Supplementary Tabe S2. Whole rock major and trace element data of the Jiacha Early Jurassic adakitic intrusions.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | GD14-89-2 | GD14-90-1 | GD14-90-2 | GD14-91-4 | GD14-91-5 | GD14-93-1 | GD14-93-2 | GD15-L07-1 | T09-16-2\* |  | GD14-90-3 | GD15-L09-2 |
| Rock type | quartz diorites | | | | | | | | |  | mafic enclaves | |
| Major element (wt.%) | |  |  |  |  |  |  |  |  |  |  |  |
| SiO2 | 62.58 | 60.08 | 58.85 | 59.48 | 58.99 | 58.43 | 60.89 | 62.15 | 63.30 |  | 51.82 | 52.55 |
| TiO2 | 0.53 | 0.53 | 0.56 | 0.57 | 0.59 | 0.57 | 0.53 | 0.53 | 0.53 |  | 0.72 | 0.89 |
| Al2O3 | 17.11 | 17.44 | 17.48 | 17.37 | 17.46 | 18.22 | 17.51 | 17.11 | 16.60 |  | 17.89 | 17.66 |
| TFe2O3 | 5.16 | 5.61 | 6.09 | 6.20 | 6.29 | 6.57 | 5.36 | 5.21 | 5.06 |  | 8.36 | 9.25 |
| MnO | 0.09 | 0.10 | 0.11 | 0.11 | 0.11 | 0.11 | 0.09 | 0.10 | 0.09 |  | 0.19 | 0.16 |
| MgO | 2.71 | 3.23 | 3.46 | 3.34 | 3.35 | 3.08 | 2.75 | 2.63 | 2.77 |  | 5.72 | 4.82 |
| CaO | 5.59 | 6.56 | 6.75 | 6.68 | 6.71 | 6.59 | 6.10 | 5.73 | 5.69 |  | 9.12 | 8.88 |
| Na2O | 4.17 | 3.94 | 3.93 | 4.00 | 3.92 | 4.10 | 3.97 | 3.92 | 4.10 |  | 3.84 | 3.74 |
| K2O | 1.28 | 1.09 | 1.15 | 1.16 | 1.26 | 1.36 | 1.40 | 1.34 | 1.24 |  | 0.95 | 0.88 |
| P2O5 | 0.16 | 0.15 | 0.17 | 0.16 | 0.16 | 0.20 | 0.17 | 0.15 | 0.16 |  | 0.15 | 0.20 |
| LOI | 0.44 | 0.45 | 0.53 | 0.66 | 0.48 | 0.45 | 0.46 | 1.16 | 0.66 |  | 0.40 | 0.20 |
| Total | 99.82 | 99.18 | 99.08 | 99.73 | 99.32 | 99.68 | 99.23 | 100.03 | 100.20 |  | 99.16 | 99.23 |
| Mg# | 51.23 | 53.53 | 53.20 | 51.87 | 51.58 | 48.40 | 50.65 | 50.24 | 52.29 |  | 57.78 | 51.04 |
| A/CNK | 0.93 | 0.89 | 0.87 | 0.87 | 0.87 | 0.90 | 0.91 | 0.93 | 0.90 |  | 0.75 | 0.76 |
| A/NK | 2.07 | 2.28 | 2.27 | 2.22 | 2.23 | 2.22 | 2.18 | 2.16 | 2.05 |  | 2.43 | 2.48 |
| Trace element (ppm) | |  |  |  |  |  |  |  |  |  |  |  |
| V | 115 | 151 | 170 | 163 | 164 | 151 | 125 | 114 |  |  | 236 | 253 |
| Cr | 24.5 | 33.3 | 36.9 | 30.3 | 29.8 | 9.48 | 10.3 | 22.5 | 30.3 |  | 77.3 | 15.3 |
| Ni | 17.3 | 23.4 | 22.8 | 20.4 | 19.0 | 13.8 | 16.0 | 10.8 | 22.9 |  | 34.3 | 23.2 |
| Ga | 17.0 | 18.5 | 19.7 | 17.5 | 18.1 | 17.8 | 17.8 | 17.5 | 17.0 |  | 19.9 | 19.7 |
| Rb | 27.6 | 23.4 | 25.5 | 23.8 | 25.4 | 28.5 | 30.4 | 33.6 | 28.0 |  | 15.6 | 12.4 |
| Sr | 419 | 438 | 446 | 412 | 416 | 493 | 504 | 465 | 469 |  | 438 | 477 |
| Y | 10.7 | 12.9 | 14.8 | 13.7 | 13.4 | 14.2 | 12.3 | 15.9 | 10.4 |  | 21.5 | 28.0 |
| Zr | 63.7 | 25.2 | 86.6 | 85.9 | 86.9 | 55.4 | 55.0 | 76.9 | 90.0 |  | 44.1 | 51.6 |
| Nb | 2.93 | 2.74 | 3.05 | 3.45 | 3.34 | 2.95 | 2.78 | 3.26 | 2.50 |  | 3.48 | 5.54 |
| Ba | 280 | 175 | 215 | 227 | 247 | 300 | 339 | 312 | 294 |  | 123 | 138 |
| Hf | 2.07 | 1.09 | 2.56 | 2.47 | 2.53 | 1.82 | 1.83 | 2.17 | 2.28 |  | 1.90 | 1.70 |
| Ta | 0.21 | 0.29 | 0.28 | 0.32 | 0.29 | 0.20 | 0.20 | 0.21 | 0.19 |  | 0.23 | 0.27 |
| Pb | 3.58 | 4.47 | 4.54 | 5.64 | 5.55 | 5.35 | 5.63 | 6.46 | 3.53 |  | 4.23 | 5.45 |
| Th | 1.92 | 1.54 | 2.68 | 4.21 | 2.94 | 1.36 | 2.97 | 2.59 | 2.31 |  | 1.12 | 0.92 |
| U | 0.54 | 0.63 | 0.78 | 1.12 | 0.82 | 0.58 | 0.67 | 0.96 | 0.65 |  | 0.40 | 0.24 |
| La | 11.9 | 8.54 | 11.9 | 18.1 | 13.6 | 11.6 | 15.6 | 13.1 | 9.58 |  | 12.4 | 14.3 |
| Ce | 23.3 | 18.5 | 24.3 | 33.3 | 27.0 | 25.4 | 29.2 | 28.3 | 19.9 |  | 29.1 | 34.7 |
| Pr | 3.04 | 2.67 | 3.27 | 3.96 | 3.51 | 3.55 | 3.72 | 3.49 | 2.61 |  | 4.39 | 4.68 |
| Nd | 12.6 | 12.5 | 14.4 | 15.6 | 13.9 | 15.6 | 14.8 | 14.5 | 10.5 |  | 20.0 | 20.8 |
| Sm | 2.49 | 2.63 | 3.10 | 2.97 | 2.97 | 3.30 | 2.95 | 3.14 | 2.34 |  | 4.23 | 4.97 |
| Eu | 0.77 | 0.84 | 0.92 | 0.89 | 0.89 | 0.93 | 0.87 | 0.90 | 0.71 |  | 1.30 | 1.34 |
| Gd | 2.58 | 2.93 | 3.44 | 3.23 | 3.27 | 3.51 | 3.02 | 2.98 | 2.45 |  | 4.61 | 4.97 |
| Tb | 0.40 | 0.45 | 0.52 | 0.49 | 0.50 | 0.51 | 0.43 | 0.45 | 0.33 |  | 0.72 | 0.79 |
| Dy | 2.19 | 2.71 | 3.04 | 2.75 | 2.77 | 2.95 | 2.45 | 2.72 | 2.00 |  | 4.21 | 4.96 |
| Ho | 0.44 | 0.54 | 0.62 | 0.56 | 0.58 | 0.59 | 0.50 | 0.56 | 0.39 |  | 0.87 | 0.99 |
| Er | 1.26 | 1.55 | 1.81 | 1.63 | 1.72 | 1.71 | 1.39 | 1.56 | 1.21 |  | 2.58 | 2.76 |
| Tm | 0.17 | 0.21 | 0.24 | 0.22 | 0.22 | 0.22 | 0.19 | 0.22 | 0.17 |  | 0.35 | 0.40 |
| Yb | 1.26 | 1.48 | 1.74 | 1.62 | 1.62 | 1.51 | 1.33 | 1.47 | 1.09 |  | 2.56 | 2.62 |
| Lu | 0.18 | 0.21 | 0.24 | 0.23 | 0.23 | 0.22 | 0.18 | 0.22 | 0.18 |  | 0.35 | 0.38 |
| Eu/Eu\* | 0.92 | 0.92 | 0.86 | 0.87 | 0.87 | 0.83 | 0.88 | 0.88 | 0.90 |  | 0.90 | 0.81 |
| Sr/Y | 39.2 | 34.0 | 30.1 | 30.1 | 31.0 | 34.7 | 41.0 | 29.2 | 45.1 |  | 20.4 | 17.0 |
| (La/Yb)N | 6.38 | 3.90 | 4.62 | 7.55 | 5.67 | 5.19 | 7.93 | 6.02 | 5.94 |  | 3.27 | 3.68 |

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| Sample | GD15-L08-01 | GD14-50-1 | GD14-50-2 | GD14-95-1\* | GD14-99-1\* | GD14-99-2\* | GD14-99-3\* | GD14-101-1\* | GD14-101-2\* | GD14-102-1\* | GD14-103-1\* |
| Rock type | tonalites | | | | | | | | | | |
| Major element (wt.%) | |  |  |  |  |  |  |  |  |  |  |
| SiO2 | 70.05 | 69.92 | 67.76 | 64.41 | 68.31 | 66.50 | 66.98 | 65.56 | 65.76 | 65.83 | 66.12 |
| TiO2 | 0.22 | 0.35 | 0.40 | 0.48 | 0.31 | 0.32 | 0.37 | 0.36 | 0.35 | 0.40 | 0.44 |
| Al2O3 | 16.62 | 15.33 | 16.18 | 15.98 | 15.80 | 16.50 | 16.53 | 16.87 | 16.84 | 16.12 | 15.14 |
| TFe2O3 | 1.68 | 3.01 | 3.56 | 4.65 | 3.10 | 3.66 | 3.45 | 3.84 | 3.81 | 3.90 | 3.68 |
| MnO | 0.06 | 0.07 | 0.08 | 0.09 | 0.09 | 0.11 | 0.09 | 0.10 | 0.10 | 0.09 | 0.09 |
| MgO | 0.93 | 1.48 | 1.60 | 2.25 | 1.40 | 1.44 | 1.35 | 1.54 | 1.53 | 1.77 | 2.02 |
| CaO | 3.31 | 3.91 | 4.20 | 4.93 | 4.08 | 4.76 | 4.54 | 5.03 | 5.01 | 4.73 | 4.21 |
| Na2O | 4.85 | 3.90 | 3.95 | 3.39 | 3.83 | 4.17 | 4.12 | 4.08 | 4.03 | 3.67 | 3.21 |
| K2O | 1.22 | 1.14 | 1.64 | 2.34 | 2.08 | 1.48 | 1.68 | 1.66 | 1.74 | 2.09 | 2.65 |
| P2O5 | 0.07 | 0.09 | 0.10 | 0.14 | 0.13 | 0.15 | 0.13 | 0.15 | 0.15 | 0.13 | 0.13 |
| LOI | 0.20 | 0.60 | 0.40 | 0.74 | 0.11 | 0.59 | 0.67 | 0.62 | 0.59 | 0.68 | 1.30 |
| Total | 99.21 | 99.81 | 99.87 | 99.40 | 99.24 | 99.68 | 99.91 | 99.81 | 99.91 | 99.41 | 98.99 |
| Mg# | 52.55 | 49.59 | 47.34 | 49.19 | 47.46 | 44.04 | 43.91 | 44.51 | 44.55 | 47.59 | 52.34 |
| A/CNK | 1.08 | 1.04 | 1.02 | 0.93 | 0.99 | 0.96 | 0.98 | 0.95 | 0.95 | 0.95 | 0.96 |
| A/NK | 1.79 | 2.00 | 1.95 | 1.97 | 1.85 | 1.95 | 1.92 | 1.98 | 1.98 | 1.94 | 1.86 |
| Trace element (ppm) | |  |  |  |  |  |  |  |  |  |  |
| V | 22.1 | 50.0 | 60.8 | 98.7 | 47.8 | 59.0 | 56.6 | 66.4 | 64.4 | 78.3 | 82.3 |
| Cr | 13.0 | 2.71 | 3.02 | 9.45 | 3.26 | 4.03 | 3.20 | 4.08 | 4.54 | 7.10 | 9.48 |
| Ni | 4.17 | 3.97 | 3.12 | 9.57 | 4.30 | 4.81 | 4.24 | 5.39 | 5.01 | 7.82 | 9.60 |
| Ga | 16.0 | 15.7 | 15.9 | 16.5 | 15.5 | 16.7 | 16.9 | 17.5 | 16.7 | 16.0 | 15.3 |
| Rb | 30.8 | 38.4 | 50.5 | 61.5 | 45.3 | 35.4 | 42.4 | 40.5 | 38.2 | 50.0 | 62.2 |
| Sr | 408 | 363 | 392 | 399 | 471 | 518 | 526 | 530 | 530 | 446 | 396 |
| Y | 6.89 | 13.3 | 13.0 | 11.2 | 4.46 | 12.0 | 9.07 | 11.6 | 11.1 | 12.9 | 7.70 |
| Zr | 78.0 | 66.8 | 56.3 | 58.1 | 43.8 | 63.3 | 65.4 | 43.8 | 45.9 | 53.8 | 71.7 |
| Nb | 1.66 | 4.51 | 4.08 | 2.91 | 1.96 | 3.36 | 3.48 | 3.84 | 3.48 | 4.23 | 3.28 |
| Ba | 212 | 123 | 451 | 405 | 459 | 382 | 425 | 347 | 375 | 419 | 575 |
| Hf | 2.24 | 2.17 | 1.79 | 1.79 | 1.49 | 1.84 | 1.84 | 1.35 | 1.42 | 1.78 | 2.20 |
| Ta | 0.15 | 0.57 | 0.27 | 0.21 | 0.09 | 0.32 | 0.28 | 0.30 | 0.26 | 0.52 | 0.21 |
| Pb | 7.92 | 8.14 | 8.40 | 7.56 | 7.96 | 7.80 | 7.50 | 7.95 | 8.11 | 9.25 | 8.75 |
| Th | 3.03 | 6.01 | 4.20 | 2.90 | 1.08 | 2.90 | 1.56 | 4.71 | 1.42 | 5.09 | 4.94 |
| U | 0.82 | 2.57 | 0.74 | 1.45 | 0.75 | 0.70 | 0.74 | 0.71 | 0.81 | 1.24 | 1.41 |
| La | 7.26 | 16.2 | 9.19 | 7.48 | 3.54 | 16.5 | 4.80 | 23.7 | 5.16 | 11.4 | 11.0 |
| Ce | 15.2 | 31.3 | 19.8 | 17.5 | 7.65 | 33.1 | 12.8 | 44.2 | 13.9 | 23.8 | 21.3 |
| Pr | 1.76 | 3.46 | 2.47 | 2.15 | 0.97 | 3.64 | 1.78 | 4.60 | 1.92 | 2.84 | 2.23 |
| Nd | 7.05 | 12.5 | 10.4 | 8.91 | 4.06 | 14.1 | 8.07 | 16.1 | 8.48 | 11.2 | 8.22 |
| Sm | 1.46 | 2.39 | 2.36 | 1.99 | 0.87 | 2.64 | 1.90 | 2.67 | 2.07 | 2.40 | 1.56 |
| Eu | 0.47 | 0.64 | 0.72 | 0.61 | 0.41 | 0.74 | 0.63 | 0.78 | 0.66 | 0.71 | 0.51 |
| Gd | 1.25 | 2.19 | 2.20 | 1.96 | 0.86 | 2.29 | 1.74 | 2.24 | 1.99 | 2.33 | 1.48 |
| Tb | 0.19 | 0.34 | 0.36 | 0.30 | 0.13 | 0.34 | 0.26 | 0.34 | 0.31 | 0.36 | 0.22 |
| Dy | 1.07 | 2.11 | 2.11 | 1.90 | 0.75 | 2.03 | 1.55 | 1.97 | 1.79 | 2.17 | 1.33 |
| Ho | 0.22 | 0.42 | 0.42 | 0.36 | 0.15 | 0.40 | 0.32 | 0.39 | 0.37 | 0.43 | 0.28 |
| Er | 0.66 | 1.25 | 1.25 | 1.10 | 0.44 | 1.17 | 0.93 | 1.12 | 1.10 | 1.34 | 0.83 |
| Tm | 0.10 | 0.19 | 0.17 | 0.17 | 0.07 | 0.18 | 0.14 | 0.18 | 0.17 | 0.21 | 0.13 |
| Yb | 0.72 | 1.35 | 1.24 | 1.14 | 0.51 | 1.18 | 0.98 | 1.19 | 1.19 | 1.39 | 0.88 |
| Lu | 0.12 | 0.20 | 0.17 | 0.18 | 0.09 | 0.17 | 0.16 | 0.19 | 0.19 | 0.21 | 0.14 |
| Eu/Eu\* | 1.05 | 0.84 | 0.94 | 0.94 | 1.43 | 0.90 | 1.03 | 0.95 | 0.98 | 0.91 | 1.02 |
| Sr/Y | 59.1 | 27.3 | 30.2 | 35.5 | 105.6 | 43.3 | 57.9 | 45.7 | 47.8 | 34.7 | 51.5 |
| (La/Yb)N | 6.82 | 8.11 | 5.02 | 4.45 | 4.65 | 9.41 | 3.31 | 13.49 | 2.92 | 5.58 | 8.45 |

LOI = loss on ignition.

\* quoted from Dong & Zhang *et al*. (2012) and Shui *et al*. (2016).

**References**

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