

TABLE A1 Age data of gold deposits from the South Qinling Orogen gold district

Deposit	Rock/Ore Type	Method	Age (Ma)	2SD (Ma)	Interpretation	Author(s)
Yangshan	Granite-porphyry	U-Th-Pb monazite	190.0	3	Metallogenic age	(Yang et al. 2006)
Laodou	Altered rocks	$^{40}\text{Ar}/^{39}\text{Ar}$ sericite	248.0	3.0	Metallogenic age	(Jin et al. 2017)
	Altered rocks	$^{40}\text{Ar}/^{39}\text{Ar}$ sericite	248.9	2.7	Metallogenic age	(Jin et al. 2017)
Zaozigou	Altered rocks	$^{40}\text{Ar}/^{39}\text{Ar}$ sericite	219.7	3.6	Metallogenic age	(Sui and Li 2013)
	Altered rocks	$^{40}\text{Ar}/^{39}\text{Ar}$ sericite	228.0	5.1	Metallogenic age	(Sui and Li 2013)
	Dacite	U-Th-Pb monazite LA-ICPMS	211.1	3.0	Metallogenic age	(Qiu et al. 2020)
Ludousou	Tuff	U-Pb zircon LA-ICPMS	252.9	4.1	Metallogenic age	(Yu et al. 2020)
	Proto-quartz-diorite porphyry	U-Pb apatite LA-ICPMS	243.5	4.8	Metallogenic age	(Yu et al. 2020)
	Quartz-diorite porphyry	U-Pb apatite LA-ICPMS	235.7	4.9	Metallogenic age	(Yu et al. 2020)
	Quartz-diorite porphyry	$^{40}\text{Ar}/^{39}\text{Ar}$ sericite	235.61	0.41	Metallogenic age	(Yu et al. 2020)
	Quartz-tourmaline-sulfide veins	U-Pb monazite SHRIMP	246.6	2.2	Metallogenic age	(Huang and Qiu 2022)
	Quartz-diorite-porphyry	U-Pb monazite SHRIMP	234.8	1.6	Metallogenic age	(Huang and Qiu 2022)
Gangcha	Tuff	Rb-Sr pyrite	225.0	3.4	Metallogenic age	(Jiang 2017)
	Tuff	Rb-Sr pyrite	229.9	4.7	Metallogenic age	(Jiang 2017)
	Sulfide	Rb-Sr pyrite	225.3	3.4	Metallogenic age	(Li 2016)
Zhaishang	Altered rocks	$^{40}\text{Ar}/^{39}\text{Ar}$ sericite	125.56	1.2	Metallogenic age	(Lu et al. 2006)
Mawu	Lamprophyre	U-Pb zircon LA-ICPMS	152.9	3.7	Metallogenic age	(Guo et al. 2020)
	Granite	U-Pb zircon LA-ICPMS	155.3	1.6	Metallogenic age	(Guo et al. 2020)
Liba	Granite-porphyry	$^{40}\text{Ar}/^{39}\text{Ar}$ muscovite	216.4	1.5	Metallogenic age	(Zeng et al. 2012)
	Granite-porphyry	U-Pb zircon	210.0	1.0	Metallogenic age	(Ke et al. 2020)
	Monzonitic granite	K-Ar sericite	206.82	1.63	Metallogenic age	(Liu et al. 2011)
Liziyuan	Gold ore body	$^{40}\text{Ar}/^{39}\text{Ar}$ sericite	200.5	1.8	Metallogenic age	(He et al. 2021)
	Gold ore body	$^{40}\text{Ar}/^{39}\text{Ar}$ sericite	198.5	2.2	Metallogenic age	(He et al. 2021)

TABLE A1 (Cont.)

Deposit	Rock/Ore Type	Method	Age (Ma)	2SD (Ma)	Interpretation	Author(s)
Pangjiahe	Granite-porphyry	U-Pb zircon	239.9	1.8	Metallogenic age	(Ma et al. 2018)
	Granite-porphyry	U-Pb zircon	231.2	1.5	Metallogenic age	(Ma et al. 2018)
Maquan	Quartz vein	Rb-Sr quartz	153.0	20	Metallogenic age	(Jiang et al. 2009)
Simaoling	Altered rocks	<sup>40</sup> Ar/ <sup>39</sup> Ar sericite	211.9	1.5	Metallogenic age	(Wang et al. 2014)
	Gold ore body	Rb-Sr sphalerite	210.8	2.4	Metallogenic age	(Wang et al. 2018)
Chaima	Quartz vein	<sup>40</sup> Ar/ <sup>39</sup> Ar sericite	219.0	2.0	Metallogenic age	(Liu et al. 2018)
	Carbonate minerals	Sm-Nd	203.2	1.6	Metallogenic age	(Liu et al. 2014)
	Carbonate minerals	Sm-Nd	209.3	4.2	Metallogenic age	(Wang et al. 2020)
Baguamiao	Carbonate minerals	Sm-Nd	208.1	3.1	Metallogenic age	(Wang et al. 2020)
	Muscovite	<sup>40</sup> Ar/ <sup>39</sup> Ar sericite	209.5	1.4	Metallogenic age	(Wang et al. 2020)
Shuangwang	Gold ore body	U-Pb monazite	220.9	1.8	Metallogenic age	(He 2023)
	Monzonitic granite	U-Pb zircon LA-ICPMS	242.0	0.8	Diagenetic age	(Zhu et al. 2010)
Ma'anqiao	Gold ore	<sup>40</sup> Ar/ <sup>39</sup> Ar sericite	120.6	1.8	Metallogenic age	(Ding 2023)
	Gold ore	<sup>40</sup> Ar/ <sup>39</sup> Ar sericite	116.7	1.3	Metallogenic age	(Ding 2023)
	Gold ore	U-Pb titanite	120.7	3.5	Metallogenic age	(He 2023)
	Gold ore	U-Pb titanite	121.1	3.1	Metallogenic age	(He 2023)
	Gold ore	U-Pb titanite	120.3	5.8	Metallogenic age	(He 2023)
	Gold ore	U-Pb titanite	120.5	2.8	Metallogenic age	(He 2023)
	Gold ore	U-Pb titanite	120.8	3.2	Metallogenic age	(He 2023)
Qiuling	Gold ore body	Sm-Nd calcite	232.0	4.0	Metallogenic age	(Hua 2012)
Jinlongshan	Slate	<sup>40</sup> Ar/ <sup>39</sup> Ar sericite	141.6	2.8	Metallogenic age	(Liu et al. 2016)
	Breccia	<sup>40</sup> Ar/ <sup>39</sup> Ar sericite	<150.7	3.1	Metallogenic age	(Wu et al. 2019)
Daqiao	Breccia	<sup>40</sup> Ar/ <sup>39</sup> Ar sericite	>142.3	2.5	Metallogenic age	(Wu et al. 2019)
	Granodiorite	<sup>40</sup> Ar/ <sup>39</sup> Ar sericite	<130.8	3.1	Metallogenic age	(Wu et al. 2019)
	Granodiorite	<sup>40</sup> Ar/ <sup>39</sup> Ar sericite	>127.2	0.6	Metallogenic age	(Wu et al. 2019)

TABLE A1 (*Cont.*)

Deposit	Rock/Ore Type	Method	Age (Ma)	2SD (Ma)	Interpretation	Author(s)
Huachanggou	Altered rocks	$^{40}\text{Ar}/^{39}\text{Ar}$ fuchsite	211.4	3.6	Metallogenic age	(Lin et al. 2017)
	Quartz vein	$^{40}\text{Ar}/^{39}\text{Ar}$ fuchsite	211.5	3.6	Metallogenic age	(Lin et al. 2017)
	Quartz vein	$^{40}\text{Ar}/^{39}\text{Ar}$ fuchsite	215.3	3.9	Metallogenic age	(Lin et al. 2017)
	Quartz vein	$^{40}\text{Ar}/^{39}\text{Ar}$ fuchsite	216.0	3.9	Metallogenic age	(Lin et al. 2017)
Jianchaling	Quartz vein	$^{40}\text{Ar}/^{39}\text{Ar}$ fuchsite	199	2	Metallogenic age	(Yue et al. 2017)
	Quartz vein	$^{40}\text{Ar}/^{39}\text{Ar}$ fuchsite	198	2	Metallogenic age	(Yue et al. 2017)
	Quartz vein	$^{40}\text{Ar}/^{39}\text{Ar}$ fuchsite	197	2	Metallogenic age	(Yue et al. 2017)
Dashui	Granodiorite	U-Pb zircon LA-ICPMS	202.9	1.5	Metallogenic age	(Zhao et al. 2017)
	Altered rocks	U-Pb zircon LA-ICPMS	<202.9	1.5	Metallogenic age	(Yan et al. 2014)
	Altered granite	U-Pb zircon LA-ICPMS	202.9	1.5	Metallogenic age	(Jia 2012)
Changgou	Altered rocks	$^{40}\text{Ar}/^{39}\text{Ar}$ biotite	178.2	0.76	Metallogenic age	(Yang et al. 2020)
	Altered rocks	$^{40}\text{Ar}/^{39}\text{Ar}$ biotite	178.4	0.8	Metallogenic age	(Han et al. 2020)
Yangpingwan	Auriferous ores	Rb-Sr Pyrite	208	0.88	Metallogenic age	(Li 2018)
Huanglong	Altered rocks	$^{40}\text{Ar}/^{39}\text{Ar}$ biotite	168.4	0.9	Metallogenic age	(Han et al. 2020)
Xiajiadian	Gold ore body	Sm-Nd calcite	139.64	0.98	Metallogenic age	(Liu et al. 2019)
Matigou	Granite-porphyry	U-Pb zircon	241.8	2.7	Metallogenic age	(Ma et al. 2021)
	Dacite-porphyry	U-Pb zircon	219.4	1.7	Metallogenic age	(Ma et al. 2021)
	Dacite-porphyry	U-Pb zircon	216.6	1.2	Metallogenic age	(Ma et al. 2021)
	Granite-porphyry	U-Pb zircon	230.3	1.4	Metallogenic age	(Ma et al. 2021)
	Granite-porphyry	$^{40}\text{Ar}/^{39}\text{Ar}$ sericite	234.0	0.2	Metallogenic age	(Ma et al. 2021)

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