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| Supplementary Table S1 Isotopic ages of Early Carboniferous magmatic rocks in the Dananhu Arc. | | | | |
| Locations | Dating Samples | Dating Methods | Ages (Ma) | References |
| ***Middle segment*** | | | | |
| Tuwu | Molybdenite | Re–Os isochron | 322.7±2.3 | Rui et al. 2002 |
| Tuwu | Phyllic-Altered Plagiogranite Porphyry | Sericite Ar–Ar plateau | 328.1±1.4 | Wang et al. 2019 |
| Tuwu | Plagiogranite Porphyry | SHRIMP zircon U–Pb | 332.3±5.9 | Wang et al. 2015a |
| Tuwu | Plagiogranite Porphyry | SIMS zircon U–Pb | 332.8±2.5 | Shen et al. 2014b |
| Tuwu | Molybdenite | Re–Os isochron | 334.1±3.3 | An et al. 2022b |
| Tuwu | Plagiogranite Porphyry | SIMS zircon U–Pb | 334.7±3 | Wang et al. 2014 |
| Tuwu | Plagiogranite Porphyry | SHRIMP zircon U–Pb | 334±3 | Chen et al. 2005 |
| Tuwu | Molybdenite | Re–Os isochron | 335.6±4.1 | Wang et al. 2021 |
| Tuwu | Graphic Granite | LA–ICP–MS zircon U–Pb | 348±2 | Du et al. 2019 |
| Tuwu | Granite porphyry | LA–ICP–MS zircon U–Pb | 357±3 | Du et al. 2021 |
| Tuwu | Granite porphyry | LA–ICP–MS zircon U–Pb | 360±3 | Du et al. 2019 |
| Yandong | Granite porphyry | LA–ICP–MS zircon U–Pb | 321.8±3.1 | An et al. 2022a |
| Yandong | Quartz Porphyry | LA–ICP–MS zircon U–Pb | 323.6±2.5 | Xiao et al. 2017 |
| Yandong | Quartz Porphyry | LA–ICP–MS zircon U–Pb | 324.1±2.3 | Xiao et al. 2017 |
| Yandong | Molybdenite | Re–Os isochron | 324.3±2.7 | Wang et al. 2018 |
| Yandong | Molybdenite | Re–Os isochron | 326.2±4.5 | Zhang et al. 2010 |
| Yandong | Quartz Porphyry | SIMS zircon U–Pb | 327.6±2.6 | Wang et al. 2018 |
| Yandong | Molybdenite | Re–Os isochron | 331.3±2.1 | Wang et al. 2018 |
| Yandong | Plagiogranite Porphyry | SIMS zircon U–Pb | 332.2±2.3 | Shen et al. 2014a |
| Yandong | Phyllic-Altered Plagiograniteporphyry | Sericite Ar–Ar plateau | 332.8±3.8 | Wang et al. 2018 |
| Yandong | Plagiogranite Porphyry | SHRIMP zircon U–Pb | 333±4 | Chen et al. 2005 |
| Yandong | Plagiogranite Porphyry | SIMS zircon U–Pb | 335.3±2.9 | Wang et al. 2018 |
| Yandong | Plagiogranite Porphyry | SHRIMP zircon U–Pb | 335±3.7 | Wang et al. 2015b |
| Yandong | Diorite | SIMS zircon U–Pb | 338.6±2.9 | Wang et al. 2018 |
| Yandong | Plagiogranite Porphyry | LA–ICP–MS zircon U–Pb | 339.3±2.2 | Xiao et al. 2017 |
| Yandong | Diorite | SIMS zircon U–Pb | 340±3 | Shen et al. 2014a |
| Yandong | Molybdenite | Re–Os isochron | 343±26 | Zhang et al. 2008 |
| Yandong | Diorite | LA–ICP–MS zircon U–Pb | 348.3±6 | Xiao et al. 2017 |
| Qi’eshan Group | Dacite | Zircon U–Pb | 319.9±1.6 | Li et al. 2004 |
| Qi’eshan Group | Basalt | Zircon U–Pb | 322.6±2 | Li et al. 2004 |
| Qi’eshan Group | Basalt | LA–ICP–MS zircon U–Pb | 323.8±3.6 | Bai et al. 2018 |
| Qi’eshan Group | Basalt | LA–ICP–MS zircon U–Pb | 324.3±4.1 | Bai et al. 2018 |
| Qi’eshan Group | Andesite | SHRIMP zircon U–Pb | 336.5±6.6 | Hou et al. 2005 |
| Qi’eshan Group | Andesite | SHRIMP zircon U–Pb | 336.9±8.3 | Hou et al. 2006 |
| Qi’eshan Group | Dacite | LA–ICP–MS zircon U–Pb | 344.0±4.1 | Mao et al. 2022 |
| Qi’eshan Group | Basalt | LA–ICP–MS zircon U–Pb | 355.7±3.7 | Liu 2020 |
| Qi’eshan Group | Dacite | LA–ICP–MS zircon U–Pb | 356.0±6.2 | Liu 2020 |
| ***Western segment*** | | | | |
| Xiaorequanzi | Monzogranite | Rb-Sr isochron | 328±8 | No. 11 Geological Team of Xinjiang Bureau of Geology and Mineral Resources, 1995 |
| Xiaorequanzi | Albite | Ar–Ar plateau | 329 | Nie et al. 2005 |
| Xiaorequanzi | Granite Porphyry | LA–ICP–MS zircon U–Pb | 331.6±6.6 | Zhang 2021 |
| Xiaorequanzi | Monzogranite | LA–ICP–MS zircon U–Pb | 333.0±2.4 | This study |
| Xiaorequanzi | Granodiorite | LA–ICP–MS zircon U–Pb | 336.7±4.8 | Zhang 2021 |
| Xiaorequanzi | Chalcopyrite | Re–Os isochron | 336±13 | He et al. 2020 |
| Xiaorequanzi | Granite Porphyry | LA–ICP–MS zircon U–Pb | 338.3±3.3 | Zhang 2021 |
| Xiaorequanzi | Blende | K–Ar dating | 339.1 | Chen 1999 |
| Xiaorequanzi | Granite Porphyry | LA–ICP–MS zircon U–Pb | 341.0±2.4 | Zhang 2021 |
| Xiaorequanzi | Granite Porphyry | LA–ICP–MS zircon U–Pb | 341.3±2.0 | Zhang 2021 |
| Xiaorequanzi | Granite Porphyry | LA–ICP–MS zircon U–Pb | 341.9±3.1 | Zhang 2021 |
| Xiaorequanzi | Granite Porphyry | LA–ICP–MS zircon U–Pb | 341.9±3.4 | Zhang 2021 |
| Xiaorequanzi | Chalcopyrite | Re–Os isochron | 342±21 | He et al. 2020 |
| Xiaorequanzi | Moyite | LA–ICP–MS zircon U–Pb | 343.6±3.4 | This study |
| Xiaorequanzi | Granite Porphyry | LA–ICP–MS zircon U–Pb | 344.5±6.1 | Zhang 2018 |
| Xiaorequanzi | Porphyritic Felsite Dyke | SHRIMP zircon U–Pb | 345±6 | He et al. 2020 |
| Xiaorequanzi | Granodiorite | Zircon U–Pb | 345±7 | No. 11 Geological Team of Xinjiang Bureau of Geology and Mineral Resources, 1995 |
| Xiaorequanzi | Granite Porphyry | LA–ICP–MS zircon U–Pb | 351.1±4.6 | Zhang 2021 |
| Xiaorequanzi | Granite Porphyry | LA–ICP–MS zircon U–Pb | 354.7±3.2 | Mao et al. 2020 |
| Xiaorequanzi | Granite Porphyry | LA–ICP–MS zircon U–Pb | 355.7±2.9 | Zhang 2021 |
| Xiaorequanzi | Granite Porphyry | LA–ICP–MS zircon U–Pb | 358.0±10.0 | Zhang 2021 |
| Xiaorequanzi | Chalcopyrite | Re–Os isochron | 354±11 | Mao et al. 2020 |
| Xiaorequanzi | Chalcopyrite | Re–Os isochron | 355.3±5.7 | Zhang et al. 2021 |
| Xiaorequanzi | Sphalerite | Rb-Sr isochron | 358.6±2.8 | Zhang et al. 2021 |
| Xiaorequanzi Formation | Basalt | SHRIMP zircon U–Pb | 318.8±5.7 | Xiao et al. 2011 |
| Xiaorequanzi Formation | Rhyolite | SHRIMP zircon U–Pb | 325.1±3.2 | Pan et al. 2009 |
| Xiaorequanzi Formation | Rhyolite | LA–ICP–MS zircon U–Pb | 343.3±2.9 | This study |
| Xiaorequanzi Formation | Tuff | LA–ICP–MS zircon U–Pb | 351.7 ± 4.9 | Zhang 2018 |
| Xiaorequanzi Formation | Tuff Sandstone | LA–ICP–MS zircon U–Pb | 352.5±4.4 | Zhang 2021 |
| Xiaorequanzi Formation | Tuff | SHRIMP zircon U–Pb | 352±5 | He et al. 2020 |
| Xiaorequanzi Formation | Dacite | LA–ICP–MS zircon U–Pb | 353.5±2.8 | Zhang 2021 |
| Xiaorequanzi Formation | Tuff | LA–ICP–MS zircon U–Pb | 354.5 ± 3.9 | Zhang 2021 |
| Xiaorequanzi Formation | Tuff | LA–ICP–MS zircon U–Pb | 354.5±3.9 | Zhang 2021 |
| Xiaorequanzi Formation | Tuff Sandstone | LA–ICP–MS zircon U–Pb | 357.3±2.4 | Mao et al. 2020 |
| Xiaorequanzi Formation | Dacite | LA–ICP–MS zircon U–Pb | 359.5±3.4 | Mao et al. 2020 |

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