

Figure DR1. Cathodoluminescence (CL) images of representative zircons from granite (FG7) and volcanic rocks (FJS16 and FJS39) in the Fanjingshan region. They have well-developed oscillatory zoning, a typical feature of magmatic origin. Numbers near the zircons are $^{206}\text{Pb}/^{238}\text{U}$ ages. The scale bar is 100 μm .

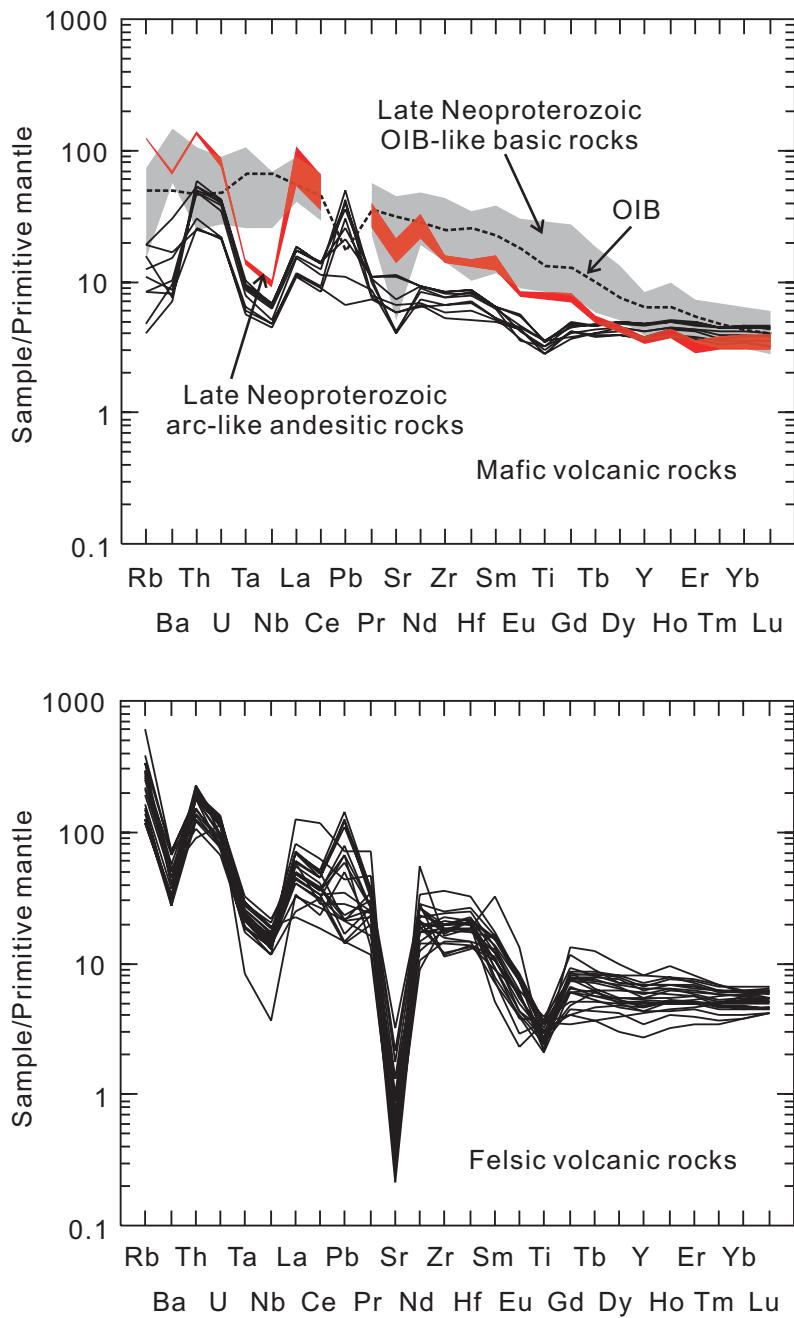


Figure DR2. Primitive mantle-normalized trace element spider diagrams for the volcanic rocks from the Fanjingshan Group. Mantle-normalization values and OIB are from Sun and McDonough (1989). The Late Neoproterozoic basic rocks in the Jiangnan Fold Belt have OIB-like geochemical characters, and andesitic rocks have arc-like features (Wang et al., 2004), suggesting that they were derived from an upwelling asthenosphere in relation to back-arc spreading.

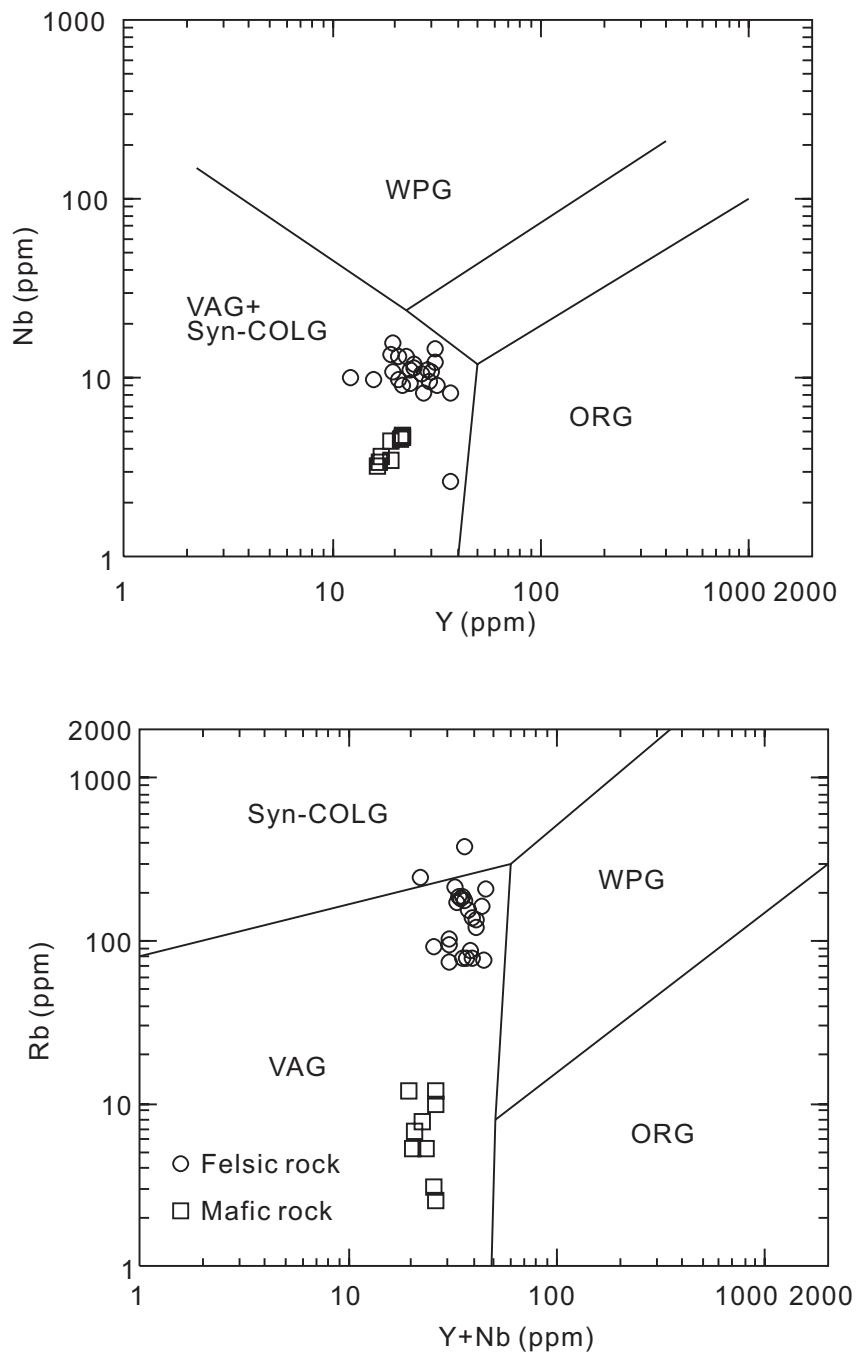


Figure DR3. Nb vs. Y and Rb vs. Y+Nb discriminant diagrams for the volcanic rocks from the Fanjingshan Group showing the tectonic classification suggested by Pearce et al. (1984). Syn-COLG, syn-collision granite; VAG, volcanic arc granite; WPG, within plate granite; ORG, ocean ridge granite.

Sample	U(ppm)	Th(ppm)	Th/U	$^{206}\text{Pb}/^{204}\text{Pb}$	$f_{206}\%$	$^{207}\text{Pb}/^{206}\text{Pb}$	$\pm\text{s}$	$^{207}\text{Pb}/^{235}\text{U}$	$\pm\text{s}$	$^{206}\text{Pb}/^{238}\text{U}$	$\pm\text{s}$	$T_{207/206}$	$\pm\text{s}$	$T_{207/235}$	$\pm\text{s}$	$T_{206/238}$	$\pm\text{s}$
FJS39-18	362	237	0.66	2.0E+05	0.01	0.1191	0.27	5.65	1.52	0.344	1.50	1942.9	4.9	1923.6	13.2	1905.8	24.8
FJS39-19	274	155	0.56	1.1E+05	0.02	0.0669	0.80	1.24	1.74	0.135	1.55	835.6	16.6	820.3	9.9	814.6	11.9
FJS39-20	274	197	0.72	1.1E+04	0.18	0.0669	0.77	1.14	1.69	0.123	1.50	834.7	15.9	770.8	9.1	749.0	10.6
FJS39-21	93	35	0.37	4.7E+04	0.04	0.0682	1.11	1.29	1.87	0.137	1.50	873.7	22.7	841.7	10.7	829.6	11.7
FJS39-22	251	205	0.82	9.0E+03	0.21	0.0662	0.84	1.14	1.72	0.125	1.50	811.6	17.5	772.4	9.4	759.0	10.8
FG7 (N27°59'01", E108°41'24"), leucogranite intruding the Fanjingshan Group																	
FG7-1	930	115	0.12	1.1E+05	0.02	0.0665	0.34	1.21	1.55	0.133	1.51	820.7	7.0	807.4	8.6	802.6	11.4
FG7-2	483	125	0.26	1.6E+05	0.01	0.0661	0.46	1.28	1.57	0.141	1.50	809.6	9.7	837.7	9.0	848.4	11.9
FG7-3	131	137	1.05		0.00	0.1656	0.32	10.81	1.53	0.473	1.50	2513.9	5.3	2506.6	14.4	2497.7	31.2
FG7-5	354	143	0.41	1.7E+04	0.11	0.0676	0.98	1.30	1.80	0.139	1.51	856.5	20.1	844.6	10.4	840.1	11.9
FG7-6	565	67	0.12	2.7E+04	0.07	0.0657	0.49	1.12	1.58	0.124	1.50	797.8	10.2	765.3	8.5	754.2	10.7
FG7-7	304	79	0.26	6.2E+04	0.03	0.0665	0.60	1.26	1.62	0.138	1.50	822.2	12.4	829.8	9.2	832.6	11.7
FG7-8	580	142	0.25	7.0E+04	0.03	0.0667	0.42	1.32	1.56	0.143	1.50	828.6	8.7	853.5	9.0	863.1	12.1
FG7-9	872	119	0.14	1.2E+05	0.02	0.0668	0.36	1.31	1.54	0.142	1.50	831.4	7.4	849.1	8.9	855.9	12.0
FG7-10	364	81	0.22	5.1E+04	0.04	0.0665	0.58	1.24	1.61	0.135	1.50	821.7	12.1	817.5	9.1	816.0	11.5
FG7-11	308	175	0.57	1.7E+05	0.01	0.0669	0.55	1.26	1.60	0.137	1.50	834.0	11.4	829.8	9.1	828.2	11.7
FG7-13	1234	103	0.08	3.1E+04	0.06	0.0669	0.31	1.27	1.53	0.138	1.50	835.3	6.4	834.5	8.8	834.2	11.8
FG7-14	862	122	0.14	9.3E+04	0.02	0.0654	0.65	1.21	1.63	0.134	1.50	787.0	13.5	803.3	9.1	809.1	11.4
FG7-15	416	60	0.15	8.0E+04	0.02	0.0671	0.52	1.26	1.59	0.136	1.50	842.1	10.7	828.7	9.0	823.7	11.6
FG7-16	280	74	0.26	3.1E+04	0.06	0.0662	0.65	1.28	1.64	0.140	1.50	812.5	13.5	835.5	9.4	844.2	11.9

$^{206}\text{Pb}/^{204}\text{Pb}$ is the measured value, f_{206} is the percentage of common ^{206}Pb in total ^{206}Pb

Zircons were dated by Second Ion Mass Spectroscopy (SIMS) IMS 1280 at the Institute of Geology and Geophysics, Chinese Academy of Sciences, following the analytical procedures described in Li et al. (2009a).

Table DR3 Summary of the data set for the Neoproterozoic igneous rocks along the southeastern margin of the Yangtze Block, South China.

Locations	Intrusion/sedimentary	Lithology	Method	Age (Ma)	Reference	Locality (Latitude; Longitude)	Description
Chongqing	Xiushan	Tuff	SHRIMP	792±9	Wang et al. (2009)	28°18'55"N; 108°50'46"E	Hongzixi formation of the upper Banxi Group
Guizhou	Fanjingshan	Mafic-ultramafic rocks	LA-ICP-MS	822±15	Zhou et al. (2009)	27°51'59.2"N; 108°45'09.6"E	Interbedded within the Fanjingshan Group
		Tuff	SIMS	830.8±4.4	This study	27°54'45"N, 108°39'49"E	
		Volcaniclastic rock	SIMS	827±15		27°54'29"N, 108°39'10"E	
		Lucogranite	SIMS	827.5±7.4		27°59'01"N, 108°41'24"E	
	Gangbian	Granite	SHRIMP	823±12	Chen et al. (2007)	25°33.371"N; 108°37.415"E	Intruded the Sibao Group
	Motianling	Granite	TIMS	825±15	Wang et al. (2006a)	\	
	Gangbian	mafic volcanic	TIMS	814±13		\	Base of the Xiajiang (Banxi) Group
Guangxi	Sanfang	Mafic-ultramafic dikes	SHRIMP	828±7	Li et al. (1999)	\	Intruded the Sibao Group
	Hejiawang	Mafic rock	LA-ICP-MS	811.5±4.8	Wang et al. (2006b)	\	Interbedded within the Sibao Group
	Yuanbaoshan	Ultramafic dike	SHRIMP	841±11	Zhou et al. (2007a)	25°23'39.2"N, 109°04'13.9"E	
	Longsheng (Tangtou)	Gabbro-diabase	TIMS	761±8	Ge et al. (2001)	\	
	Sanfang	Biotite granite	SHRIMP	826±10	Li (1999)	\	
			LA-ICP-MS	804.3±5.2	Wang et al. (2006b)	\	
	Bendong	Granodiorite	SHRIMP	819±9	Li (1999)	\	
			LA-ICP-MS	822.7±3.8	Wang et al. (2006b)	\	Intruded the Sibao Group
	Yuanbaoshan	Granite	SHRIMP	824±4	Li (1999)	\	
	Tianpeng	Granite	LA-ICP-MS	835.8±2.5	Wang et al. (2006b)	\	
	Zhaigun	Granodiorite	LA-ICP-MS	794.2±8.2		\	
	Dongma	Granodiorite	LA-ICP-MS	824±13		\	
	Sanmenjie	Rhyodacite	SHRIMP	765±14	Zhou et al. (2007b)	25°49'48.0"N; 109°47'53.2"E	Neoproterozoic stratigraphy
Hunan	Aikou	mafic-ultramafic dike	LA-ICP-MS	831.6±9.7	Zhang et al. (2009)	\	\
	Guzhang	Dolerite	SHRIMP	768±28	Zhou et al. (2007b)	28°29'41.8"N, 109°49'06.5"E	
	Qianyang	Diabase	SHRIMP	747±18	Wang et al. (2008a)	\	Intruded the Banxi Group
	Tongdao	Altered mafic rock	SHRIMP	756±12		\	
	Cangshuipu	Dacitic rock	SHRIMP	814±12	Wang et al. (2003)	\	Base of the Banxi Group
	Niuguping Fm	Volcanic rock	SHRIMP	725±10	Zhang et al. (2008)	27°35.9"N; 109°42.4"E	The youngest unit of the Banxi Group
	Zhangbangyuan	Granite	SHRIMP	816±4.6	Ma et al. (2009)	\	Intruded the Lengjiaxi Group
	Yiyang	Andesite	SHRIMP	823±6	Wang et al. (2007)	28°35.50"N; 112°20.91"E	\
Jiangxi	Hengyong Fm	Tuff	SHRIMP	831±5	Gao et al. (2008)	29°47.107N; 117°12.203E	From the Shuangqiaoshan Group
	Sizhou	Diabase	LA-ICP-MS	838.5±5.3	Lu et al. (2006)	29°04'N; 117°47'E	
	Gangbian	Quartz syenite	SIMS	848±4	Li et al. (2010)	28°28'05"N; 117°41'41"E	alkaline complex
	Dexing	Glaucophane	K-Ar	866±14	Shu et al. (1994)	\	within blueschist of the Qigong Group
	Jiuling	Granodiorite	SHRIMP	819±9	Li et al. (2003a)	29°05'15"N; 114°58'33"E	Intruded the Shuangqiaoshan Group
			SHRIMP	828±8	Zhong et al. (2005)	28°29.455N; 114°32.389E	
	Ganfang	Granite	SHRIMP	820±10		28°40.267N; 114°53.250E	Emplaced into the Jiuling intrusion
	Jingdezhen	Gabbro	LA-ICP-MS	801±4	Wang et al. (2008b)	29°48'20.7"N; 117°12'25.1"E	Intruded the Shuangqiaoshan Group
		Quartz-keratophyre	LA-ICP-MS	878±5		29°47'06.3"N; 117°12'18.1"E	From the Shuangqiaoshan Group
		Tuff	LA-ICP-MS	879±6		29°47'06.3"N; 117°12'18.2"E	
	Xiwan	Leucogranite	SHRIMP	880±19	Li et al. (2008b)	28°44'30"N; 117°34'37"E	Within the Xiwan ophiolitic mélange
		Anorthosite	SHRIMP	968±23	Li et al. (1994)	\	Enclosed within the Xiwan ophiolitic mélange

Table DR3 continued

Anhui	Jingtian Fm	Dacite	LA-ICP-MS	773±7	Wu et al. (2007)	29°30'24"N; 118°14'27"E	Neoproterozoic strata From the Shuangqiaoshan Group Intruded the Sibaoan Shangxi/Shuangxiwu/ Shuangqiaoshan Group
		Dacite	SHRIMP	820±16		29°29'26"N; 118°13'56"E	
		Tuff	LA-ICP-MS	779±7		29°21'46"N; 118°23'3"E	
	Anleling Fm	Tuff	SHRIMP	829±5	Gao et al. (2008)	29°47.934N; 117°39.841E	
		Shiershan	LA-ICP-MS	771±17	Zheng et al. (2008)	29°52'53"N; 118°28'59"E	
			LA-ICP-MS	777±7		29°55'31"N; 118°33'19"E	
			LA-ICP-MS	775±5		29°23'58"N; 118°22'8"E	
	Xucun		SHRIMP	779±11	Li et al. (2003b)	29°32.162N; 118°19.625"E	
		Granodiorite	SHRIMP	823±8	Li et al. (2003a)	29°57'37"N; 118°20'21"E	
			LA-ICP-MS	827±7	Wu et al. (2006)	30°00'58"N; 118°20'47"E	Intruded the Sibaoan Shangxi Group
Zhejiang	Shexian	Granodiorite	LA-ICP-MS	823±9		29°52'53"N; 118°28'59"E	
	Xiuning	Granodiorite	LA-ICP-MS	824±7		29°50'07"N; 118°09'21"E	
	Shijiao	Hornblende of tebinitie	Ar-Ar	832.3±6.8	Zhou and Zhu (1992)	\	From the Shuangqiaoshan Group
	Zhuji	Gabbro	SHRIMP	858±11	Shu et al. (2006)	\	From the ophiolitic melange
	Shenwu	Dolerite	SHRIMP	849±7	Li et al. (2008a)	29°49'56"N; 120°05'33"E	Intruded the Shuangxiwu Group
	Daolinshan	K-feldspar granite	SHRIMP	794±9		\	Intruded the Sibaoan Shuangxiwu Group
	Shangshu	Rhyolite	SHRIMP	792±5		29°58'25"N; 120°12'14"E	From the Shuangxiwu Group
	Daolinshan	A-type granite	SHRIMP	775±13	Wang et al. (2010)		Intruded the Sibaoan Shuangxiwu Group
				780±6			
	Hongchicun Fm	Volcanic rocks	SHRIMP	797±11	Li et al. (2003a)	29°55.309N; 120°07.031"E	Neoproterozoic strata
	Shangshu Fm	Volcanic rocks	SHRIMP	767±5	Gao et al. (2008)	29°09.621N; 118°28.141E	From Heshangzheng Group
	Guangfeng	Rhyolite	SHRIMP	827±14	Li et al. (2008c)	28°28'35"N; 117°09'50"E	From Taoyuan volcanic formation
	Taohong	Tonalite	SHRIMP	913±15	Ye et al. (2007)	29°51'48.7"N; 120°34'11.9"E	Intruded the Shuangqiaoshan Group
	Xiqiu	Granodiorite	SHRIMP	905±14		29°54'32.7"N; 120°36'58.1"E	
	Beiwu	Volcanic rocks	SHRIMP	926±15	Li et al. (2009b)	29°52'19"N; 120°02'35"E	The middle Shuangxiwu Group
	Zhangcun	Volcanic rocks	SHRIMP	891±12		29°51'40"N; 120°04'45"E	The uppermost Shuangxiwu Group

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