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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 metalFe (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 ± 0.653.4 ± 0.61372 ± 312237 ± 2045 ± 12132 ± 31—475 ± 102227 ± 27—500 ± 417193 ± 44226 ± 106——55 ± 13307 ± 799385 ± 674749 ± 991—566 ± 141—— | 57.1 ± 1.342.0 ± 1.31265 ± 41240 ± 3042 ± 28268 ± 38—684 ± 108364 ± 38—566 ± 486294 ± 15—3262 ± 15212610 ± 36146 ± 4347 ± 7182 ± 56726 ± 1992449 ± 450908 ± 64—— | 55.1 ± 0.643.8 ± 0.6892 ± 136251 ± 5228 ± 16113 ± 32182 ± 48415 ± 81212 ± 38225 ± 182185 ± 84152 ± 30———86 ± 402813 ± 9547260 ± 74871 ± 171307 ± 732398 ± 103—— | 55.1 ± 0.844.1 ± 1.51095 ± 92314 ± 20107 ± 13135 ± 8412 ± 136399 ± 36289 ± 10316 ± 85262 ± 35148 ± 80.78 ± 0.24323 ± 12304 ± 12144 ± 2594 ± 176116 ± 125111 ± 109233 ± 112——0.10 ± 0.06 | 54.7 ± 0.945.4 ± 0.51018 ± 40325 ± 39133 ± 29156 ± 22473 ± 97406 ± 46247 ± 17325 ± 39265 ± 16158 ± 180.63 ± 0.12418 ± 23271 ± 28139 ± 863 ± 93100 ± 133104 ± 274187 ± 97301 ± 220.11 ± 0.13— | 53.7 ± 1.145.6 ± 1.91019 ± 114375 ± 27991 ± 68127 ± 30—296 ± 82214 ± 10—184 ± 140121 ± 15—426 ± 66208 ± 27102 ± 4017 ± 38—472 ± 1908—275 ± 104—— |
| Liquid metalFe (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 ± 2.027.3 ± 2.529.8 ± 1.2410 ± 65756 ± 19575 ± 4417 ± 7313.3 ± 3.164 ± 21174 ± 376.4 ± 4.76.3 ± 5.738 ± 2022845 ± 17124———0.15 ± 0.070.05 ± 0.060.112 ± 0.1080.65 ± 0.6141 ± 30—— | 50.4 ± 2.018.7 ± 3.529.7 ± 2.2320 ± 28868 ± 41429.3 ± 5.841 ± 3314.9 ± 4.070 ± 27191 ± 77.1 ± 4.06.9 ± 5.753 ± 135779 ± 3879761 ± 4811307 ± 8140.93 ± 0.540.25 ± 0.170.10 ± 0.050.23 ± 0.111.5 ± 1.163 ± 22—— | 49.0 ± 2.120.2 ± 3.029.6 ± 1.8262 ± 361021 ± 28462 ± 613.3 ± 2.69.6 ± 0.646 ± 8133 ± 142.9 ± 1.02.5 ± 1.427 ± 119272 ± 2923——1.7 ± 0.70.11 ± 0.040.06 ± 0.020.09 ± 0.040.43 ± 0.1126 ± 11—— | 47.4 ± 1.320.8 ± 1.430.3 ± 0.5321 ± 661281 ± 131351 ± 1404.6 ± 3.517.9 ± 4.948 ± 4212 ± 1042.9 ± 2.83.8 ± 2.842 ± 5288 ± 66111 ± 20145 ± 32—0.08 ± 0.070.05 ± 0.050.07 ± 0.070.37 ± 0.2939 ± 15409 ± 186341 ± 158 | 47.8 ± 1.121.4 ± 1.230.0 ± 0.4270 ± 631367 ± 302314 ± 911.7 ± 1.614.4 ± 3.939 ± 7140 ± 422.4 ± 1.92.4 ± 1.927 ± 20260 ± 93159 ± 47143 ± 482.8 ± 2.30.04 ± 0.020.03 ± 0.020.05 ± 0.020.19 ± 0.1423 ± 11477 ± 245443 ± 212 | 45.5 ± 1.123.4 ± 1.329.7 ± 0.6316 ± 1031422 ± 28868 ± 291.4 ± 2.612.3 ± 3.749 ± 13147 ± 44——48 ± 20320 ± 181209 ± 65145 ± 51—0.02 ± 0.02—0.03 ± 0.08—30 ± 20697 ± 426597 ± 349 |
| TroiliteFe (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 ± 0.42.58 ± 0.1036.1 ± 0.3210 ± 11159 ± 7101 ± 90.2 ± 0.212.1 ± 2.2—379 ± 223.2 ± 1.6——105 ± 62——0.25 ± 0.120.2 ± 0.50.2 ± 0.4————— | 62.1 ± 0.51.69 ± 0.1036.1 ± 0.3150 ± 13176 ± 1029 ± 17—10.3 ± 1.8—382 ± 692.4 ± 0.2——59 ± 56————4 ± 11—2 ± 4——— | 62.2 ± 0.61.8 ± 0.335.8 ± 0.5121 ± 6190 ± 364 ± 52 ± 38.8 ± 1.2—266 ± 17—0.11 ± 0.060.11 ± 0.04129 ± 98————0.006 ± 0.0100.009 ± 0.0230.013 ± 0.0200.48 ± 0.12—— | 60.9 ± 1.21.79 ± 0.0836.7 ± 0.7113 ± 5218 ± 10302 ± 226 ± 916.5 ± 1.5—315 ± 120.28 ± 0.130.06 ± 0.020.13 ± 0.092.9 ± 0.80.37 ± 0.300.4 ± 0.8——0.006 ± 0.007———0.6 ± 1.30.9 ± 1.9 | 60.8 ± 1.01.84 ± 0.1436.4 ± 2.6124 ± 38239 ± 112353 ± 2098 ± 1416.0 ± 5.95 ± 9302 ± 182———2.6 ± 1.6—2 ± 6—0.004 ± 0.0060.7 ± 2.00.002 ± 0.0020.11 ± 0.40—0.3 ± 0.50.4 ± 0.5 | 60.1 ± 2.52.3 ± 1.436.8 ± 0.8125 ± 11249 ± 2580 ± 83.3 ± 1.913.3 ± 2.10.6 ± 1.1305 ± 56——0.12 ± 0.032.7 ± 0.9—0.2± 0.4—0.006 ± 0.010———0.48 ± 0.420.6 ± 1.80.6 ± 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 metalFe (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 ± 1.423.1 ± 0.8645 ± 43156 ± 1220 ± 8149 ± 18213 ± 52305 ± 22283 ± 27173 ± 50189 ± 39129 ± 120.48 ± 0.37396 ± 60183 ± 12147 ± 2314 ± 22—20 ± 25—232 ± 130.3 ± 1.00.4 ± 1.2 | 84.4 ± 1.015.4 ± 0.3496 ± 53121 ± 1242 ± 14158 ± 29330 ± 9394 ± 14313 ± 23163 ± 49239 ± 31157 ± 150.32 ± 0.07133 ± 18146 ± 21293 ± 2557 ± 64—44 ± 61186 ± 111379 ± 710.02 ± 0.020.021 ± 0.008 | 81.9 ± 0.815.7 ± 0.3589 ± 91135 ± 1044 ± 7155 ± 18—117 ± 18314 ± 42272 ± 128250 ± 32199 ± 270.37 ± 0.12168 ± 29182 ± 29266 ± 4296 ± 20275 ± 12079 ± 166364 ± 359250 ± 570.0643 ± 0.0002— |
| Liquid metalFe (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 ± 1.38.7 ± 1.930.6 ± 1.5151 ± 33753 ± 483154 ± 462.7 ± 1.9—33 ± 13124 ± 600.88 ± 0.41—35 ± 13120 ± 118192± 30100 ± 214.3 ± 1.20.031 ± 0.015—0.033 ± 0.029—29 ± 14186 ± 177147 ± 130 | 60.8 ± 0.97.7 ± 1.730.2 ± 1.8112 ± 16997 ± 145260 ± 373.6 ± 0.918 ± 412.3 ± 1.793 ± 22* 1. ± 0.2

3.3 ± 1.062 ± 11285 ± 188118 ± 10151 ± 222.9 ± 0.80.09 ± 0.18—0.04 ± 0.020.53 ± 0.1751 ± 16225 ± 144240 ± 139 | 58.4 ± 1.17.1 ± 1.631.8 ± 1.4110 ± 221272 ± 638425 ± 4071.9 ± 1.724 ± 179 ± 9106 ± 710.69 ± 0.68—51 ± 21354 ± 139125 ± 15160 ± 312.4 ± 1.30.04 ± 0.100.03 ± 0.060.04 ± 0.050.3 ± 0.6—263 ± 79337 ± 107 |
| TroiliteFe (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 ± 0.81.0 ± 0.436.2 ± 0.742 ± 25144 ± 5695 ± 730.2 ± 0.3—1.1 ± 2.8174 ± 1580.08 ± 0.060.03 ± 0.02———3 ± 90.50 ± 0.16—————3 ± 123 ± 10 | 62.6 ± 0.60.62 ± 0.0736.3 ± 0.428 ± 2152 ± 13262 ± 470.7 ± 2.019 ± 10—171 ± 250.08 ± 0.050.05 ± 0.04———0.5 ± 0.90.89 ± 0.37——0.0010 ± 0.0006——2 ± 61.1 ± 3.0 | 61.3 ± 0.80.61 ± 0.0735.7 ± 0.9—143 ± 98229 ± 2044 ± 1017 ± 141.62 ± 1.56132 ± 123—————3 ± 8—0.12 ± 0.370.4 ± 1.20.11 ± 0.230.7 ± 2.5—2 ± 63 ± 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) |
| CoNi Cu Zn Ga Ge As Mo Ru Rh Pd Ag Sn Sb W Re Os Ir Pt Au Pb Bi  | 3.9 ± 0.32.11 ± 0.080.22 ± 0.020.48 ± 0.1339 ± 1223 ± 48.5 ± 0.81.9 ± 0.2149 ± 4279 ± 244.0 ± 0.50.0029 ± 0.00112.1 ± 0.21.6 ± 0.271 ± 152824 (2637, 6389)a858 ± 7282837 (2218, 3958)a625 ± 3288.2 ± 1.80.00025 ± 0.000070.00018 ± 0.00011  | 9.9 ± 0.623.7 ± 0.71.29 ± 0.080.45 ± 0.1039 ± 2423 ± 572 ± 700.99 ± 0.071702 ± 7124366 ± 13181159 ± 2820.73 ± 0.40862 ± 702445 (389, 515)a288 ± 716543 (5767, 11460)a12429 (12408, 23363)a32974 (32284, 48248)a7242 (6949, 19094)a755 ± 2650.15 ± 0.25b0.09 ± 0.20b | 0.41 ± 0.030.089 ± 0.0050.18 ± 0.021.03 ± 0.131.5 ± 1.6b0.93 ± 0.110.10 ± 0.10b2.0 ± 0.20.25 ± 0.110.024 ± 0.0130.0032 ± 0.00110.0096 ± 0.00270.0034 ± 0.00280.010 ± 0.014b0.20 ± 0.070.8 ± 1.8b13 ± 24b0.023 ± 0.0180.7 ± 1.6b0.0183 ± 0.0090.005 ±0.008b0.004 ± 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 |
| CoNiCu Zn Ga Ge As Mo Ru Rh Pd Ag Sn Sb W Re Os Ir Pt Au Pb BiBi (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 86211,1LEW 86211,11LEW 86498,8Chen & Wasserburg (1990)Cape York1Derrick PeakGibeonGrant1,2MundrabillaSanta Clara2Chen & Wasserburg (1987)BogouNantan1Hermann et al. (1971)Arva MaguraBrownfieldCanyon DiabloMount JoyXiquipilco | ———0.77-0.92—————0.00480.11-0.12————— | ———0.061-0.0740.0240.018-0.180.021-0.0240.130.27——————— | <0.50.4 ± 0.60.67 ± 2.3————————————— | ———————————3.60.44660.03998 | ———————————>484.8>511.54.1 | ————————————2.52.61.72.8 | ———————————>6—5.7—>7.2 | 14.7 ± 7.716.1 ± 8.218.3 ± 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 86211,1LEW 86211,11LEW 86498,8Chen & Wasserburg (1990)Cape York1Derrick PeakGibeonGrant1,2MundrabillaSanta Clara2Chen & Wasserburg (1987)BogouNantanHermann et al. (1971)Arva MaguraBrownfieldCanyon DiabloMount JoyXiquipilco | >33.56.8 ± 0.76.7 ± 0.6——————————29—47 | ———1325-1346780336-1350136-139381.75——————— | ———————————5758821296668 | ———————————>16300>44002673391700 | ————————————11.936—253 | ————————————12.1>286>3>147 | ———————————>15653>180241.7 | ———————————>136>657143>35>2800 |

1Includes data from Chen and Wasserburg (1983).

2Includes data from Kaiser and Wasserburg (1983).