 | 14 | 30 | 12942 | 1.869 | 0.44 |
| KS-17 | 3-17 | 1694 | 4356 | 579 | 2526 | 921 | 127 | 850 | 160 | 812 | 118 | 241 | 27 | 138 | 14 | 32 | 12564 | 1.899 | 0.43 |
| KS-21 | 3-22 | 1432 | 3705 | 504 | 2118 | 788 | 113 | 777 | 144 | 710 | 103 | 212 | 24 | 126 | 11 | 29 | 10768 | 1.817 | 0.44 |
| KS-22 | 3-23 | 1727 | 4519 | 655 | 2757 | 1030 | 158 | 923 | 191 | 995 | 139 | 284 | 31 | 176 | 16 | 65 | 13600 | 1.762 | 0.48 |
| KS-24 | 3-26 | 1627 | 3997 | 545 | 2392 | 887 | 125 | 811 | 162 | 806 | 122 | 234 | 26 | 140 | 14 | 18 | 11888 | 1.816 | 0.44 |
| KS-26 | 3-29 | 1630 | 4163 | 571 | 2398 | 919 | 127 | 806 | 161 | 823 | 115 | 232 | 27 | 140 | 13 | 26 | 12124 | 1.874 | 0.44 |
| KS-35 | 3-44 | 1544 | 3934 | 557 | 2231 | 845 | 117 | 788 | 152 | 780 | 111 | 219 | 27 | 134 | 12 | 22 | 11451 | 1.84 | 0.43 |
| KS-40 | 3-58 | 1689 | 4529 | 684 | 2811 | 1116 | 155 | 1050 | 207 | 1091 | 156 | 298 | 34 | 188 | 19 | 32 | 14027 | 1.633 | 0.43 |
| KS-46 | 3-60 | 1667 | 4218 | 580 | 2336 | 884 | 123 | 807 | 156 | 834 | 117 | 224 | 24 | 136 | 13 | 35 | 12119 | 1.893 | 0.44 |
| KS-47 | 3-85 | 1718 | 4873 | 647 | 2605 | 1040 | 145 | 973 | 182 | 936 | 142 | 271 | 31 | 161 | 16 | 41 | 13739 | 1.789 | 0.43 |
| KS-50 | 3-88 | 1512 | 3948 | 556 | 2349 | 834 | 116 | 810 | 157 | 775 | 114 | 225 | 26 | 138 | 13 | 31 | 11572 | 1.812 | 0.42 |

利用电子探针测定的U作为外标校正微量元素含量

表3海德乌拉铀矿床沥青铀矿LA-ICP-MS U-Pb同位素组成

Table 3 LA-ICP-MS U-Pb isotope compositions of pitchblende in the Haidewula uranium deposit

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 点号 | 含量（ppm） | | | |  | 原始测量同位素组成 | | | | | |  | 矫正后同位素组成 | | | |  | 矫正数据得到的年龄(Ma) | | | |
| Total Pb | Th | U | Common Pb |  | 207Pb/235U | 1σ | 206Pb/238U | 1σ | 207Pb/206Pb | 1σ |  | 207Pb/235U | 1σ | 206Pb/238U | 1σ |  | 207Pb/235U | 1σ | 206Pb/238U | 1σ |
| KS-01 | 61427 | 48 | 716776.2 | 15724 |  | 1.1184 | 0.0273 | 0.0561 | 0.0011 | 0.143 | 0.0016 |  | 0.2622 | 0.0199 | 0.0374 | 0.0005 |  | 236 | 20 | 236 | 3 |
| KS-03 | 72906 | 58 | 639536.6 | 19813 |  | 1.4536 | 0.0225 | 0.0623 | 0.0009 | 0.1685 | 0.0013 |  | 0.256 | 0.0152 | 0.0365 | 0.0003 |  | 231 | 15 | 231 | 2 |
| KS-05 | 60140 | 24 | 717371.6 | 17168 |  | 1.1584 | 0.0203 | 0.0568 | 0.001 | 0.1478 | 0.0014 |  | 0.2611 | 0.0156 | 0.0372 | 0.0004 |  | 236 | 16 | 236 | 3 |
| KS-08 | 53386 | 29 | 757758.3 | 10287 |  | 0.7921 | 0.0184 | 0.0488 | 0.0011 | 0.1171 | 0.0011 |  | 0.2611 | 0.0158 | 0.0372 | 0.0006 |  | 236 | 16 | 236 | 4 |
| KS-10 | 69475 | 35 | 689040.2 | 16408 |  | 1.1468 | 0.0238 | 0.0577 | 0.0011 | 0.1438 | 0.0016 |  | 0.2682 | 0.0179 | 0.0381 | 0.0005 |  | 241 | 18 | 241 | 3 |
| KS-15 | 51609 | 21 | 746711.4 | 11745 |  | 0.8703 | 0.0174 | 0.05 | 0.0009 | 0.1257 | 0.0011 |  | 0.2576 | 0.0143 | 0.0368 | 0.0005 |  | 233 | 14 | 233 | 3 |
| KS-16 | 75093 | 30 | 675827.3 | 19951 |  | 1.3135 | 0.0192 | 0.0601 | 0.0008 | 0.1582 | 0.0016 |  | 0.2606 | 0.0135 | 0.0372 | 0.0003 |  | 235 | 14 | 235 | 2 |
| KS-17 | 57256 | 32 | 724396.7 | 13453 |  | 0.9209 | 0.0118 | 0.051 | 0.0006 | 0.1309 | 0.0013 |  | 0.257 | 0.0095 | 0.0367 | 0.0003 |  | 232 | 10 | 232 | 2 |
| KS-21 | 56725 | 29 | 732372.0 | 11427 |  | 0.8332 | 0.0132 | 0.05 | 0.0008 | 0.1208 | 0.0012 |  | 0.2632 | 0.0113 | 0.0375 | 0.0004 |  | 237 | 11 | 237 | 3 |
| KS-22 | 65196 | 65 | 686277.5 | 17657 |  | 1.1984 | 0.0191 | 0.058 | 0.0009 | 0.1497 | 0.0014 |  | 0.2631 | 0.0143 | 0.0375 | 0.0004 |  | 237 | 14 | 237 | 2 |
| KS-24 | 55911 | 18 | 722814.0 | 14577 |  | 0.9838 | 0.014 | 0.0521 | 0.0007 | 0.1368 | 0.0011 |  | 0.2553 | 0.0112 | 0.0365 | 0.0003 |  | 231 | 11 | 231 | 2 |
| KS-26 | 60390 | 26 | 714797.5 | 15172 |  | 1.0472 | 0.0162 | 0.0545 | 0.0008 | 0.1391 | 0.0011 |  | 0.2619 | 0.0127 | 0.0373 | 0.0004 |  | 236 | 13 | 236 | 2 |
| KS-35 | 50677 | 22 | 734215.5 | 12435 |  | 0.8908 | 0.0171 | 0.0506 | 0.0009 | 0.1277 | 0.0014 |  | 0.2587 | 0.014 | 0.0369 | 0.0005 |  | 234 | 14 | 234 | 3 |
| KS-40 | 62639 | 32 | 689936.8 | 16643 |  | 1.1925 | 0.026 | 0.0571 | 0.0011 | 0.1506 | 0.0012 |  | 0.2584 | 0.0189 | 0.0369 | 0.0005 |  | 233 | 19 | 233 | 3 |
| KS-46 | 61517 | 35 | 727051.6 | 12700 |  | 0.9185 | 0.0168 | 0.0512 | 0.0009 | 0.1298 | 0.0011 |  | 0.2587 | 0.0138 | 0.0369 | 0.0005 |  | 234 | 14 | 234 | 3 |
| KS-47 | 56912 | 41 | 724256.2 | 11723 |  | 0.8737 | 0.013 | 0.0508 | 0.0007 | 0.1246 | 0.001 |  | 0.2626 | 0.0107 | 0.0374 | 0.0004 |  | 237 | 11 | 237 | 2 |
| KS-50 | 51722 | 31 | 743424.4 | 11569 |  | 0.8453 | 0.0164 | 0.0498 | 0.0009 | 0.1228 | 0.0012 |  | 0.2599 | 0.0137 | 0.0371 | 0.0005 |  | 235 | 14 | 235 | 3 |

Pb含量和普通铅含量仅作为参考，利用电子探针测定的U作为外标校正微量元素含量