---------------------------------3-----------------------------------------

Geochemical signature and negative εHf(t) values (-4.9 – (cid:0) 12.6) indicate that the hidden granite might have been generated by melting of crustal materials of argillaceous-depleted sedimentary rocks

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They have negative zircon εHf(t) values ((cid:0) 13 to (cid:0) 10.8) and old Hf crustal model ages (2060–1920 Ma), indicating a Paleoproterozoic crustal source

They have narrow εHf(t) values of (cid:0) 2.7 to +2.6 with corresponding Hf crustal model ages of 1410–1060 Ma, indicating a Mesoproterozoic juvenile crustal source modified by mantle-derived magma

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Zircons from the two-mica monzogranite show a εHf(t) range from (cid:0) 14.1 to (cid:0) 8.0 (average (cid:0) 10.1) and molybdenites from pegmatites show Re contents of 7.06–8.98 μg/g, both indicating that these rocks were likely sourced from the crust materials

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Diﬀerent2 5 2frommostW-bearinggranitesintheJiangxiregion,thecalculatedzirconεHf(t)(−10.0to−2.4;two-stagemodelages:1350–1824Ma)andδ18O values(+6.40to+8.87‰)oftheShimensigranitessuggestthatthezirconlatterweremainlyderivedfromthepartialmeltingofheterogeneoussourcerocks,probablywithcombinedcontributionsfromtheNeoproterozoicShuangqiaoshanGroupmetamorphicrocksandJiulinggranodiorite

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Allofthesegranitesarecharac-terizedbyvariablewhole-rockinitial87Sr/86Sr(0.7053–0.8000),ε (t)(−12.6to−9.4)andε (t)(−12.3toNd Hf−8.5),aswellasvariablezirconε (t)andδ18O,withvaluesof−16.3to−7.4and7.6to10.0‰,respectively

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Thewhole-rockNd(εNd(t)=−6.85to−6.56)andzirconHf–Fractionalcrystallization O(εHf(t)=−12.2to−2.2andδ18OVSMOW=7.15‰to9.19‰)isotopiccompositionsofthehigh-silicaGreisen-typetinmineralization granitesareindistinguishablefromthoseofthemain-phasegranites,implyingthattheyarederivedQitianlingcompositepluton fromthesamesources

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Zircongrainsfromthebatholithsandgraniticporphyrystockshaveε (t)rangingfrom−10to−30,T 2agesfrom1.6to2.5Gaandδ18Ofrom+5.0to+8.7‰,whicharetakenHf DMto suggest the involvement of the subducted continental crust of the Yangtze Block in the source

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Their Sr and Nd isotope compositions (initial 87Sr/86Sr=0.7027 and 0.7097; ε (t)=−5.6 andNd−5.7)arelessradiogenicthanthatoftheSouthChinabasement

ThisisalsofavoredbythewiderangeofzirconHfisotopevalues(ε (t)=−6.6to0.8),whichindicatesmixingprocesses

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FurtherinsituzirconHf-Oisotopeanalysesrevealthatthegraniticcomplexwasdominantlyderivedfromreducedmeltingmetasedimentaryrocks(δ18O =ca.11‰;ε (t) =ca

Thevariationinδ18O(7.8‰–12.9‰)ismorelikelyaresultofhybridization,whereasthatinε (t)(−31.9to−1.8)isaresultofbothhybridizationanddisequilibriummelting

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TheGPhasεNd(t)valuesrangingfrom−10.0to−9.7withTDM2agesof1688–1915Ma,whiletheKFGPhashigherεNd(t)valuesrangingfrom−7.5to−7.6withyoungerTDM2agesof1538–1548Ma

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ZircongrainsoftheYGXgranitoidshavestrongly negative ε (t) (–15 to –10.3), with two-stage Hf model ages of 2.15–1.86Ga, indicating a magmaHfsourceofreworkedancientcrustalmaterialwithoutobviousinvolvementofjuvenilematerials

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The Yantianling granite has low whole-rock εNd(t) values (−9.5 to−9.3),zirconεHf(t)values(−12.7to−7.8)andPaleoproterozoicmodelages

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TheCaijianggranitehasrelativelyhigh(87Sr/86Sr) ratiosof0.71288to0.72009,lowε (t)valuesof−9.9to−9.3,andlowzirconε (t)values(peaki Nd Hfvalueof−7.5)

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TheGaoxigranitehasalsohigh(87Sr/86Sr) ratiosof0.71252to0.71356,lowε (t)valueof−13.8i Ndandlowzirconε (t)values(peakvalueof−12.0)

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ZirconsfromLijiagouspodumenepegmatites thesameunitsyieldεHf(t)valuesof−39.17to6.81,−22.73to−2.83,−11.17to8.14,and−4.92to−2.4,re-Songpan-GarzeFoldBelt spectively,consistentwithmixedcrustalsourcesforthepegmatiteandgranitemagmas

GiventhedifferencesinmagmaticagesandεHf(t)rangesbetweenalbitespodumenepegmatiteandboththetwo-micagraniteandthemuscovitealbitegranite,thealbitespodumenepegmatitesprobablyrepresentanatecticmeltsandnotfractionationproductsofeitherofthegraniticmagmas