

Table 1

Average trace element concentrations of quart in the Hongniu-Hongshan deposit

| Sample            | Type | Li<br>ppm | B<br>ppm | Na<br>ppm | Mg<br>ppm | Al<br>ppm | SiO <sub>2</sub><br>wt% | P<br>ppm | K<br>ppm | Ca<br>ppm | Ti<br>ppm | Cr<br>ppm | Mn<br>ppm | Fe<br>ppm | Cu<br>ppm | Zn<br>ppm | Ge<br>ppm | As<br>ppm | Rb<br>ppm | Sr<br>ppm | Sn<br>ppm | Cs<br>ppm | Pb<br>ppm |     |
|-------------------|------|-----------|----------|-----------|-----------|-----------|-------------------------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| zk750-1184.90(1)  | Qtz2 | 13.9      | 0.67     | 45.5      | 8.62      | 89.4      | 99.9                    | 21.3     | 16.8     | 62.1      | 63.9      | 0.24      | 9.36      | 25.2      | 0.07      | 2.30      | 0.75      | 0.17      | 0.36      | 0.35      | 0.53      | 0.24      | 1.62      | n=4 |
|                   | Qtz3 | 15.8      | 0.75     | 35.0      | 7.53      | 97.0      | 99.9                    | 13.7     | 15.8     | 41.8      | 76.6      | 0.13      | 5.33      | 19.9      | 0.01      | 1.71      | 0.67      | 0.15      | 0.33      | 0.37      | 0.53      | 0.31      | 0.94      | n=2 |
| zk750-1184.90(2)  | Qtz2 | 17.1      | 0.51     | 7.25      | 3.39      | 115       | 99.9                    | 17.2     | 7.33     | 43.7      | 58.8      | 0.63      | 1.03      | 9.18      | 0.04      | 0.10      | 0.81      | 0.12      | 0.09      | 0.37      | 0.34      | 0.42      | 0.06      | n=3 |
|                   | Qtz3 | 14.6      | 0.45     | 3.65      | 2.13      | 79.5      | 100                     | 13.0     | 1.56     | 0.00      | 92.8      | 0.04      | 0.31      | 1.90      | 0.00      | 0.05      | 0.39      | 0.05      | 0.01      | 0.08      | 0.35      | 0.02      | 0.04      | n=1 |
| zk750-1184.90(3)  | Qtz1 | 9.69      | 0.82     | 30.9      | 18.1      | 129       | 99.9                    | 19.1     | 16.8     | 28.5      | 41.8      | 0.53      | 3.81      | 40.0      | 0.16      | 1.33      | 0.66      | 0.04      | 0.32      | 0.42      | 0.52      | 1.25      | 1.47      | n=1 |
|                   | Qtz2 | 12.7      | 0.53     | 11.2      | 28.9      | 82.4      | 99.9                    | 17.1     | 8.04     | 34.2      | 60.9      | 0.92      | 1.94      | 87.6      | 1.77      | 0.41      | 0.57      | 2.31      | 0.17      | 0.41      | 0.34      | 0.30      | 0.90      | n=2 |
|                   | Qtz3 | 15.6      | 0.77     | 17.6      | 2.19      | 82.2      | 100                     | 17.6     | 15.2     | 28.6      | 78.5      | 0.16      | 3.74      | 5.77      | 0.02      | 0.97      | 0.49      | 0.07      | 0.33      | 0.16      | 0.36      | 0.20      | 0.28      | n=1 |
| zk750-1209.40(1)  | Qtz1 | 11.6      | 0.91     | 23.5      | 2.13      | 109       | 99.9                    | 24.2     | 14.5     | 50.0      | 24.8      | 0.18      | 3.77      | 34.8      | 0.28      | 11.9      | 1.00      | 0.50      | 0.41      | 0.62      | 0.41      | 0.28      | 5.93      | n=1 |
|                   | Qtz2 | 13.9      | 1.23     | 32.0      | 2.98      | 93.0      | 99.9                    | 18.8     | 19.0     | 52.5      | 60.5      | 0.24      | 4.29      | 21.7      | 0.04      | 1.25      | 0.77      | 0.21      | 0.37      | 0.75      | 0.30      | 0.36      | 1.02      | n=4 |
| zk1155-993.60(1)  | Qtz1 | 6.69      | 0.40     | 61.1      | 2.83      | 97.8      | 99.8                    | 31.4     | 13.5     | 53.6      | 21.9      | 0.22      | 3.52      | 21.8      | 0.00      | 0.37      | 0.67      | 0.20      | 0.22      | 1.85      | 0.41      | 0.14      | 0.46      | n=1 |
|                   | Qtz2 | 13.6      | 0.37     | 4.22      | 0.88      | 99.3      | 99.9                    | 37.2     | 0.81     | 51.1      | 66.9      | 0.32      | 0.84      | 2.75      | 0.01      | 0.13      | 0.60      | 0.13      | 0.02      | 0.07      | 0.46      | 0.01      | 0.03      | n=2 |
|                   | Qtz3 | 13.4      | 0.33     | 9.25      | 8.48      | 98.7      | 99.9                    | 36.1     | 9.90     | 53.9      | 85.5      | 0.76      | 3.48      | 55.7      | 0.00      | 1.93      | 0.50      | 0.13      | 0.29      | 0.43      | 0.41      | 0.12      | 1.45      | n=2 |
| zk1155-993.60(2)  | Qtz1 | 14.1      | 0.30     | 5.23      | 0.50      | 86.1      | 100                     | 28.4     | 0.77     | 30.2      | 47.1      | 0.33      | 0.56      | 0.55      | 0.00      | 0.05      | 0.47      | 0.18      | 0.00      | 0.11      | 0.35      | 0.01      | 0.00      | n=1 |
|                   | Qtz2 | 15.1      | 1.73     | 1.66      | 0.33      | 83.0      | 100                     | 30.5     | 1.97     | 30.6      | 62.9      | 0.25      | 0.37      | 1.86      | 0.02      | 0.02      | 0.43      | 0.14      | 0.01      | 0.03      | 0.29      | 0.02      | 0.00      | n=2 |
|                   | Qtz3 | 16.1      | 0.45     | 51.4      | 0.83      | 87.3      | 99.9                    | 30.0     | 5.96     | 48.7      | 56.2      | 0.13      | 0.60      | 8.24      | 0.04      | 0.10      | 0.89      | 0.13      | 0.07      | 0.44      | 0.36      | 0.04      | 0.05      | n=1 |
| zk1155-993.60(3)  | Qtz1 | 17.6      | 0.29     | 2.09      | 0.21      | 116       | 99.9                    | 33.1     | 41.4     | 9.00      | 85.3      | 0.38      | 0.76      | 0.43      | 0.07      | 0.00      | 0.70      | 0.04      | 0.22      | 0.09      | 0.25      | 0.00      | 0.00      | n=1 |
|                   | Qtz2 | 15.4      | 0.28     | 1.59      | 0.81      | 89.6      | 100                     | 35.7     | 1.69     | 31.9      | 84.8      | 0.77      | 0.36      | 2.27      | 0.01      | 0.00      | 0.50      | 0.20      | 0.02      | 0.04      | 0.26      | 0.01      | 0.02      | n=2 |
|                   | Qtz3 | 16.3      | 0.14     | 0.57      | 83.1      | 90.9      | 99.9                    | 47.3     | 0.00     | 0.00      | 86.2      | 0.00      | 3.16      | 1.35      | 0.04      | 0.00      | 0.00      | 0.00      | 0.00      | 0.01      | 0.17      | 0.00      | 0.01      | n=1 |
| zk1155-993.60(4)  | Qtz2 | 19.9      | 0.40     | 8.75      | 0.65      | 188       | 99.9                    | 33.2     | 28.6     | 51.9      | 143       | 0.24      | 2.54      | 7.55      | 0.05      | 0.12      | 0.92      | 0.11      | 0.51      | 0.24      | 0.34      | 0.16      | 0.04      | n=5 |
| zk1155-993.60(5)  | Qtz1 | 11.2      | 0.49     | 6.87      | 0.14      | 89.1      | 99.6                    | 36.0     | 13.5     | 38.8      | 31.5      | 0.38      | 0.75      | 5.92      | 0.03      | 0.09      | 0.52      | 0.11      | 4.05      | 3.34      | 0.32      | 0.05      | 0.21      | n=3 |
|                   | Qtz3 | 14.5      | 0.38     | 1.24      | 0.09      | 80.1      | 100                     | 34.8     | 3.12     | 27.7      | 70.1      | 0.11      | 0.02      | 0.11      | 0.00      | 0.03      | 0.50      | 0.09      | 0.03      | 0.02      | 0.32      | 0.00      | 0.01      | n=1 |
| zk1155-993.60(6)  | Qtz1 | 3.80      | 0.39     | 3.84      | 0.14      | 58.2      | 100                     | 37.0     | 0.83     | 34.5      | 31.6      | 0.53      | 0.66      | 2.15      | 0.01      | 0.04      | 0.61      | 0.07      | 0.03      | 0.03      | 0.31      | 0.01      | 0.03      | n=1 |
|                   | Qtz2 | 8.44      | 0.31     | 4.57      | 0.81      | 87.2      | 100                     | 27.8     | 2.41     | 36.6      | 63.6      | 0.54      | 0.00      | 1.67      | 0.00      | 0.07      | 0.51      | 0.07      | 0.02      | 0.05      | 0.28      | 0.00      | 0.03      | n=1 |
|                   | Qtz3 | 11.1      | 0.70     | 8.34      | 0.53      | 93.4      | 99.9                    | 31.9     | 17.2     | 60.8      | 86.8      | 0.02      | 9.30      | 24.8      | 0.04      | 1.94      | 0.47      | 0.00      | 0.35      | 0.30      | 0.23      | 0.11      | 1.22      | n=1 |
| zk1552-1071.10(1) | Qtz2 | 15.1      | 3.07     | 4.89      | 8.34      | 92.1      | 100                     | 25.0     | 4.51     | 18.2      | 84.7      | 1.18      | 0.45      | 1.40      | 0.00      | 0.06      | 0.55      | 0.21      | 0.02      | 0.43      | 0.19      | 0.01      | 0.04      | n=2 |
|                   | Qtz3 | 18.8      | 1.13     | 1.45      | 0.25      | 92.0      | 100                     | 41.5     | 1.42     | 10.2      | 83.1      | 0.22      | 0.44      | 1.07      | 0.00      | 0.00      | 0.61      | 0.19      | 0.00      | 0.16      | 0.32      | 0.00      | 0.02      | n=1 |
| zk1552-1071.10(2) | Qtz2 | 23.4      | 0.39     | 1.94      | 0.07      | 111       | 100                     | 32.8     | 1.70     | 24.0      | 65.2      | 0.23      | 0.55      | 0.24      | 0.05      | 0.02      | 0.49      | 0.11      | 0.00      | 0.04      | 0.32      | 0.00      | 0.01      | n=1 |
|                   | Qtz3 | 18.7      | 0.69     | 7.11      | 0.00      | 101       | 99.9                    | 38.0     | 2.46     | 33.7      | 80.8      | 0.48      | 0.46      | 2.20      | 0.06      | 0.01      | 0.62      | 0.14      | 0.01      | 0.37      | 0.32      | 0.01      | 0.14      | n=2 |