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| Table 1. Experimental partitioning in the Fe-Ni-S system. All errors are ± 2σ. | | | | | | |
| Run # | CH3-2 | CH2-2 | S36-2 | S32-2 | S32-4 | S32-5 |
| Temperature (°C) | 800 | 850 | 850 | 850 | 850 | 850 |
| Duration (days) | 2 | 3 | 3 | 7 | 4 | 1 |
| Solid metal  Fe (wt %)  Ni (wt %)  Co (ppm)  Cu (ppm)  Zn (ppm)  Ga (ppm)  Ge (ppm)  As (ppm)  Mo (ppm)  Ru (ppm)  Rh (ppm)  Pd (ppm)  Ag (ppm)  Sn (ppm)  Sb (ppm)  W (ppm)  Re (ppm)  Os (ppm)  Ir (ppm)  Pt (ppm)  Au (ppm)  Pb (ppm)  Bi (ppm) | 45.4 ± 0.6  53.4 ± 0.6  1372 ± 312  237 ± 20  45 ± 12  132 ± 31  —  475 ± 102  227 ± 27  —  500 ± 417  193 ± 44  226 ± 106  —  —  55 ± 13  307 ± 799  385 ± 674  749 ± 991  —  566 ± 141  —  — | 57.1 ± 1.3  42.0 ± 1.3  1265 ± 41  240 ± 30  42 ± 28  268 ± 38  —  684 ± 108  364 ± 38  —  566 ± 486  294 ± 15  —  3262 ± 1521  2610 ± 361  46 ± 43  47 ± 71  82 ± 56  726 ± 1992  449 ± 450  908 ± 64  —  — | 55.1 ± 0.6  43.8 ± 0.6  892 ± 136  251 ± 52  28 ± 16  113 ± 32  182 ± 48  415 ± 81  212 ± 38  225 ± 182  185 ± 84  152 ± 30  —  —  —  86 ± 40  2813 ± 9547  260 ± 748  71 ± 171  307 ± 732  398 ± 103  —  — | 55.1 ± 0.8  44.1 ± 1.5  1095 ± 92  314 ± 20  107 ± 13  135 ± 8  412 ± 136  399 ± 36  289 ± 10  316 ± 85  262 ± 35  148 ± 8  0.78 ± 0.24  323 ± 12  304 ± 12  144 ± 25  94 ± 176  116 ± 125  111 ± 109  233 ± 112  —  —  0.10 ± 0.06 | 54.7 ± 0.9  45.4 ± 0.5  1018 ± 40  325 ± 39  133 ± 29  156 ± 22  473 ± 97  406 ± 46  247 ± 17  325 ± 39  265 ± 16  158 ± 18  0.63 ± 0.12  418 ± 23  271 ± 28  139 ± 8  63 ± 93  100 ± 133  104 ± 274  187 ± 97  301 ± 22  0.11 ± 0.13  — | 53.7 ± 1.1  45.6 ± 1.9  1019 ± 114  375 ± 279  91 ± 68  127 ± 30  —  296 ± 82  214 ± 10  —  184 ± 140  121 ± 15  —  426 ± 66  208 ± 27  102 ± 40  17 ± 38  —  472 ± 1908  —  275 ± 104  —  — |
| Liquid metal  Fe (wt %)  Ni (wt %)  S (wt %)  Co (ppm)  Cu (ppm)  Zn (ppm)  Ga (ppm)  Ge (ppm)  As (ppm)  Mo (ppm)  Ru (ppm)  Rh (ppm)  Pd (ppm)  Ag (ppm)  Sn (ppm)  Sb (ppm)  W (ppm)  Re (ppm)  Os (ppm)  Ir (ppm)  Pt (ppm)  Au (ppm)  Pb (ppm)  Bi (ppm) | 41.5 ± 2.0  27.3 ± 2.5  29.8 ± 1.2  410 ± 65  756 ± 195  75 ± 44  17 ± 73  13.3 ± 3.1  64 ± 21  174 ± 37  6.4 ± 4.7  6.3 ± 5.7  38 ± 20  22845 ± 17124  —  —  —  0.15 ± 0.07  0.05 ± 0.06  0.112 ± 0.108  0.65 ± 0.61  41 ± 30  —  — | 50.4 ± 2.0  18.7 ± 3.5  29.7 ± 2.2  320 ± 28  868 ± 414  29.3 ± 5.8  41 ± 33  14.9 ± 4.0  70 ± 27  191 ± 7  7.1 ± 4.0  6.9 ± 5.7  53 ± 13  5779 ± 3879  761 ± 481  1307 ± 814  0.93 ± 0.54  0.25 ± 0.17  0.10 ± 0.05  0.23 ± 0.11  1.5 ± 1.1  63 ± 22  —  — | 49.0 ± 2.1  20.2 ± 3.0  29.6 ± 1.8  262 ± 36  1021 ± 284  62 ± 6  13.3 ± 2.6  9.6 ± 0.6  46 ± 8  133 ± 14  2.9 ± 1.0  2.5 ± 1.4  27 ± 11  9272 ± 2923  —  —  1.7 ± 0.7  0.11 ± 0.04  0.06 ± 0.02  0.09 ± 0.04  0.43 ± 0.11  26 ± 11  —  — | 47.4 ± 1.3  20.8 ± 1.4  30.3 ± 0.5  321 ± 66  1281 ± 131  351 ± 140  4.6 ± 3.5  17.9 ± 4.9  48 ± 4  212 ± 104  2.9 ± 2.8  3.8 ± 2.8  42 ± 5  288 ± 66  111 ± 20  145 ± 32  —  0.08 ± 0.07  0.05 ± 0.05  0.07 ± 0.07  0.37 ± 0.29  39 ± 15  409 ± 186  341 ± 158 | 47.8 ± 1.1  21.4 ± 1.2  30.0 ± 0.4  270 ± 63  1367 ± 302  314 ± 91  1.7 ± 1.6  14.4 ± 3.9  39 ± 7  140 ± 42  2.4 ± 1.9  2.4 ± 1.9  27 ± 20  260 ± 93  159 ± 47  143 ± 48  2.8 ± 2.3  0.04 ± 0.02  0.03 ± 0.02  0.05 ± 0.02  0.19 ± 0.14  23 ± 11  477 ± 245  443 ± 212 | 45.5 ± 1.1  23.4 ± 1.3  29.7 ± 0.6  316 ± 103  1422 ± 288  68 ± 29  1.4 ± 2.6  12.3 ± 3.7  49 ± 13  147 ± 44  —  —  48 ± 20  320 ± 181  209 ± 65  145 ± 51  —  0.02 ± 0.02  —  0.03 ± 0.08  —  30 ± 20  697 ± 426  597 ± 349 |
| Troilite  Fe (wt %)  Ni (wt %)  S (wt %)  Co (ppm)  Cu (ppm)  Zn (ppm)  Ga (ppm)  Ge (ppm)  As (ppm)  Mo (ppm)  Ru (ppm)  Rh (ppm)  Pd (ppm)  Ag (ppm)  Sn (ppm)  Sb (ppm)  W (ppm)  Re (ppm)  Os (ppm)  Ir (ppm)  Pt (ppm)  Au (ppm)  Pb (ppm)  Bi (ppm) | 61.2 ± 0.4  2.58 ± 0.10  36.1 ± 0.3  210 ± 11  159 ± 7  101 ± 9  0.2 ± 0.2  12.1 ± 2.2  —  379 ± 22  3.2 ± 1.6  —  —  105 ± 62  —  —  0.25 ± 0.12  0.2 ± 0.5  0.2 ± 0.4  —  —  —  —  — | 62.1 ± 0.5  1.69 ± 0.10  36.1 ± 0.3  150 ± 13  176 ± 10  29 ± 17  —  10.3 ± 1.8  —  382 ± 69  2.4 ± 0.2  —  —  59 ± 56  —  —  —  —  4 ± 11  —  2 ± 4  —  —  — | 62.2 ± 0.6  1.8 ± 0.3  35.8 ± 0.5  121 ± 6  190 ± 3  64 ± 5  2 ± 3  8.8 ± 1.2  —  266 ± 17  —  0.11 ± 0.06  0.11 ± 0.04  129 ± 98  —  —  —  —  0.006 ± 0.010  0.009 ± 0.023  0.013 ± 0.020  0.48 ± 0.12  —  — | 60.9 ± 1.2  1.79 ± 0.08  36.7 ± 0.7  113 ± 5  218 ± 10  302 ± 22  6 ± 9  16.5 ± 1.5  —  315 ± 12  0.28 ± 0.13  0.06 ± 0.02  0.13 ± 0.09  2.9 ± 0.8  0.37 ± 0.30  0.4 ± 0.8  —  —  0.006 ± 0.007  —  —  —  0.6 ± 1.3  0.9 ± 1.9 | 60.8 ± 1.0  1.84 ± 0.14  36.4 ± 2.6  124 ± 38  239 ± 112  353 ± 209  8 ± 14  16.0 ± 5.9  5 ± 9  302 ± 182  —  —  —  2.6 ± 1.6  —  2 ± 6  —  0.004 ± 0.006  0.7 ± 2.0  0.002 ± 0.002  0.11 ± 0.40  —  0.3 ± 0.5  0.4 ± 0.5 | 60.1 ± 2.5  2.3 ± 1.4  36.8 ± 0.8  125 ± 11  249 ± 25  80 ± 8  3.3 ± 1.9  13.3 ± 2.1  0.6 ± 1.1  305 ± 56  —  —  0.12 ± 0.03  2.7 ± 0.9  —  0.2± 0.4  —  0.006 ± 0.010  —  —  —  0.48 ± 0.42  0.6 ± 1.8  0.6 ± 1.1 |
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| Table 1. *Continued.* Experimental partitioning in the Fe-Ni-S system. All errors are ± 2σ. | | | |
| Run # | N12-1 | N8-3 | N8-4 |
| Temperature (°C) | 900 | 925 | 925 |
| Duration (days) | 2 | 6 | 3 |
| Solid metal  Fe (wt %)  Ni (wt %)  Co (ppm)  Cu (ppm)  Zn (ppm)  Ga (ppm)  Ge (ppm)  As (ppm)  Mo (ppm)  Ru (ppm)  Rh (ppm)  Pd (ppm)  Ag (ppm)  Sn (ppm)  Sb (ppm)  W (ppm)  Re (ppm)  Os (ppm)  Ir (ppm)  Pt (ppm)  Au (ppm)  Pb (ppm)  Bi (ppm) | 75.0 ± 1.4  23.1 ± 0.8  645 ± 43  156 ± 12  20 ± 8  149 ± 18  213 ± 52  305 ± 22  283 ± 27  173 ± 50  189 ± 39  129 ± 12  0.48 ± 0.37  396 ± 60  183 ± 12  147 ± 23  14 ± 22  —  20 ± 25  —  232 ± 13  0.3 ± 1.0  0.4 ± 1.2 | 84.4 ± 1.0  15.4 ± 0.3  496 ± 53  121 ± 12  42 ± 14  158 ± 29  330 ± 93  94 ± 14  313 ± 23  163 ± 49  239 ± 31  157 ± 15  0.32 ± 0.07  133 ± 18  146 ± 21  293 ± 25  57 ± 64  —  44 ± 61  186 ± 111  379 ± 71  0.02 ± 0.02  0.021 ± 0.008 | 81.9 ± 0.8  15.7 ± 0.3  589 ± 91  135 ± 10  44 ± 7  155 ± 18  —  117 ± 18  314 ± 42  272 ± 128  250 ± 32  199 ± 27  0.37 ± 0.12  168 ± 29  182 ± 29  266 ± 42  96 ± 202  75 ± 120  79 ± 166  364 ± 359  250 ± 57  0.0643 ± 0.0002  — |
| Liquid metal  Fe (wt %)  Ni (wt %)  S (wt %)  Co (ppm)  Cu (ppm)  Zn (ppm)  Ga (ppm)  Ge (ppm)  As (ppm)  Mo (ppm)  Ru (ppm)  Rh (ppm)  Pd (ppm)  Ag (ppm)  Sn (ppm)  Sb (ppm)  W (ppm)  Re (ppm)  Os (ppm)  Ir (ppm)  Pt (ppm)  Au (ppm)  Pb (ppm)  Bi (ppm) | 58.0 ± 1.3  8.7 ± 1.9  30.6 ± 1.5  151 ± 33  753 ± 483  154 ± 46  2.7 ± 1.9  —  33 ± 13  124 ± 60  0.88 ± 0.41  —  35 ± 13  120 ± 118  192± 30  100 ± 21  4.3 ± 1.2  0.031 ± 0.015  —  0.033 ± 0.029  —  29 ± 14  186 ± 177  147 ± 130 | 60.8 ± 0.9  7.7 ± 1.7  30.2 ± 1.8  112 ± 16  997 ± 145  260 ± 37  3.6 ± 0.9  18 ± 4  12.3 ± 1.7  93 ± 22   * 1. ± 0.2   3.3 ± 1.0  62 ± 11  285 ± 188  118 ± 10  151 ± 22  2.9 ± 0.8  0.09 ± 0.18  —  0.04 ± 0.02  0.53 ± 0.17  51 ± 16  225 ± 144  240 ± 139 | 58.4 ± 1.1  7.1 ± 1.6  31.8 ± 1.4  110 ± 22  1272 ± 638  425 ± 407  1.9 ± 1.7  24 ± 17  9 ± 9  106 ± 71  0.69 ± 0.68  —  51 ± 21  354 ± 139  125 ± 15  160 ± 31  2.4 ± 1.3  0.04 ± 0.10  0.03 ± 0.06  0.04 ± 0.05  0.3 ± 0.6  —  263 ± 79  337 ± 107 |
| Troilite  Fe (wt %)  Ni (wt %)  S (wt %)  Co (ppm)  Cu (ppm)  Zn (ppm)  Ga (ppm)  Ge (ppm)  As (ppm)  Mo (ppm)  Ru (ppm)  Rh (ppm)  Pd (ppm)  Ag (ppm)  Sn (ppm)  Sb (ppm)  W (ppm)  Re (ppm)  Os (ppm)  Ir (ppm)  Pt (ppm)  Au (ppm)  Pb (ppm)  Bi (ppm) | 61.5 ± 0.8  1.0 ± 0.4  36.2 ± 0.7  42 ± 25  144 ± 56  95 ± 73  0.2 ± 0.3  —  1.1 ± 2.8  174 ± 158  0.08 ± 0.06  0.03 ± 0.02  —  —  —  3 ± 9  0.50 ± 0.16  —  —  —  —  —  3 ± 12  3 ± 10 | 62.6 ± 0.6  0.62 ± 0.07  36.3 ± 0.4  28 ± 2  152 ± 13  262 ± 47  0.7 ± 2.0  19 ± 10  —  171 ± 25  0.08 ± 0.05  0.05 ± 0.04  —  —  —  0.5 ± 0.9  0.89 ± 0.37  —  —  0.0010 ± 0.0006  —  —  2 ± 6  1.1 ± 3.0 | 61.3 ± 0.8  0.61 ± 0.07  35.7 ± 0.9  —  143 ± 98  229 ± 204  4 ± 10  17 ± 14  1.62 ± 1.56  132 ± 123  —  —  —  —  —  3 ± 8  —  0.12 ± 0.37  0.4 ± 1.2  0.11 ± 0.23  0.7 ± 2.5  —  2 ± 6  3 ± 7 |
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| Table 2. Partitioning coefficients in the Fe-Ni-S system. All errors are ± 2σ. | | | |
| Element | D(solid metal/liquid metal) | D(solid metal/troilite) | D(troilite/liquid metal) |
| Co  Ni  Cu  Zn  Ga  Ge  As  Mo  Ru  Rh  Pd  Ag  Sn  Sb  W  Re  Os  Ir  Pt  Au  Pb  Bi | 3.9 ± 0.3  2.11 ± 0.08  0.22 ± 0.02  0.48 ± 0.13  39 ± 12  23 ± 4  8.5 ± 0.8  1.9 ± 0.2  149 ± 42  79 ± 24  4.0 ± 0.5  0.0029 ± 0.0011  2.1 ± 0.2  1.6 ± 0.2  71 ± 15  2824 (2637, 6389)a  858 ± 728  2837 (2218, 3958)a  625 ± 328  8.2 ± 1.8  0.00025 ± 0.00007  0.00018 ± 0.00011 | 9.9 ± 0.6  23.7 ± 0.7  1.29 ± 0.08  0.45 ± 0.10  39 ± 24  23 ± 5  72 ± 70  0.99 ± 0.07  1702 ± 712  4366 ± 1318  1159 ± 282  0.73 ± 0.40  862 ± 702  445 (389, 515)a  288 ± 71  6543 (5767, 11460)a  12429 (12408, 23363)a  32974 (32284, 48248)a  7242 (6949, 19094)a  755 ± 265  0.15 ± 0.25b  0.09 ± 0.20b | 0.41 ± 0.03  0.089 ± 0.005  0.18 ± 0.02  1.03 ± 0.13  1.5 ± 1.6b  0.93 ± 0.11  0.10 ± 0.10b  2.0 ± 0.2  0.25 ± 0.11  0.024 ± 0.013  0.0032 ± 0.0011  0.0096 ± 0.0027  0.0034 ± 0.0028  0.010 ± 0.014b  0.20 ± 0.07  0.8 ± 1.8b  13 ± 24b  0.023 ± 0.018  0.7 ± 1.6b  0.0183 ± 0.009  0.005 ±0.008b  0.004 ± 0.007b |
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| aWeighted average from all runs with sufficient detection to determine a coefficient, but none of the runs produced coefficients statistically significant within 2σ. Errors are listed as (-2σ, +2σ). The lower bound is determined from the run with the lowest calculated coefficient, and the upper bound is given by the standard error of the mean, which is lower than the highest calculated coefficient from all runs.  bCalculated the same as for (a), but the lowest calculated coefficient out of all runs contributing to the average was much less than 1, so the standard error of the mean was used for both lower and upper bounds. | | | |

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| Table 3. Partitioning coefficients calculated from model parameterizations of Chabot et al. (2017). | |
| Element | D(solid metal/liquid metal)a |
| Co  Ni  Cu  Zn  Ga  Ge  As  Mo  Ru  Rh  Pd  Ag  Sn  Sb  W  Re  Os  Ir  Pt  Au  Pb  Bi  Bi (new) | 6.7 (0.4, 0.8)  1.88 (0.05, 0.08)  0.093 (0.008, 0.008)  0.147 (0.009, 0.019)  63 (11, 28)  74 (14, 30)  4.5 (0.4, 0.8)  5.2 (0.4, 0.6)  335 (117, 317)  54 (9, 18)  1.61 (0.06, 0.09)  0.0018 (0.0012, 0.0004)  0.48 (0.02, 0.04)  0.311 (0.012, 0.017)  565 (200, 682)  6074 (2056, 9572)  3344 (2179, 11284)  5121 (1715, 7900)  503 (131, 280)  4.7 (0.4, 0.8)  8.4E-05 (4.8E-05, 7.4E-05)  1.5E-07 (1.1E-07, 2.8E-07)  8.3E-05 (3.3E-05, 4.5E-05) |
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| aErrors listed as (-2σ, +2σ) and derived from using the range of S contents and their associated errors in the liquid metal for the experimental runs (given in Table 1) that contributed to each weighted average D value (given in Table 2). | |

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| Table A1. Summary of meteorite data in the literature with measured trace elemental abundances in both troilite and metal. When applicable, errors listed as ± 1σ. | | | | | | | | |
| Element | Pb | Ag | Cu | Zn | Sb | Mo | Sn | Ni |
| Lunning et al. (2019)  LEW 86211,1  LEW 86211,11  LEW 86498,8  Chen & Wasserburg (1990)  Cape York1  Derrick Peak  Gibeon  Grant1,2  Mundrabilla  Santa Clara2  Chen & Wasserburg (1987)  Bogou  Nantan1  Hermann et al. (1971)  Arva Magura  Brownfield  Canyon Diablo  Mount Joy  Xiquipilco | —  —  —  0.77-0.92  —  —  —  —  —  0.0048  0.11-0.12  —  —  —  —  — | —  —  —  0.061-0.074  0.024  0.018-0.18  0.021-0.024  0.13  0.27  —  —  —  —  —  —  — | <0.5  0.4 ± 0.6  0.67 ± 2.3  —  —  —  —  —  —  —  —  —  —  —  —  — | —  —  —  —  —  —  —  —  —  —  —  3.6  0.44  66  0.039  98 | —  —  —  —  —  —  —  —  —  —  —  >48  4.8  >51  1.5  4.1 | —  —  —  —  —  —  —  —  —  —  —  —  2.5  2.6  1.7  2.8 | —  —  —  —  —  —  —  —  —  —  —  >6  —  5.7  —  >7.2 | 14.7 ± 7.7  16.1 ± 8.2  18.3 ± 12.5  —  —  —  —  —  —  —  —  —  —  86  —  817 |

1Includes data from Chen and Wasserburg (1983).

2Includes data from Kaiser and Wasserburg (1983).

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| Table A1. *(Continued).* Summary of meteorite data in the literature with measured trace elemental abundances in both troilite and metal. When applicable, errors listed as ± 1σ. | | | | | | | | |
| Element | Co | Pd | Au | As | Ru | Os | Re | Ir |
| Lunning et al. (2019)  LEW 86211,1  LEW 86211,11  LEW 86498,8  Chen & Wasserburg (1990)  Cape York1  Derrick Peak  Gibeon  Grant1,2  Mundrabilla  Santa Clara2  Chen & Wasserburg (1987)  Bogou  Nantan  Hermann et al. (1971)  Arva Magura  Brownfield  Canyon Diablo  Mount Joy  Xiquipilco | >33.5  6.8 ± 0.7  6.7 ± 0.6  —  —  —  —  —  —  —  —  —  —  29  —  47 | —  —  —  1325-1346  780  336-1350  136-139  38  1.75  —  —  —  —  —  —  — | —  —  —  —  —  —  —  —  —  —  —  575  88  212  96  668 | —  —  —  —  —  —  —  —  —  —  —  >16300  >4400  2673  39  1700 | —  —  —  —  —  —  —  —  —  —  —  —  11.9  36  —  253 | —  —  —  —  —  —  —  —  —  —  —  —  12.1  >286  >3  >147 | —  —  —  —  —  —  —  —  —  —  —  >156  53  >180  24  1.7 | —  —  —  —  —  —  —  —  —  —  —  >136  >657  143  >35  >2800 |

1Includes data from Chen and Wasserburg (1983).

2Includes data from Kaiser and Wasserburg (1983).