Table S1 Energy-dispersive X-ray emission spectrometric analyses of PGMs in the Jinbaoshan deposit. All data recalculated to 100% after removal of O, which should not occur in the analyzed PGMs and must be contributed by associated silicates and sulfides.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample No.** | **Litho** | **PGM** | **Host Mineral** | **Cu** | **S** | **As** | **Ru** | **Rh** | **Pd** | **Ag** | **Sn** | **Sb** | **Te** | **Ir** | **Pt** | **Au** | **Hg** | **Bi** | **Total** |
| **wt %** | **wt %** | **wt %** | **wt %** | **wt %** | **wt %** | **wt %** | **wt %** | **wt %** | **wt %** | **wt %** | **wt %** | **wt %** | **wt %** | **wt %** | **wt%** |
| JBS1495-B1(1) | Wehrlite | hollingworthite | Cub | — | 32.21 | 32.33 | — | 31.70 | — | — | — | — | — | 3.77 | — | — | — | — | 100 |
| JBS1495-B1(1) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 41.65 | — | 40.01 | — | — | 18.34 | 100 |
| JBS1495-B1(1) | Wehrlite | Sperrylite | Sil | — | — | 41.67 | — | — | — | — | — | 2.74 | — | — | 55.60 | — | — | — | 100 |
| JBS1495-B1(1) | Wehrlite | Sperrylite | Vio | — | — | 42.84 | — | — | — | — | — | — | — | — | 57.16 | — | — | — | 100 |
| JBS1495-B1(1) | Wehrlite | Sperrylite | Mgt | — | — | 45.27 | — | — | — | — | — | — | — | — | 54.73 | — | — | — | 100 |
| JBS1495-B1(1) | Wehrlite | Irarsite | Vio | — | 14.54 | 29.95 | — | 12.06 | — | — | — | — | 1.35 | 30.12 | 11.97 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Atokite | Mgt | — | — | — | — | — | 68.70 | — | 24.76 | — | — | — | — | 6.54 | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Atokite | Cp | — | — | — | — | — | 48.47 | — | 23.51 | — | — | — | 28.03 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Atokite | Sil | — | — | — | — | — | 49.12 | — | 22.69 | — | — | — | 28.19 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Atokite | Cp | — | — | — | — | — | 48.17 | — | 20.08 | — | — | — | 27.46 | 4.29 | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Atokite | Cp | — | — | — | — | — | 44.96 | — | 21.15 | — | — | — | 25.67 | 7.17 | — | 1.05 | 100 |
| JBS1495-B1(3) | Wehrlite | Atokite | Mlr | — | — | — | — | — | 52.03 | — | 21.70 | — | — | — | 21.79 | 4.47 | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Au-Pd-Pt-Ag-Sn | Mlr | — | — | — | — | — | 23.59 | 7.27 | 7.74 | — | — | — | 7.84 | 53.55 | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Au-Pt-As-Ag | Mlr | — | — | 11.84 | — | — | — | 6.35 | — | — | — | — | 14.81 | 67.00 | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Electrum | Cp | — | — | — | — | — | 3.14 | 8.49 | — | — | — | — | — | 88.37 | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Irarsite | Mgt | — | 11.80 | 24.15 | — | — | — | — | — | — | — | 57.61 | 6.45 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Irarsite | Mgt | — | 12.61 | 26.40 | — | — | — | — | — | — | — | 60.99 | — | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Platinum | Sil | — | — | — | — | — | — | — | — | — | — | — | 100 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Platinum | Sil | — | — | — | — | — | — | — | — | — | — | — | 100 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Cp | — | — | — | — | — | — | — | — | — | 51.13 | — | 48.87 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 48.37 | — | 43.02 | — | — | 8.61 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 45.09 | — | 40.60 | 4.63 | — | 9.69 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 52.71 | — | 47.29 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 52.74 | — | 47.26 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 46.62 | — | 42.11 | — | — | 11.27 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 47.17 | — | 43.36 | — | — | 9.47 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 49.22 | — | 44.57 | — | — | 6.21 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Py | — | — | — | — | — | — | — | — | — | 48.54 | — | 42.12 | — | — | 9.34 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 51.99 | — | 42.42 | — | — | 5.59 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 48.22 | — | 42.92 | — | — | 8.86 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 48.62 | — | 43.23 | — | — | 8.15 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 50.27 | — | 40.86 | — | — | 8.86 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 51.05 | — | 45.56 | — | — | 3.39 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 48.10 | — | 45.37 | — | — | 6.53 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 52.19 | — | 43.48 | — | — | 4.33 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Sil | — | — | — | — | — | — | — | — | — | 48.90 | — | 43.91 | — | — | 7.19 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Sil | — | — | — | — | — | — | — | — | — | 47.48 | — | 44.10 | — | — | 8.41 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Cp | — | — | — | — | — | — | — | — | — | 47.30 | — | 42.84 | — | — | 9.86 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Cp | — | — | — | — | — | — | — | — | — | 44.95 | — | 43.44 | — | — | 11.61 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 45.52 | — | 43.39 | — | — | 11.09 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 47.41 | — | 42.79 | — | — | 9.80 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 51.02 | — | 43.95 | — | — | 5.02 | 100 |
| JBS1495-B1(3) | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 47.01 | — | 43.80 | — | — | 9.18 | 100 |
| JBS1495-B1(3) | Wehrlite | Palarstanide | Sil | — | — | 6.64 | — | — | 72.93 | — | 14.04 | 3.89 | — | — | — | 2.51 | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Pd-Cu | Mgt | 38.16 | — | — | — | — | 61.84 | — | — | — | — | — | — | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Platinum | Sil | — | — | — | — | — | — | — | — | — | — | — | 100 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Platinum | Sil | — | — | — | — | — | — | — | — | — | — | — | 100 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Platinum | Sil | — | — | — | — | — | — | — | — | — | — | — | 100 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Pt2Te3？ | Sil | — | — | — | — | — | — | — | — | — | 49.51 | — | 50.49 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Pt2Te3？ | Sil | — | — | — | — | — | — | — | — | — | 47.99 | — | 52.01 | — | — | — | 100 |
| JBS1495-B1(3) | Wehrlite | Sperrylite | Mlr | — | — | 37.12 | — | — | 3.37 | — | 1.75 | — | — | — | 57.76 | — | — | — | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Atokite | Mgt | — | — | 6.40 | — | — | 71.15 | — | 15.29 | 3.16 | — | — | 2.01 | 1.99 | — | — | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Atokite | Sil | — | — | — | — | — | 34.84 | — | 21.23 | — | — | — | 43.93 | — | — | — | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Electrum | Mgt | — | — | — | — | — | — | 15.85 | — | — | — | — | — | 84.15 | — | — | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Irarsite | Sil | — | 11.70 | 26.72 | 1.42 | 2.32 | — | — | — | — | — | 41.96 | 15.89 | — | — | — | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Irarsite | Sil | — | 11.13 | 28.88 | — | — | — | — | — | — | — | 33.47 | 26.52 | — | — | — | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Irarsite | Sil | — | 15.24 | 28.59 | — | — | — | — | — | — | — | 25.50 | 30.67 | — | — | — | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Irarsite | Sil | — | 11.19 | 29.81 | 3.12 | 1.59 | — | — | — | — | — | 23.25 | 30.32 | — | — | 0.72 | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Irarsite | Sil | — | 11.32 | 26.26 | 2.85 | 1.92 | 1.15 | — | 0.91 | — | 2.07 | 25.33 | 28.18 | — | — | — | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Kotulskite | Mgt | — | — | — | — | — | 43.90 | — | — | — | 38.83 | — | — | — | — | 17.27 | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 51.96 | — | 48.04 | — | — | — | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 47.15 | — | 44.31 | — | — | 8.54 | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 49.90 | — | 43.13 | — | — | 6.97 | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 49.33 | — | 42.47 | — | — | 8.20 | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 45.45 | — | 47.84 | — | — | 6.70 | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 51.07 | — | 43.63 | — | — | 5.30 | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 46.66 | — | 43.92 | — | — | 9.42 | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Palarstanide | Mgt | — | — | 6.05 | — | — | 61.36 | — | 17.08 | — | — | — | 11.51 | 4.00 | — | — | 100 |
| JBS1495-B2(2)(2) | Wehrlite | Platinum | Mgt | — | — | — | — | — | — | — | — | — | — | — | 100 | — | — | — | 100 |
| JBS1495-B2(2)(3) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 46.98 | — | 45.17 | — | — | 7.85 | 100 |
| JBS1495-B2(2)(3) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 45.76 | — | 44.35 | — | — | 9.89 | 100 |
| JBS1495-B2(2)(3) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 46.59 | — | 42.67 | — | — | 10.74 | 100 |
| JBS1495-B2(2)(3) | Wehrlite | Moncheite | Sil | — | — | — | — | — | — | — | — | — | 46.07 | — | 45.09 | — | — | 8.84 | 100 |
| JBS1495-B6(1) | Wehrlite | Rustenburgite | Mgt | — | — | — | — | — | 22.27 | — | 18.65 | — | — | — | 59.09 | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Irarsite | Mgt | — | 26.72 | 20.45 | — | — | — | — | — | — | — | 52.83 | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Merenskyite | Mgt | — | — | — | — | — | 9.92 | — | — | 38.56 | 38.56 | — | 12.95 | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.44 | — | — | 70.09 | — | — | 26.47 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 2.64 | — | — | 72.08 | — | — | 25.27 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mgt | — | — | 2.84 | — | — | 71.01 | — | — | 26.15 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.69 | — | — | 70.68 | — | — | 25.64 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | — | — | — | 75.57 | — | — | 24.43 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Vio | — | — | 2.93 | — | — | 71.68 | — | — | 25.39 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Vio | — | — | 2.76 | — | — | 70.50 | — | — | 26.73 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mgt | — | — | 2.46 | — | — | 73.03 | — | — | 24.51 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Vio | — | — | 2.96 | — | — | 70.54 | — | — | 26.50 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Vio | — | — | 3.42 | — | — | 71.07 | — | — | 25.51 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Vio | — | — | 4.58 | — | — | 74.73 | — | — | 20.69 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Vio | — | — | 4.89 | — | — | 71.88 | — | — | 23.23 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Vio | — | — | 3.83 | — | — | 71.12 | — | — | 25.05 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.33 | — | — | 70.55 | — | — | 26.12 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.18 | — | — | 71.17 | — | — | 25.65 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.49 | — | — | 70.19 | — | — | 26.33 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.29 | — | — | 71.04 | — | — | 25.67 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.51 | — | — | 71.08 | — | — | 25.41 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 2.84 | — | — | 71.56 | — | — | 25.60 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.23 | — | — | 69.68 | — | — | 27.09 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.95 | — | — | 71.93 | — | — | 24.13 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Vio | — | — | 2.64 | — | — | 73.34 | — | — | 24.02 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Vio | — | — | 3.30 | — | — | 71.08 | — | — | 25.63 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Vio | — | — | 2.94 | — | — | 70.96 | — | — | 26.10 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Vio | — | — | 3.64 | — | — | 70.27 | — | — | 26.09 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.94 | — | — | 74.11 | — | — | 21.95 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.75 | — | — | 70.10 | — | — | 26.15 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.45 | — | — | 71.29 | — | — | 25.26 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 2.66 | — | — | 71.07 | — | — | 26.27 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.08 | — | — | 71.89 | — | — | 25.03 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Mertieite I | Mlr | — | — | 3.49 | — | — | 71.42 | — | — | 25.09 | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 51.71 | 0 | 44.27 | — | — | 4.02 | 100 |
| JBS1495-B6(1) | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 42.80 | 0 | 43.34 | — | — | 13.85 | 100 |
| JBS1495-B6(1) | Wehrlite | Moncheite | Ccp | — | — | — | — | — | 1.60 | — | — | — | 45.22 | 0 | 41.59 | — | — | 11.59 | 100 |
| JBS1495-B6(1) | Wehrlite | Palladium | Mgt | — | — | — | — | — | 100 | — | — | — | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Palladium | Mlr | — | — | — | — | — | 100 | — | — | — | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Pd-As-Hg | Mlr | — | — | 26.90 | — | — | 61.11 | — | — | 1.47 | — | — | — | — | 10.53 | — | 100 |
| JBS1495-B6(1) | Wehrlite | Pd-S | Vio | — | 39.63 | — | — | — | 60.37 | — | — | — | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Pd-S | Py | — | 34.73 | — | — | — | 65.27 | — | — | — | — | — | — | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Sperrylite | Mgt | — | — | 41.82 | — | — | — | — | — | — | — | — | 58.18 | — | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Sperrylite | Mgt | — | — | 39.27 | — | — | — | — | — | — | — | — | 53.03 | 7.70 | — | — | 100 |
| JBS1495-B6(1) | Wehrlite | Pt-Au | Mgt | — | — | — | — | — | — | — | — | 6.05 | — | — | 78.21 | 14.70 | — | 1.04 | 100 |
| JBS1508-B2 | Wehrlite | Merenskyite | Vio | — | — | — | — | — | 27.20 | — | — | — | 69.68 | 3.12 | — | — | — | — | 100 |
| JBS1508-B2 | Wehrlite | Merenskyite | Mgt | — | — | — | — | — | 31.56 | — | — | — | 68.44 | — | — | — | — | — | 100 |
| JBS1508-B2 | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 52.82 | — | 47.18 | — | — | — | 100 |
| JBS1508-B2 | Wehrlite | Moncheite | Sil | — | — | — | — | — | — | — | — | — | 55.69 | — | 44.31 | — | — | — | 100 |
| JBS1508-B2 | Wehrlite | Moncheite | Sil | — | — | — | — | — | — | — | — | — | 55.17 | — | 44.83 | — | — | — | 100 |
| JBS1508-B2 | Wehrlite | Moncheite | Mgt | — | — | — | — | — | — | — | — | — | 48.16 | — | 43.49 | — | — | 8.36 | 100 |
| JBS1508-B2 | Wehrlite | Moncheite | Mgt | — | — | — | — | 2.68 | — | — | — | — | 54.00 | — | 39.25 | — | — | 4.06 | 100 |
| JBS1508-B2 | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 51.36 | — | 42.52 | — | — | 6.12 | 100 |
| JBS1508-B2 | Wehrlite | Moncheite | Sil | — | — | — | — | — | — | — | — | — | 52.59 | — | 43.32 | — | — | 4.09 | 100 |
| JBS1508-B2 | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 49.08 | — | 42.86 | — | — | 8.06 | 100 |
| JBS1508-B2 | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 48.79 | — | 45.57 | — | — | 5.64 | 100 |
| JBS1508-B2 | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 48.67 | — | 43.19 | — | — | 8.14 | 100 |
| JBS1508-B2 | Wehrlite | Moncheite | Vio | — | — | — | — | — | — | — | — | — | 50.45 | — | 43.57 | — | — | 5.98 | 100 |
| JBS1508-B2 | Wehrlite | Moncheite | Vio | — | — | — | — | 2.94 | — | — | — | — | 55.83 | — | 38.61 | — | — | 2.62 | 100 |
| JBS1508-B2 | Wehrlite | Sperrylite | Vio | — | — | 44.22 | — | — | — | — | — | — | — | — | 55.78 | — | — | — | 100 |
| JBS1508-B2 | Wehrlite | Pt-As-Te | Sil | — | — | 32.96 | — | — | 2.67 | — | — | — | 14.72 | — | 49.66 | — | — | — | 100 |

**Abbreviations**: **Py-pyrite; Cp-chalcopyrite; Vio-violarite; Pld-polydymite; Mlr-millerite; Mgt-magnetite; Sil-silicate**

Table S2 LA-ICP-MS analyses of violarite, polydymite, pyrite, chalcopyrite, and millerite in the Jinbaoshan deposit

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample** | **Mineral** | **Mineral**  **type** | **Cd** | **Pb** | **Ag** | **Pd** | **Cu** | **Pt** | **Rh** | **Ru** | **Ni** | **Ir** | **Os** | **Co** | **Zn** |
| **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** |
| 1495-B1(3) | Vio | Vl1 | <LLD | 7.8 | 3.2 | 0.99 | 1640 | 33.1 | 0.53 | 0.52 | 229200 | 1.4 | 0.27 | 131700 | <LLD |
| 1495-B1(3) | Vio | Vl1 | <LLD | 4.1 | <LLD | 9.5 | 235 | 31.3 | 20 | 2.86 | 245900 | 0.83 | 2.28 | 134400 | <LLD |
| 1495-B1(3) | Vio | Vl1 | <LLD | 8.4 | <LLD | 0.8 | 180 | 12.6 | 11.1 | 1.3 | 242000 | 1.25 | 1.16 | 125000 | <LLD |
| 1495-B1(3) | Vio | Vl1 | <LLD | 46.8 | 58 | 4.3 | 9980 | <LLD | <LLD | <LLD | 258000 | <LLD | <LLD | 122000 | 1200 |
| 1495-B2(2) | Vio | Vl1 | <LLD | 2.24 | <LLD | <LLD | 630 | 158 | 14.5 | 1.7 | 281100 | 10 | 5.5 | 135900 | <LLD |
| 1495-B2(2) | Vio | Vl1 | <LLD | 5.5 | 0.7 | 0.46 | 400 | 115 | 6.5 | 0.9 | 282000 | 5.9 | 4.25 | 121000 | <LLD |
| 1495-B2(2) | Vio | Vl1 | <LLD | 4.8 | <LLD | 0.17 | 890 | 42 | 1.01 | 0.9 | 278000 | 2.74 | 1.58 | 121100 | <LLD |
| 1508-B2 | Vio | Vl1 | <LLD | 4.1 | <LLD | 0.18 | 800 | 9.3 | 2.23 | 3.1 | 225000 | 3.1 | 0.55 | 155900 | <LLD |
| 1495-B1(3) | Vio | Vl1 | <LLD | 9.9 | 2.6 | <LLD | 2800 | 8 | 3.42 | 1.01 | 227000 | 0.26 | <LLD | 167600 | 50 |
| 1495-B1(3) | Vio | Vl1 | <LLD | 14 | <LLD | <LLD | 470 | 720 | 8.7 | 1 | 246000 | 0.63 | 0.41 | 126200 | <LLD |
| 1495-B6(1) | Vio | Vl1 | <LLD | 6.17 | 1.24 | 5.9 | 478 | 9.3 | 11.1 | 0.72 | 318000 | 10.2 | 0.98 | 40700 | <LLD |
| 1495-B1(1) | Vio | Vl2 | <LLD | 10.8 | 11.8 | 75.1 | 4850 | 0.12 | 4.22 | 10.4 | 314000 | 0.91 | 3.97 | 38400 | <LLD |
| 1495-B1(1) | Vio | Vl2 | <LLD | 89 | 82 | 84.1 | 4690 | <LLD | 1.02 | 1.3 | 285000 | <LLD | 0.46 | 35400 | <LLD |
| 1495-B1(1) | Vio | Vl2 | <LLD | 49.4 | 13.6 | 184 | 80.2 | <LLD | 26.7 | 10.4 | 404900 | <LLD | 9.3 | 24500 | <LLD |
| 1495-B1(1) | Vio | Vl2 | <LLD | 169.4 | 20 | 391 | 14.1 | <LLD | 1.27 | <LLD | 419600 | <LLD | 1.55 | 24400 | <LLD |
| 1495-B1(1) | Vio | Vl2 | <LLD | 72.4 | 45.4 | 480 | 50.5 | <LLD | 8.88 | <LLD | 436600 | <LLD | 0.083 | 25100 | <LLD |
| 1495-B1(1) | Vio | Vl2 | <LLD | 97 | 66 | 13.6 | 143 | <LLD | 1.97 | 0.62 | 350000 | <LLD | 1.15 | 22500 | <LLD |
| 1495-B1(3) | Vio | Vl2 | <LLD | <LLD | 4.82 | 1246 | 44.5 | 0.17 | 18.9 | 8.5 | 380400 | 26.1 | 9.4 | 15550 | <LLD |
| 1495-B1(3) | Vio | Vl2 | <LLD | 1.78 | 1.62 | 1309 | 137 | 24 | 24 | 12 | 378800 | 29 | 14 | 17100 | <LLD |
| 1495-B1(3) | Vio | Vl2 | <LLD | 6.75 | 4.03 | 1490 | 2090 | <LLD | 115 | 9.7 | 373000 | 93.3 | 15.8 | 15430 | <LLD |
| 1495-B1(3) | Vio | Vl2 | <LLD | 72.7 | 133 | 67.2 | 1010 | 2.66 | 1.52 | <LLD | 315000 | <LLD | <LLD | 3500 | 82 |
| 1508-B2 | Vio | Vl2 | <LLD | 41.5 | 4.25 | 0.27 | 151 | 3.8 | 3.01 | 0.23 | 322700 | 1 | 0.77 | 1561 | <LLD |
| 1508-B2 | Vio | Vl2 | <LLD | 38.6 | 10.1 | 72 | 297 | 0.72 | 1.21 | <LLD | 308900 | 4.6 | 0.23 | 4700 | <LLD |
| 1508-B2 | Vio | Vl2 | <LLD | 71.1 | 25 | 351 | 690 | 0.73 | 13.4 | 6.3 | 338000 | 7.3 | 10.8 | 16800 | <LLD |
| 1508-B2 | Vio | Vl2 | <LLD | 59.4 | 3.22 | 47 | 83 | 0.27 | 1.11 | 0.9 | 218000 | 4.7 | 0.78 | 5500 | <LLD |
| 1508-B2 | Vio | Vl2 | <LLD | 80.8 | 56.4 | 390 | 1950 | <LLD | 15.2 | 1.1 | 195000 | 4.1 | 0.68 | 16800 | <LLD |
| 1495-B6(1) | Pld |  | <LLD | 37.3 | 13.9 | 6.3 | 179 | 19.3 | 26.7 | 2.28 | 488500 | 8.7 | 1.75 | 25700 | <LLD |
| 1495-B1(1) | Pld |  | <LLD | 165 | 115 | 232 | 4700 | <LLD | 11.1 | <LLD | 399100 | 0.082 | 1.63 | 42700 | <LLD |
| 1495-B1(1) | Pld |  | <LLD | 23.1 | 15.2 | 242 | 221 | <LLD | 30.4 | 12.3 | 444000 | <LLD | 9.8 | 26100 | <LLD |
| 1495-B2(2) | Pld |  | <LLD | 26.9 | 22.6 | 780 | 1150 | 1.21 | 29.9 | 13.4 | 485400 | 25.8 | 15.6 | 12130 | <LLD |
| 1495-B2(2) | Pld |  | <LLD | 30.8 | 31.6 | 820 | 438 | 4.47 | 31.6 | 15.4 | 493100 | 29.1 | 15.9 | 13300 | <LLD |
| 1495-B2(2) | Pld |  | <LLD | 27.6 | 13.3 | 2.78 | 62.5 | 0.12 | <LLD | 1.1 | 492700 | <LLD | <LLD | 15600 | <LLD |
| 1495-B2(2) | Pld |  | <LLD | 12.4 | 7.66 | 3.41 | 486 | <LLD | <LLD | 1 | 501600 | <LLD | <LLD | 14900 | <LLD |
| 1495-B2(3) | Pld |  | <LLD | 21.7 | 3.64 | 0.65 | 1880 | <LLD | <LLD | 0.39 | 512100 | <LLD | <LLD | 11600 | <LLD |
| 1495-B2(3) | Pld |  | <LLD | 54.7 | 20 | 0.46 | 806 | <LLD | <LLD | <LLD | 502200 | <LLD | <LLD | 13800 | <LLD |
| 1495-B2(3) | Pld |  | <LLD | 112 | 429 | 1.79 | 1770 | <LLD | <LLD | 0.69 | 475700 | <LLD | <LLD | 3190 | <LLD |
| 1495-B2(3) | Pld |  | <LLD | 115 | 301 | 0.93 | 3110 | <LLD | <LLD | 0.34 | 465400 | <LLD | <LLD | 4510 | <LLD |
| 1495-B2(3) | Pld |  | <LLD | 146.5 | 589 | 11.4 | 2250 | <LLD | <LLD | <LLD | 485300 | <LLD | <LLD | 7880 | <LLD |
| 1495-B2(3) | Pld |  | <LLD | 116.8 | 565 | 11.5 | 7800 | <LLD | 0.1 | <LLD | 484800 | <LLD | <LLD | 8170 | <LLD |
| 1495-B2(3) | Pld |  | <LLD | 52.7 | 45.4 | 1.75 | 419 | <LLD | <LLD | <LLD | 502000 | <LLD | <LLD | 11900 | <LLD |
| 1495-B2(2) | Pld |  | <LLD | 20.7 | 2.63 | <LLD | 340 | <LLD | <LLD | <LLD | 469000 | <LLD | <LLD | 27100 | <LLD |
| 1495-B2(2) | Pld |  | <LLD | 17.6 | 2.24 | <LLD | 280 | <LLD | <LLD | 1.6 | 471400 | <LLD | <LLD | 29000 | <LLD |
| 1495-B2(2) | Pld |  | <LLD | 21.9 | 7.3 | 0.48 | 184 | <LLD | <LLD | 2.1 | 472400 | <LLD | <LLD | 34800 | <LLD |
| 1495-B2(2) | Pld |  | <LLD | 36.9 | 44.9 | 780 | 1220 | <LLD | 5.3 | 3.7 | 448000 | 8.61 | 4.9 | 8630 | <LLD |
| 1495-B1(1) | Py | Py2 | 1.51 | 33.3 | 8.8 | <LLD | 640 | 0.12 | 0.101 | 0.13 | 36900 | 0.45 | 0.09 | 820 | <LLD |
| 1495-B1(1) | Py | Py2 | <LLD | 14.6 | 2.27 | <LLD | 299 | 0.28 | 0.184 | <LLD | 7270 | 2.6 | 0.105 | 728 | <LLD |
| 1508-B2 | Py | Py2 | 2.24 | 48.4 | 35.8 | 0.44 | 1179 | <LLD | <LLD | <LLD | 2240 | <LLD | <LLD | 6.3 | 3.1 |
| 1508-B2 | Py | Py2 | <LLD | 18 | 0.45 | 3.4 | 9 | 25 | 0.51 | 0.5 | 7600 | 3.5 | 0.21 | 415 | <LLD |
| 1508-B2 | Py | Py2 | 0.21 | 6.7 | 0.68 | <LLD | 141 | <LLD | 0.85 | 0.044 | 7930 | 0.335 | 0.094 | 416 | <LLD |
| 1495-B6(1) | Py | Py1 | <LLD | 25.8 | 5.7 | 1.4 | 1010 | 9.5 | 0.45 | 3.38 | 1500 | 0.154 | 0.59 | 24100 | 25.7 |
| 1495-B6(1) | Py | Py1 | <LLD | 5.1 | 0.82 | 0.88 | 124 | 3.51 | 0.4 | 4.9 | 1890 | 0.093 | 0.41 | 12500 | 27 |
| 1495-B6(1) | Py | Py1 | 14.3 | 10.3 | 0.96 | 3.5 | 160 | 4.8 | 0.69 | 1.61 | 864 | 0.163 | 0.6 | 12600 | 3300 |
| 1495-B6(1) | Py | Py1 | <LLD | 22.8 | 9.1 | 1.89 | 3100 | 1.05 | <LLD | 3.91 | 5290 | 0.025 | 1.24 | 9900 | 8 |
| 1495-B6(1) | Py | Py1 | 10.2 | 82.5 | 14.3 | 9.2 | 2580 | 0.135 | 0.187 | 0.28 | 11030 | <LLD | <LLD | 14800 | 1800 |
| 1495-B1(3) | Py | Py1 | 9.9 | 63.6 | 70.2 | <LLD | 20600 | <LLD | <LLD | <LLD | 7200 | <LLD | <LLD | 91 | 600 |
| 1495-B1(3) | Py | Py1 | <LLD | 259 | 19.6 | 19 | 2280 | 35 | 1.34 | 0.52 | 2470 | 1.42 | <LLD | 15700 | 16 |
| 1495-B1(3) | Py | Py1 | <LLD | 68.1 | 3.67 | 0.41 | 43 | <LLD | <LLD | 1.25 | 10200 | 0.093 | 1.19 | 670 | <LLD |
| 1495-B2(3) | Py | Py3 | 3.3 | 73 | 6.9 | <LLD | 4010 | <LLD | <LLD | 0.55 | 9880 | <LLD | <LLD | 1730 | 530 |
| 1495-B2(3) | Py | Py3 | 0.56 | 62 | 11.9 | <LLD | 1160 | <LLD | <LLD | <LLD | 9900 | <LLD | <LLD | 1720 | 36 |
| 1495-B2(3) | Py | Py3 | 2.14 | 67.8 | 8.4 | 0.25 | 5500 | <LLD | <LLD | <LLD | 3730 | <LLD | <LLD | 14900 | 420 |
| 1495-B2(3) | Py | Py3 | <LLD | 257 | 15.6 | <LLD | 1230 | <LLD | <LLD | <LLD | 5480 | <LLD | <LLD | 10100 | 14.1 |
| 1495-B2(3) | Py | Py3 | 0.59 | 57.5 | 2.74 | <LLD | 2400 | <LLD | 0.072 | <LLD | 4290 | <LLD | <LLD | 8200 | 66 |
| 1495-B2(3) | Py | Py3 | <LLD | 49.8 | 6.1 | <LLD | 1980 | <LLD | <LLD | <LLD | 4200 | <LLD | <LLD | 940 | 117 |
| 1495-B2(3) | Py | Py3 | 0.78 | 52.9 | 4 | <LLD | 4400 | <LLD | <LLD | <LLD | 7040 | <LLD | <LLD | 5400 | 102 |
| 1495-B1(1) | Cp |  | 3.4 | 8.4 | 20.3 | <LLD | 264000 | <LLD | 0.7 | <LLD | 7.7 | <LLD | <LLD | 1.79 | 700 |
| 1508-B2 | Cp |  | 4.3 | 48 | 16.9 | <LLD | 305000 | <LLD | 1 | <LLD | <LLD | <LLD | <LLD | 0.31 | 305 |
| 1508-B2 | Cp |  | 5.5 | 19.1 | 0.34 | 0.83 | 315000 | <LLD | 25 | 2.2 | 350 | 3.8 | 3.4 | 12.7 | 392 |
| 1495-B2(3) | Cp |  | <LLD | 19.8 | <LLD | <LLD | 373000 | <LLD | <LLD | <LLD | 156 | <LLD | <LLD | 7.7 | 100 |
| 1495-B2(3) | Cp |  | 10.8 | 30.3 | 35.9 | 0.33 | 356000 | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD | 1410 |
| 1495-B2(3) | Cp |  | 1.23 | 17.7 | 39.2 | <LLD | 442000 | <LLD | <LLD | <LLD | 116 | <LLD | <LLD | 18 | 183 |
| 1495-B2(3) | Cp |  | 3.34 | 4.85 | 93.3 | <LLD | 349000 | <LLD | 0.2 | <LLD | <LLD | <LLD | <LLD | <LLD | 347 |
| 1495-B2(3) | Cp |  | 16.1 | 6.9 | 91 | 0.25 | 357000 | <LLD | 0.1 | 0.39 | <LLD | <LLD | <LLD | <LLD | 2450 |
| 1495-B2(3) | Cp |  | 13 | 29.2 | 104 | <LLD | 400000 | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD | 0.63 | 1820 |
| 1495-B2(3) | Cp |  | 1.42 | 13.1 | 96 | <LLD | 362000 | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD | 264 |
| 1495-B6(1) | Cp |  | 20.1 | 15.5 | 32.2 | 0.3 | 316000 | <LLD | 2 | <LLD | 11.4 | 0.17 | 1.5 | 10 | 1410 |
| 1495-B6(1) | Cp |  | 13.5 | 21 | 25.8 | <LLD | 267000 | 0.34 | 2.8 | <LLD | 87 | 0.15 | 0.24 | 1.6 | 1470 |
| 1495-B6(1) | Cp |  | 11.3 | 5.74 | 20.5 | 0.38 | 301000 | 0.86 | 3.9 | <LLD | <LLD | 1.25 | 3.1 | <LLD | 2000 |
| 1495-B6(1) | Cp |  | 1.57 | 37.9 | 40.6 | 2.9 | 315000 | <LLD | 5.1 | <LLD | 3.8 | 0.07 | 0.17 | 0.3 | 147 |
| 1495-B1(3) | Cp |  | 4.4 | 28 | 15.6 | <LLD | 289000 | <LLD | <LLD | <LLD | 17.3 | <LLD | <LLD | 1.62 | 380 |
| 1495-B1(3) | Cp |  | 3.82 | 12.7 | 3.07 | <LLD | 286000 | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD | 0.66 | 378 |
| 1495-B1(3) | Cp |  | 20 | 29.4 | 2.22 | <LLD | 286000 | <LLD | <LLD | <LLD | 12.5 | <LLD | <LLD | 2.1 | 3500 |
| 1495-B1(3) | Cp |  | 26 | 28.8 | 0.91 | 0.7 | 286000 | <LLD | <LLD | <LLD | 14.5 | <LLD | <LLD | 0.65 | 2300 |
| 1495-B1(3) | Cp |  | 8.1 | 5.4 | 8.2 | <LLD | 326000 | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD | 0.62 | 517 |
| 1495-B6(1) | Mlr |  | <LLD | <LLD | <LLD | <LLD | 90 | <LLD | 0.145 | 3.8 |  | <LLD | 0.27 | 17.9 | <LLD |
| 1495-B6(1) | Mlr |  | <LLD | <LLD | <LLD | 0.58 | 60 | <LLD | 0.064 | 0.59 |  | 3.1 | 0.66 | 244 | <LLD |

**Abbreviations**: **Vio-violarite; Vl1- hypogene violarite; Vl2-supergene violarite; Py-pyrite; Cp-chalcopyrite; Pld-polydymite; Mlr-millerite**

Table S3 S, Ni, Cu and PGE analyses of mineralized whole rocks and in 100% sulfides in the Jinbaoshan deposit.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Lithology** | **Sample No.** | **S** | **Pd** | **Cu** | **Pt** | **Rh** | **Ru** | **Ni** | **Ir** | **As** | **Sulfide** | **As/S \*10-4** | **δ34S** | **Pd100** | **Cu100** | **Pt100** | **Rh100** | **Ru100** | **Ni100** | **Ir100** | **Source** |
| **wt%** | **ppb** | **wt%** | **ppb** | **ppb** | **ppb** | **wt%** | **ppb** | **ppm** | **wt%** |  | **‰** | **ppb** | **wt%** | **ppb** | **ppb** | **ppb** | **wt%** | **ppb** |  |
| Wehrlite | 1495-B2 | 1.5 | 8505 | 0.507 | 6255 | 355 | 131 | 0.606 | 482 | 2.4 | 3.578 | 1.600 | — | 237672 | 14.2 | 174796 | 9920 | 3660 | 14.1 | 13469 | Lu et al.2014 |
| Wehrlite | 1495-B3（2） | 0.47 | 2345 | 0.211 | 1940 | 111 | 44.3 | 0.266 | 147 | 1 | 1.177 | 2.128 | — | 199185 | 17.9 | 164784 | 9428 | 3762 | 14.1 | 12486 | Lu et al.2014 |
| Wehrlite | 1495-B1(1) | 0.1 | 138 | 0.00309 | 105 | 9.8 | 4.25 | 0.1465 | 10.7 | 0.7 | 0.215 | 7.000 | — | 64321 | 1.4 | 48940 | 4567 | 1980 | 21.7 | 4987 | Lu et al.2014 |
| Wehrlite | 1495-B1(2) | 0.13 | 171 | 0.00715 | 98.3 | 8.37 | 4.33 | 0.1525 | 11 | 0.3 | 0.278 | 2.308 | — | 61538 | 2.6 | 35375 | 3012 | 1558 | 18.9 | 3958 | Lu et al.2014 |
| Wehrlite | 1495-B1(3) | 0.14 | 330 | 0.0146 | 248 | 15.2 | 6.75 | 0.163 | 18.9 | 0.4 | 0.310 | 2.857 | — | 106610 | 4.7 | 80119 | 4910 | 2180 | 20.4 | 6105 | Lu et al.2014 |
| Wehrlite | 1508-B1 | 0.12 | 67 | 0.00529 | 54.2 | 4.02 | 1.04 | 0.149 | 3.37 | 0.6 | 0.255 | 5.000 | — | 26225 | 2.1 | 21215 | 1573 | 407 | 19.2 | 1319 | Lu et al.2014 |
| Wehrlite | 1508-B6 | 0.082 | 313 | 0.0008 | 259 | 16.9 | 7.24 | 0.1595 | 18.6 | 0.7 | 0.185 | 8.537 | — | 168826 | 0.4 | 139699 | 9115 | 3905 | 32.1 | 10032 | Lu et al.2014 |
| Wehrlite | 1508-B7 | 0.087 | 52.8 | 0.0021 | 35.3 | 3.2 | 1.06 | 0.1265 | 2.74 | 0.2 | 0.179 | 2.299 | — | 29538 | 1.2 | 19748 | 1790 | 593 | 14.8 | 1532 | Lu et al.2014 |
| Wehrlite | JB-38 | 0.44 | 530 | 0.0275 | 439 | 25.1 | 7.15 | 0.0738 | 15.9 | — | 1.16 | — | — | 45689 | 2.4 | 37844 | 2163 | 616 | 2.1 | 1370 | Wang et al. 2010, 2018 |
| Wehrlite | JB-39 | 0.89 | 786 | 0.1261 | 564 | 35.6 | 10.13 | 0.0835 | 47.2 | — | 2.34 | — | 6.3 | 33589 | 5.4 | 24102 | 1521 | 432 | 1.4 | 2017 | Wang et al. 2010, 2018 |
| Wehrlite | JB-40 | 4.28 | 3696 | 0.0508 | 654 | 133 | 38.7 | 0.1926 | 138 | — | 11.26 | — | 6.4 | 32824 | 0.5 | 5808 | 1181 | 343 | 1.3 | 1225 | Wang et al. 2010, 2018 |
| Wehrlite | JB-41 | 4.31 | 1593 | 0.258 | 987 | 116 | 37.3 | 0.1904 | 55.2 | — | 11.34 | — | 4.6 | 14047 | 2.3 | 8703 | 1022 | 328 | 1.2 | 486 | Wang et al. 2010, 2018 |
| Wehrlite | JB-42 | 4.36 | 1498 | 0.2902 | 704 | 121 | 38.9 | 0.1824 | 51.6 | — | 11.47 | — | 4.6 | 13060 | 2.5 | 6137 | 1054 | 339 | 1.2 | 449 | Wang et al. 2010, 2018 |
| Wehrlite | JBS14-1508-B1 | 0.096 | 115 | 0.00071 | 78.8 | 6.99 | 2.17 | 0.1415 | 8.74 | — | 0.202 | — | — | 56913 | 0.4 | 38997 | 3459 | 1073 | 20.5 | 4325 | Lu and He. 2018 |
| Wehrlite | JBS14-1508-B2 | 0.09 | 67.2 | 0.000492 | 68.1 | 3.82 | 2.15 | 0.1673 | 4.96 | — | 0.204 | — | 3.1 | 32917 | 0.2 | 33358 | 1871 | 1053 | 33.0 | 2429 | Lu and He. 2018 |
| Wehrlite | JBS14-B1 | 0.033 | 61.2 | 0.00121 | 48.8 | 4.21 | 1.3 | 0.1227 | 5.24 | — | 0.075 | — | 1.5 | 81600 | 1.6 | 65066 | 5613 | 1733 | 30.3 | 6986 | Lu and He. 2018 |
| Wehrlite | JBS14-B2 | 0.043 | 56.3 | 0.000931 | 43 | 4.05 | 1.23 | 0.1217 | 4.98 | — | 0.093 | — | — | 60700 | 1.0 | 46360 | 4366 | 1326 | 23.4 | 5369 | Lu and He. 2018 |
| Wehrlite | JBS14-1339-B3 | 0.52 | 2006 | 0.1297 | 1374 | 91.7 | 38.3 | 0.2706 | 128 | — | 1.192 | — | 1.3 | 168288 | 10.9 | 115268 | 7693 | 3213 | 14.3 | 10738 | Lu and He. 2018 |

Table S4 Sulfur isotope analyses of sulfides and country rocks in the Jinbaoshan deposit. The data are from Tao et al. (2007), Wang et al. (2018), and Lu and He (2018).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Rock/Ore type** | **Sample** | **Mineral** | **δ34S (‰)** | **Reference** |
| Disseminated | JB8222a | Pyrrhotite | 1.1 | Tao et al. 2007 |
| Disseminated | JB8222b | Pyrrhotite | 1.6 |
| Disseminated | JB2H22a | Pyrrhotite | 1.9 |
| Disseminated | JB2H22b | Pyrrhotite | 2 |
| Disseminated | JB2H22c | Pyrrhotite | 2 |
| Disseminated | JB2H22d | Pyrrhotite | 2 |
| Disseminated | JB14523a | Pyrrhotite | 1.2 |
| Disseminated | JB14523b | Pyrrhotite | 1.9 |
| Disseminated | JB14524a | Pyrrhotite | 1.7 |
| Disseminated | JB14524b | Pyrrhotite | 1.5 |
| Vein | JB8222 | Chalcopyrite | 0.6 |
| Vein | JB14524e | Chalcopyrite | 2.8 |
| Vein | JB14523c | Chalcopyrite | 1.6 |
| Vein | JB14523d | Pyrite | 2.1 |
| Disseminated | JB32227 | Pyrite | 0.6 |
| Breccia | JB144a | Pyrite | 6.5 |
| Breccia | Jb144b | Pyrite | 5.4 |
| Gneiss | 5ZK308-6 | whole rock | 4.8 | Lu and He. 2018 |
| Gabbro | 5ZK308-8 | whole rock | 4.8 |
| Wehrlite | JBS14-1339-B3 | whole rock | 1.3 |
| Wehrlite | JBS14-1508-B2 | whole rock | 5 |
| Wehrlite | JBS14-1508-B3 | whole rock | 1.5 |
| wehrlite | 1495-B3(1) | whole rock | 2.1 |
| anhydrite | JBS15-4 | whole rock | 16.3 |
| lamprophyre | JBS15-6 | whole rock | 5.1 |
| wehrlite | JB-39 | Cpy | 5.8 | Wang et al. 2018 |
| wehrlite | JB-39 | Py | 6.7 |
| wehrlite | JB-40 | Cpy | 6.1 |
| wehrlite | JB-40 | Py | 6.7 |
| wehrlite | JB-41 | Cpy | 4.9 |
| wehrlite | JB-41 | Py | 4.4 |
| wehrlite | JB-42 | Cpy | 4.4 |
| wehrlite | JB-42 | Py | 4.9 |