

Jing-Yuan Chen, Jin-Hui Yang, Ji-Heng Zhang, Jin-Feng Sun, Yu-Sheng Zhu, and Eva Hartung, 2021, Generation of Cretaceous high-silica granite by complementary crystal accumulation and silicic melt extraction in the coastal region of southeastern China: GSA Bulletin, <https://doi.org/10.1130/B35745.1>.

Supplemental Material

1. Setup and Partition Coefficients

Figure S1. Representative cathodoluminescence (CL) images of zircon grains from the granitic rocks. Red circles show the location of LA-ICPMS U-Pb analyses as well as the LA-MC-ICPMS Hf analyses. Blue circles show the location of SIMS U-Pb isotopic analyses. Black circles show the location of SIMS O isotopic analyses. The scale bar in all CL images is 100 μm in length.

Figure S2. Phase relations in the haplogranitic system represented in the quartz-albite-orthoclase (Qz-Ab-Or) ternary. Adapted from Blundy and Cashman (2001).

Table S1. Zircon Cameca 1280 U-Pb data for the granitic rocks from SE Fujian, coastal area of SE China.

Table S2. LA-ICPMS zircon U-Pb data for the granitic rocks from SE Fujian, coastal area of SE China.

Table S3. Major and trace elements of the granitic rocks from SE Fujian, coastal area of SE China.

Table S4. Whole-rock Sm-Nd isotopic data of the granitic rocks from SE Fujian, coastal area of SE China.

Table S5. Whole-rock Lu-Hf isotopic data of the granitic rocks from SE Fujian, coastal area of SE China.

Table S6. Zircon Hf-O isotopic data of the granitic rocks from SE Fujian, coastal area of SE China.

Table S7. Zircon trace element of the granitic rocks from SE Fujian, coastal area of SE China.

1. Setup and Partition Coefficients

Model setup for felsic fractional crystallization curves in Figures 12a, and b use the same starting composition. Fractionating mineral assemblage resembles that in the Cretaceous monzogranite in the coastal area of SE China. Melt evolution determined by the Rayleigh fractionation (Eq.1) and bulk cumulate evolution (Eq.2) equations:

$$C_L/C_o = F^{(D-1)} \text{ (Eq.1)}$$

$$C_R/C_o = (1 - F^D) / (1 - F) \text{ (Eq.2)}$$

Where C_L is the trace element concentration in the liquid, C_o is the initial trace element concentration in the starting magma, C_R is the trace element concentration in the total residual solid, F is the fraction of melt remaining, and D is the bulk partition coefficient. Equations from Albarede, 1995.

Starting composition:

Rb	190 ppm
Ba	500 ppm
Sr	350 ppm

mineral	mode	low K_D		
		Rb	Ba	Sr
qtz	0.24			
plag	0.35	0.04	0.31	2.84
kspar	0.35	0.34	6.12	2.11
bio	0.05	2.24	5.37	0.12
magnetite	0.01			
apatite	0.001			
zircon	0.002			
	1.00	Bulk D 0.25	Bulk D 2.52	Bulk D 1.74

mineral	mode	high K_D		
		Rb	Ba	Sr
qtz	0.24			
plag	0.35	0.11	1.52	15.63
kspar	0.35	0.74	17.1	22.1
bio	0.05	4.2	23.53	0.52
magnetite	0.01			
apatite	0.001			
zircon	0.002			
	1.00	Bulk D 0.51	Bulk D 7.69	Bulk D 13.23

Partition coefficients from Rollinson, 1993; Bacon and Druitt, 1988; Mahood & Hildreth, 1983; Bachmann et al., 2005; Ewart and Griffin, 1994.

Figure S1

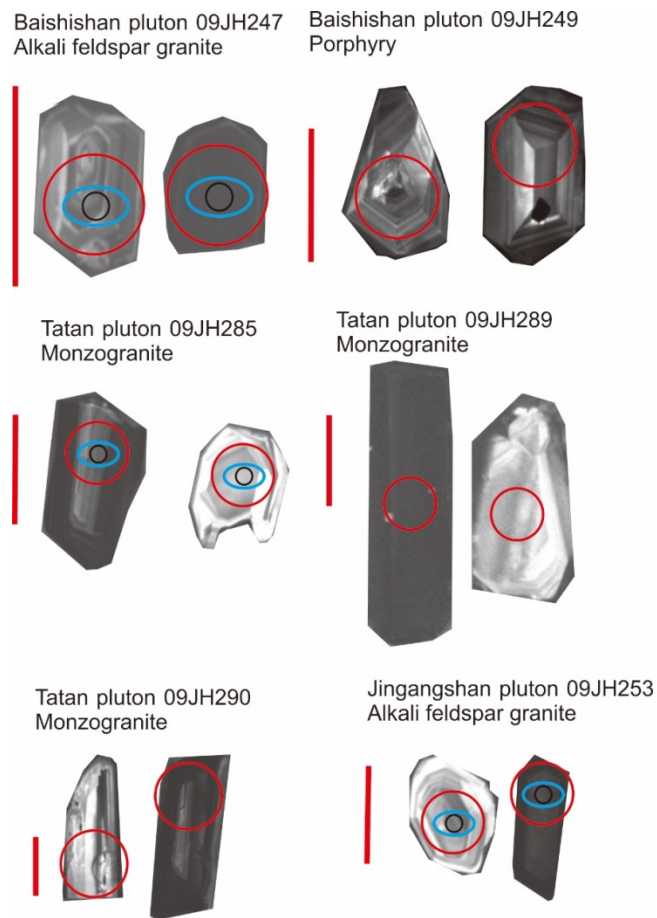


Figure S2

