**Supplementary table 1** Sampling localities, mineral assemblages and ages of the dated rocks from the Wuguan Complex

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sample | Location | Lithology | Mineral assemblage | Zircon U-Pb age (Ma) | Muscovite 40Ar-39Ar age (Ma) | References |
| Detrital zircon (Ma)  | Metamorphic zircon (Ma) |
| SL1-2 | N33°26′59.07″E110°47′50.13″ | Mica-quartz schist | Qt+Bi+Pl+Cal | 407 - 2702 |  |  | This study |
| SL3-3 | N 37°27′08.33″E 110°47′04.07″ | Mica-quartz schist | Qt+Bi+Pl+Cal | 412 - 2954 |  |  | This study |
| SL4-2 | N 33°27′18.87″E1 10°48′21.50″ | Mica-quartz schist | Qt+Bi+Pl+Cal | 426 - 2505 |  |  | This study |
| XS004 | N 33°24′57.20″E111°03′34.00″ | Mica-quartz schist | Qt+Bi+Mus+Pl+Cal+Epi | 371 - 2704 |  | 247±1 | This study |
| XS27 | N 33°25′57.50″E111°04′25.30″ | Meta-siltstone | Qt+Chl+Serl | 376 - 2712 |  | 247±1 | This study |
| XN8 | N 33°24′20.70″E 111°05′23.10″ | Meta-siltstone | Qt+Chl+Ser | 438 - 2717 |  | 249±1 | This study |
| 09SND8 | Nearby Wuguan | Mica-quartz schist | Qt+Bi | 424 - 2630 |  |  | Yan et al. (2016)  |
| 09SND27 | Nearby Taohuapu | Arkose | Pl+Qt | 416 - 2673 |  |  | Yan et al. (2016)  |
| 09SND26 | Nearby Taohuapu | Mica-quartz schist | Qt+Bi | 359 - 2545 | 326 ± 2 |  | Yan et al. (2016)  |
| 09SND12 | Nearby Wuguan | Grey arkose | Pl+Qt+Grt+Chl | 357 - 2665 |  |  | Yan et al. (2016)  |
| 09DWG1 | Nearby Wuguan | Meta-greywacke | Prx+Pl+Qt | 351 - 537 |  |  | Yan et al. (2016)  |
| 09SND6 | Nearby Qingyouhe | Meta-sanstone | Pl+Qt+Prx | 350 - 2547 |  |  | Yan et al. (2016)  |
| 09SND10 | Nearby Wuguan | Meta-sanstone | Pl+Qz | 360 - 2473 | 334 |  | Yan et al. (2016)  |
| 08SBW23 | Nearby Wuguan | Meta-sanstone | Pl+Qz | 483 - 2580 |  |  | Yan et al. (2016)  |
| 09SND2 | Nearby Shangnan | Greywacke | Pl+Qz | 341 - 2375 |  |  | Yan et al. (2016)  |
| 09DWG9 | Nearby Wuguan | Amphibolite | Hbl+Pl+Qt | 341 - 2868 | 332 ± 10 |  | Yan et al. (2016)  |
| WG04-1 | N 33°34′38″E 110°39′49″ | Garnet amphibolite | Grt+Hbl+Bi+Ep+Pl+Qt+Oq |  | 318 ± 3 |  | Chen et al. (2014) |
| QYH02-2 | N 33°33′19″E 110°44′21″ | Amphibolite | Hbl+Bi+Pl |  | 321 ± 2 |  | Chen et al. (2014) |
| WG03-5 | N 33°34′52″E 110°39′12″ | Meta-andesite | Hbl+Bi+Zo+Pl+Qt+Rt | 368 ± 3 |  |  | Chen et al. (2014) |
| TYP02-6 | N 33°37′43″E 110°31′36″ | Granitic dike | Ms+Bi+Pl+Kfs+Qtz+Oq | 351 ± 2 | 320 |  | Chen et al. (2014) |
| TYP02-8 | N 33°37′43″E 110°31′36″ | Metaquartzite | Ms+Bi+Pl+Qtz+Tur+Oq | 418 - 3295 |  |  | Chen et al. (2014) |
| D436f | N 33°33′90″E 110°39′00″ | Mylonite | Grt+ Mus +Bi + Ky |  |  | 247.9 ± 0.7 | Ratschbacher et al. (2003) |
| WG-11 | N 33°34′33″E 110°39′42″ | Mica-quartz schist | Qt+Bi+Mus+Pl | 417 - 2683 |  |  | Li et al. (2017) |