

Figure S1. Comparison of TIMS ages calculated from different values of Th/U<sub>magma</sub> for each unit of the SPT and the post-caldera intrusions. For each unit, the uppermost results have been calculated using a single zircon partition coefficient for Th and U (shown in parenthesis to the right of the results) calculated from Claiborne et al. (2016). All other results were calculated using a single value for Th/U magma; the value used is shown in parentheses to the right of the LSPT; these values were used in the same succession for all other samples.

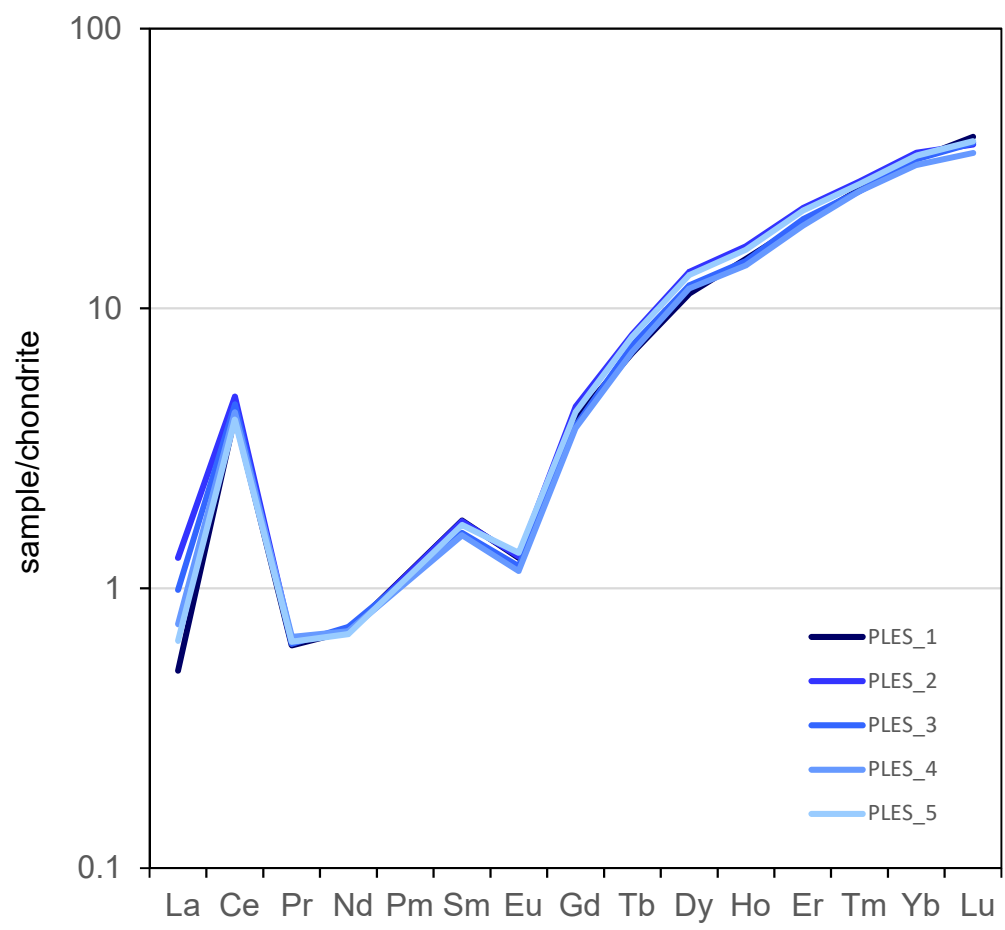
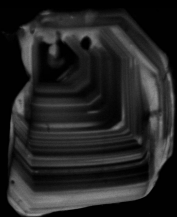


Figure S2. Plot of REEs determined from the Plesovice solution analyzed during one analysis session. The Plesovice zircon solution was analyzed 5 times for every batch of 20 unknowns.

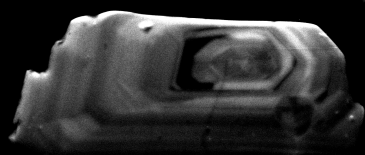


Figure S3. CL images of zircon grains analyzed in this study. Names labeled in blue are high-Hf grains.

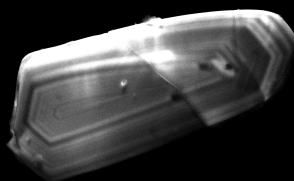
48C



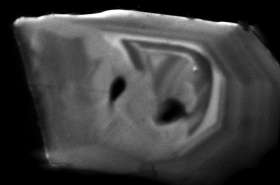
M4 z8



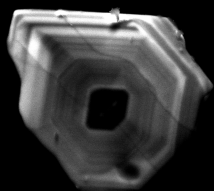
L4 z10



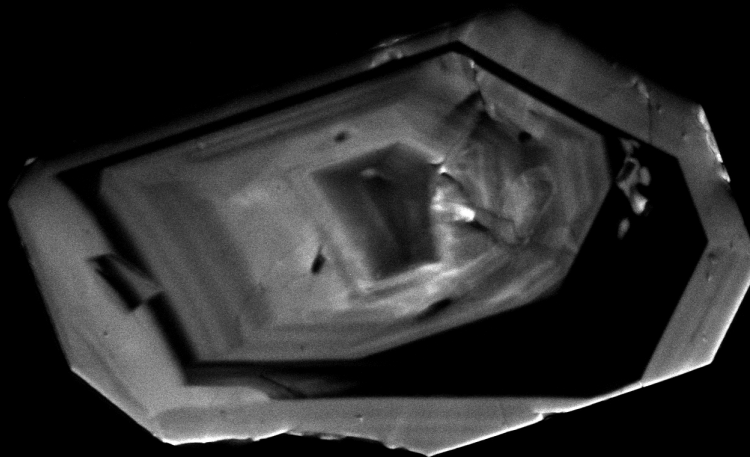
L4 z11



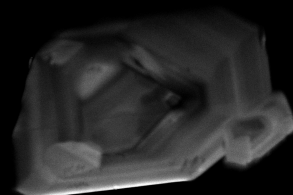
L4 z2



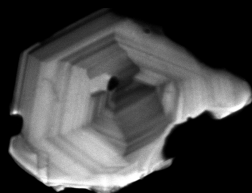
L4 z4



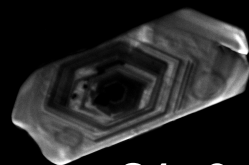
L5 z1



L5 z2



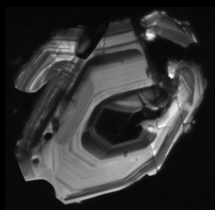
S4 z17



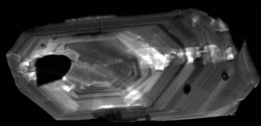
S4 z6

50  $\mu$ m

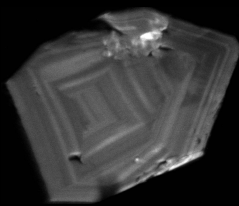
# SPM



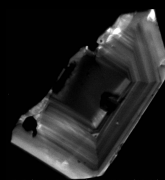
M4 z13



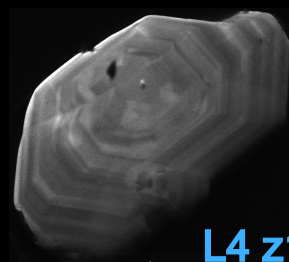
M4 z6



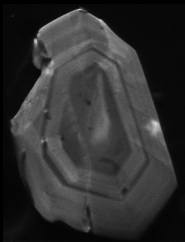
M4 z5



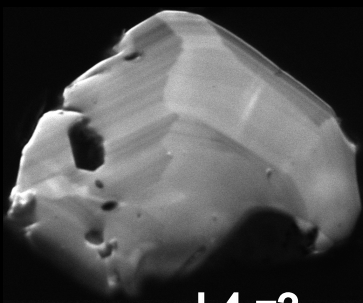
M4 z3



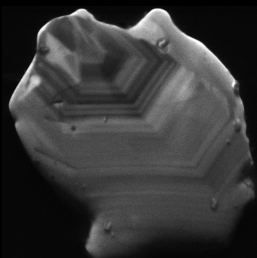
L4 z1



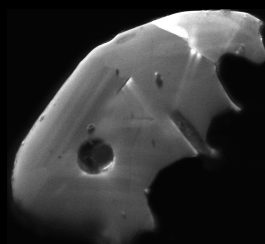
L4 z2



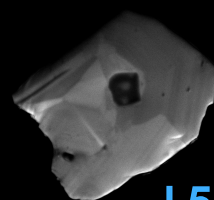
L4 z3



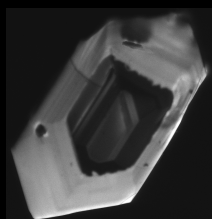
L4 z6



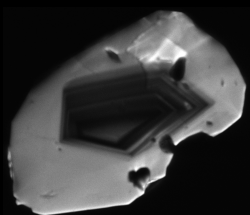
L4 z7



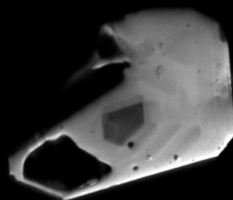
L5 z1



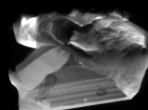
L5 z20



L5 z7



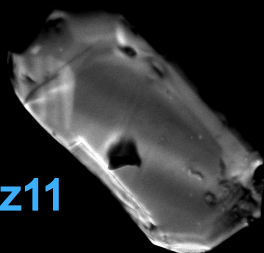
L5 z9



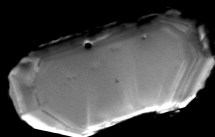
L5 z8



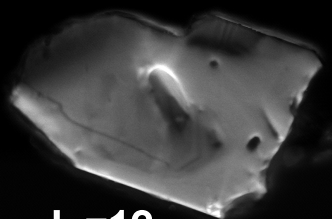
L z10B



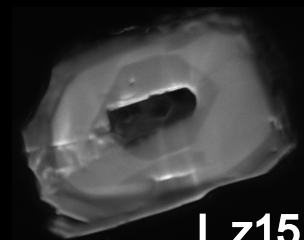
L z11



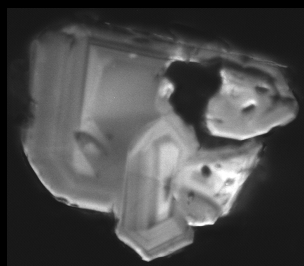
L z12



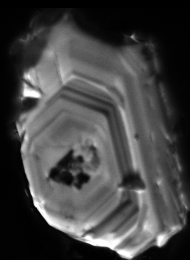
L z13



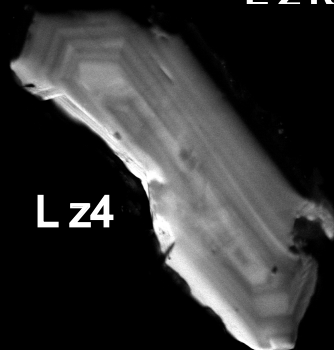
L z15



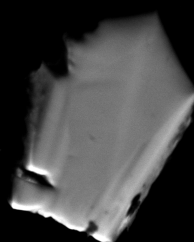
L z19



L z3



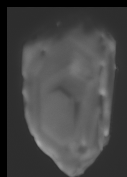
L z4



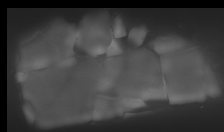
L z5



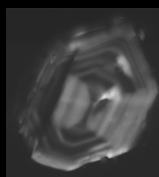
M z3



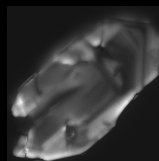
M z6



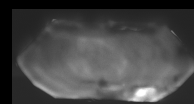
S z10



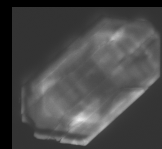
S z12



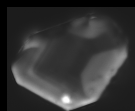
S z14



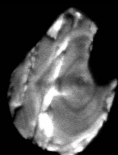
S z1



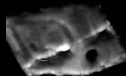
S z4



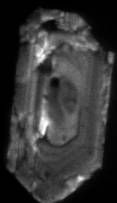
S z9



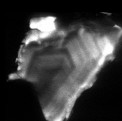
S2 z21



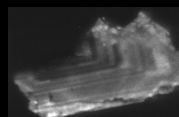
S2 z8



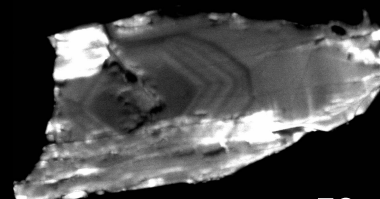
S2 z6



S2 z4



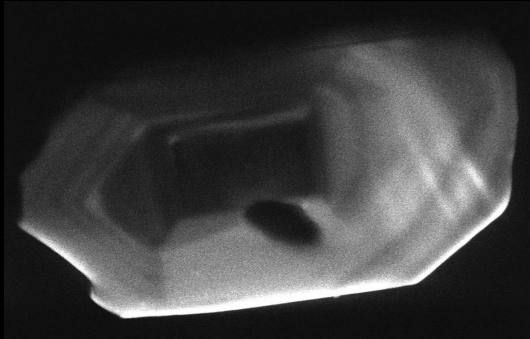
S2 z1



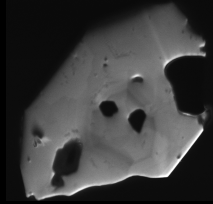
S2 z12

50  $\mu$ m

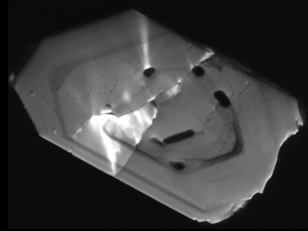
# 40B



M6 z2



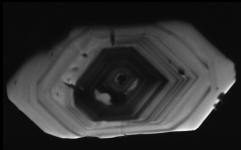
L5 z11



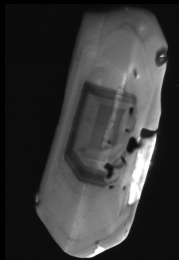
L5 z10



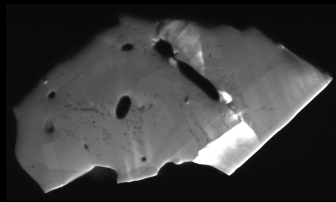
L5 z19



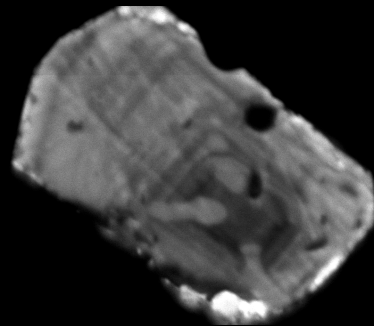
L5 z16



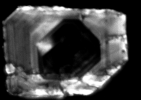
L5 z18



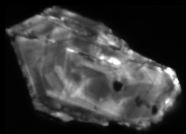
L5 z8



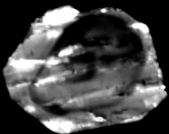
S2 z12



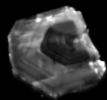
S2 z13



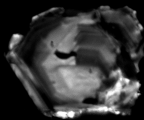
S2 z17



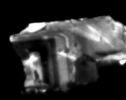
S2 z2



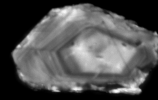
S2 z22



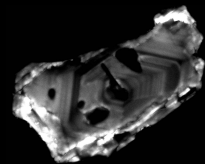
S2 z24



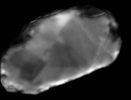
S2 z5



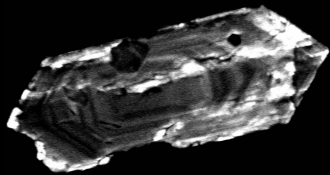
S2 z8



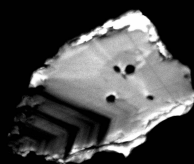
M2 z3



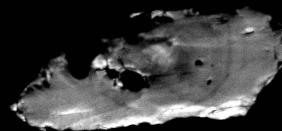
M2 z1



L2 z7



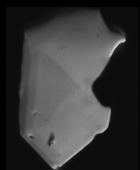
L2 z6



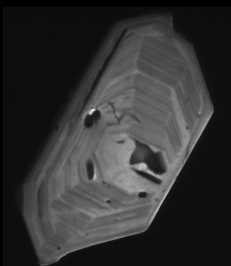
L2 z1

50  $\mu$ m

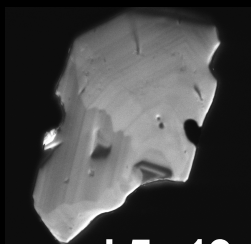
# SPU



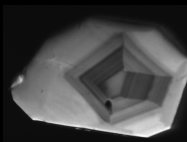
L5 z12



L5 z18



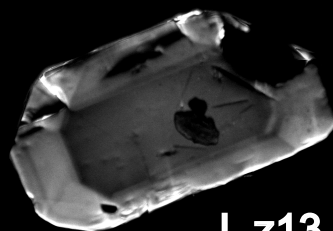
L5 z19



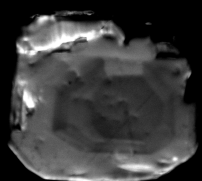
L5 z21



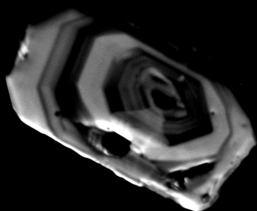
S2 z1



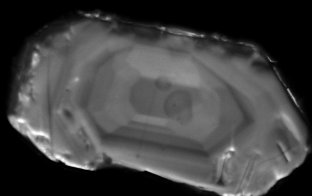
L z13



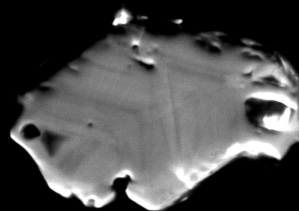
L z15



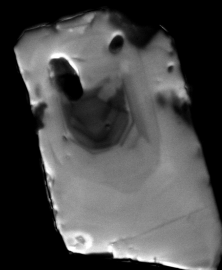
L z19



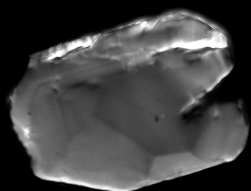
L z1



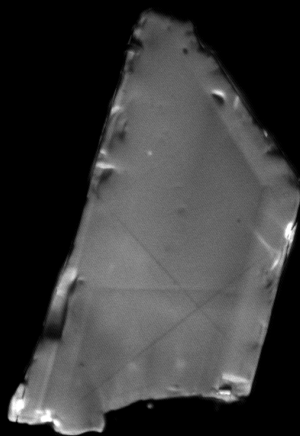
L z20



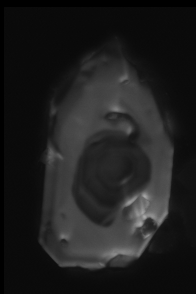
L z7



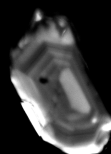
L z8



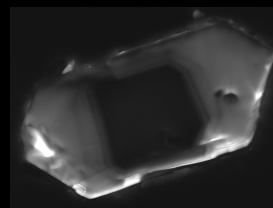
L z9



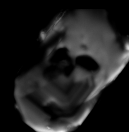
M z14



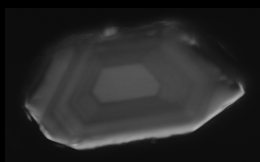
M z1



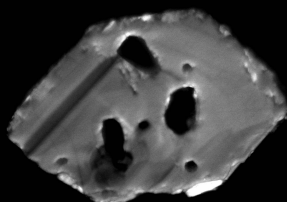
M z20



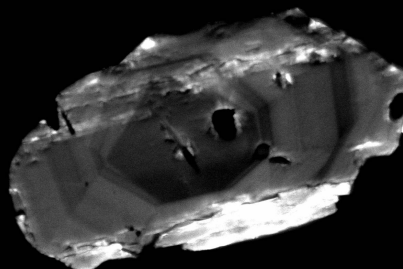
M z3



M z9



L2 z5

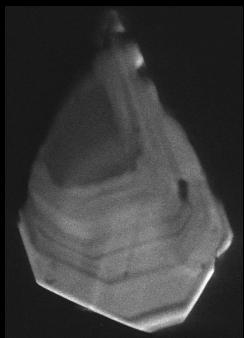


L2 z7

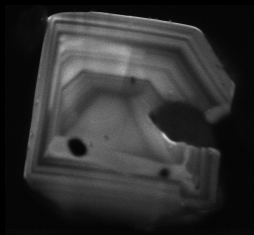
50  $\mu$ m



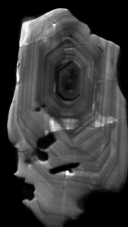
# SY2A



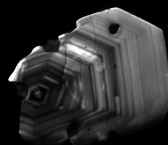
M6 z5



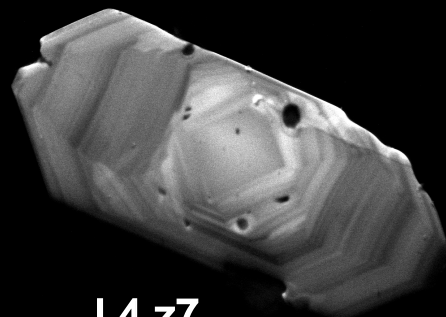
L4 z12



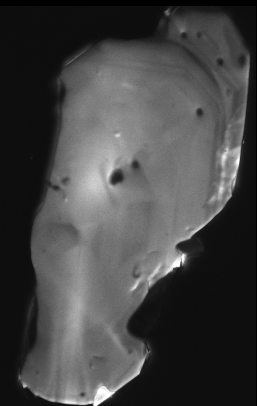
L4 z3



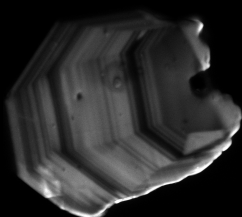
L4 z4



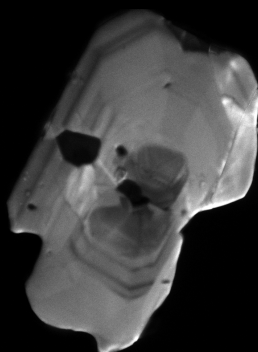
L4 z7



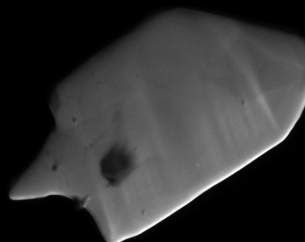
L5 z2



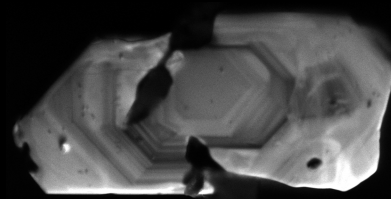
L5 z4



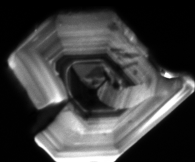
L5 z5



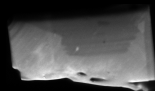
L5 z8



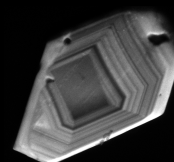
L5 z9



S4 z1



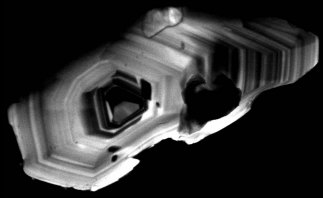
S4 z2



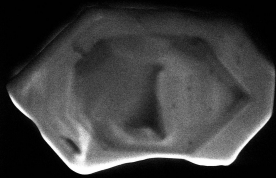
S4 z5

50  $\mu$ m

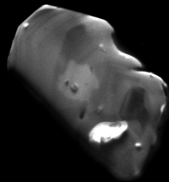
10B



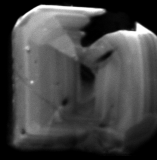
M4 z1



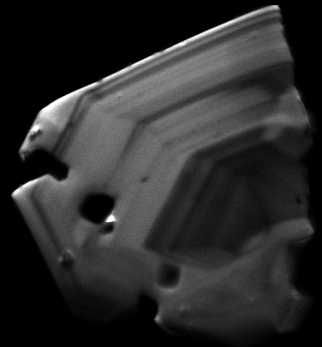
M6 z1



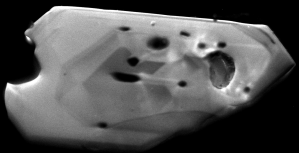
L4 z13



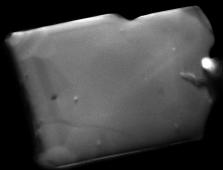
L4 z17



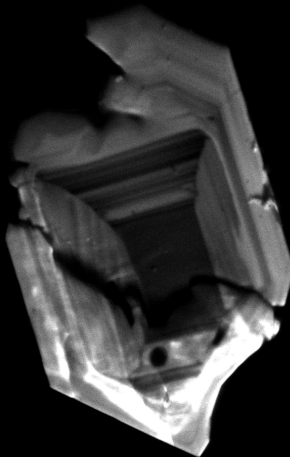
L4 z6



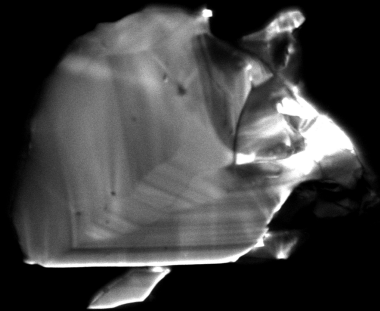
L4 z7



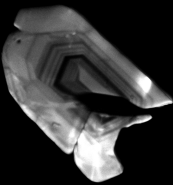
L4 z9



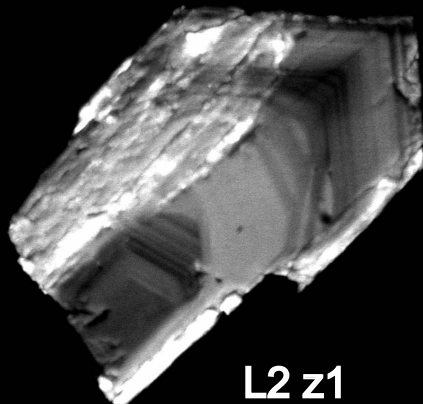
L5 z2



L5 z3



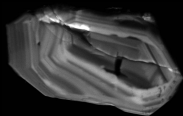
S4 z5



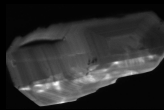
L2 z1

50  $\mu$ m

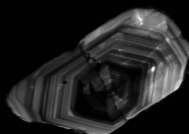
1C



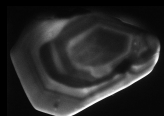
M4 z2



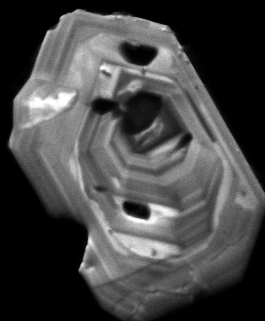
M4 z6



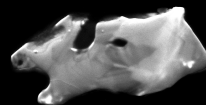
M4 z5



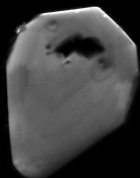
M6 z6



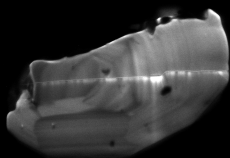
L4 z1



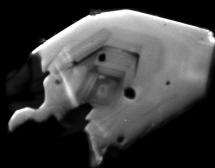
L4 z11



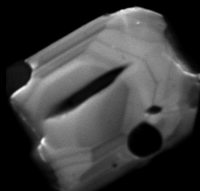
L4 z15



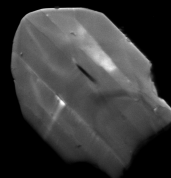
L4 z16



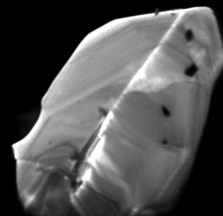
L4 z3



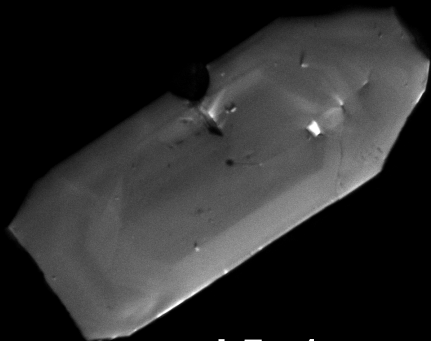
L4 z6



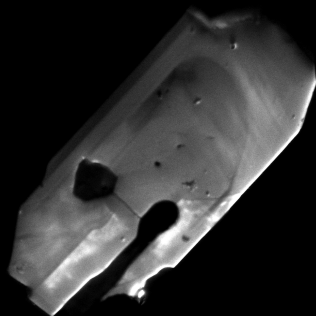
L4 z5



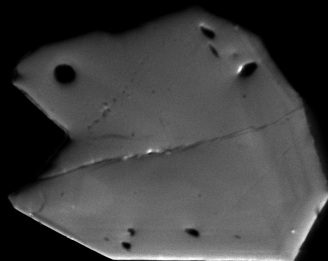
L4 z9



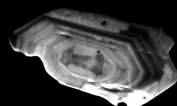
L5 z1



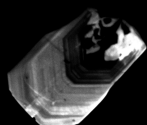
L5 z4



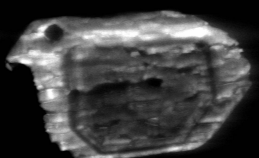
L5 z5



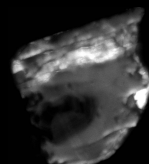
S4 z2



S4 z3



L2 z7

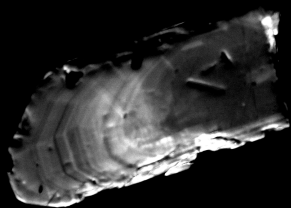


L2 z6

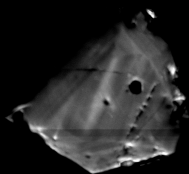
50  $\mu$ m



# AGQM



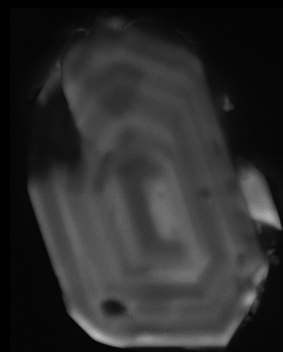
L z3



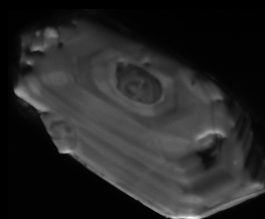
L z7



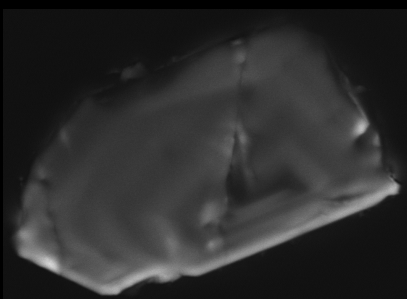
L z8



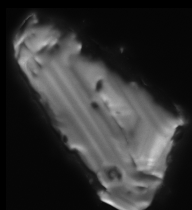
M z10



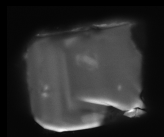
M z11



M z17



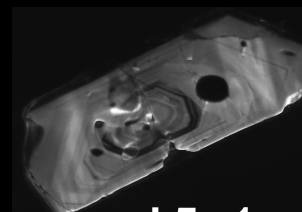
M z3



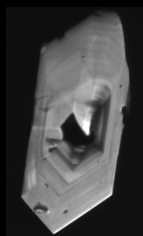
M z5



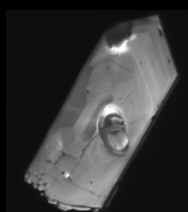
M z7



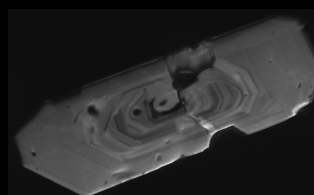
L5 z1



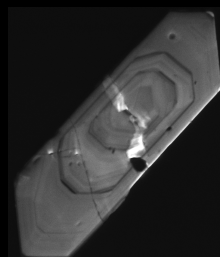
L5 z13



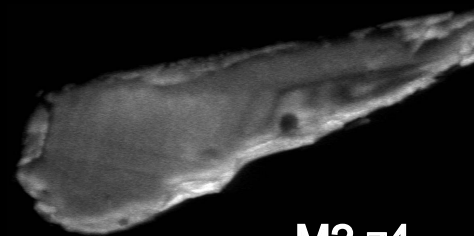
L5 z17



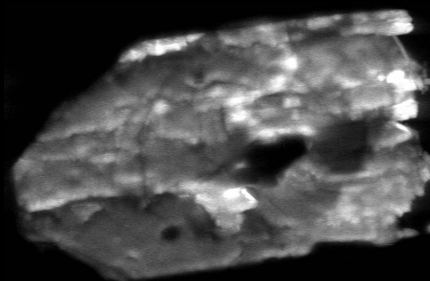
L5 z6



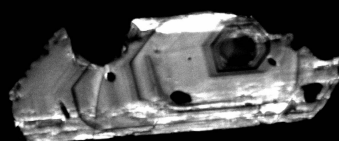
L5 z8



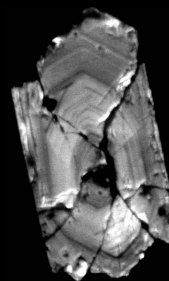
M2 z4



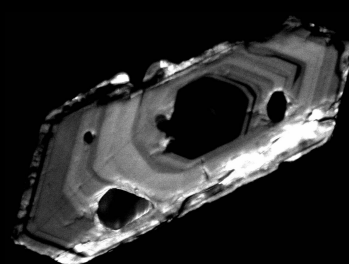
M2 z2



M2 z3



M2 z4



M2 z9

50  $\mu$ m

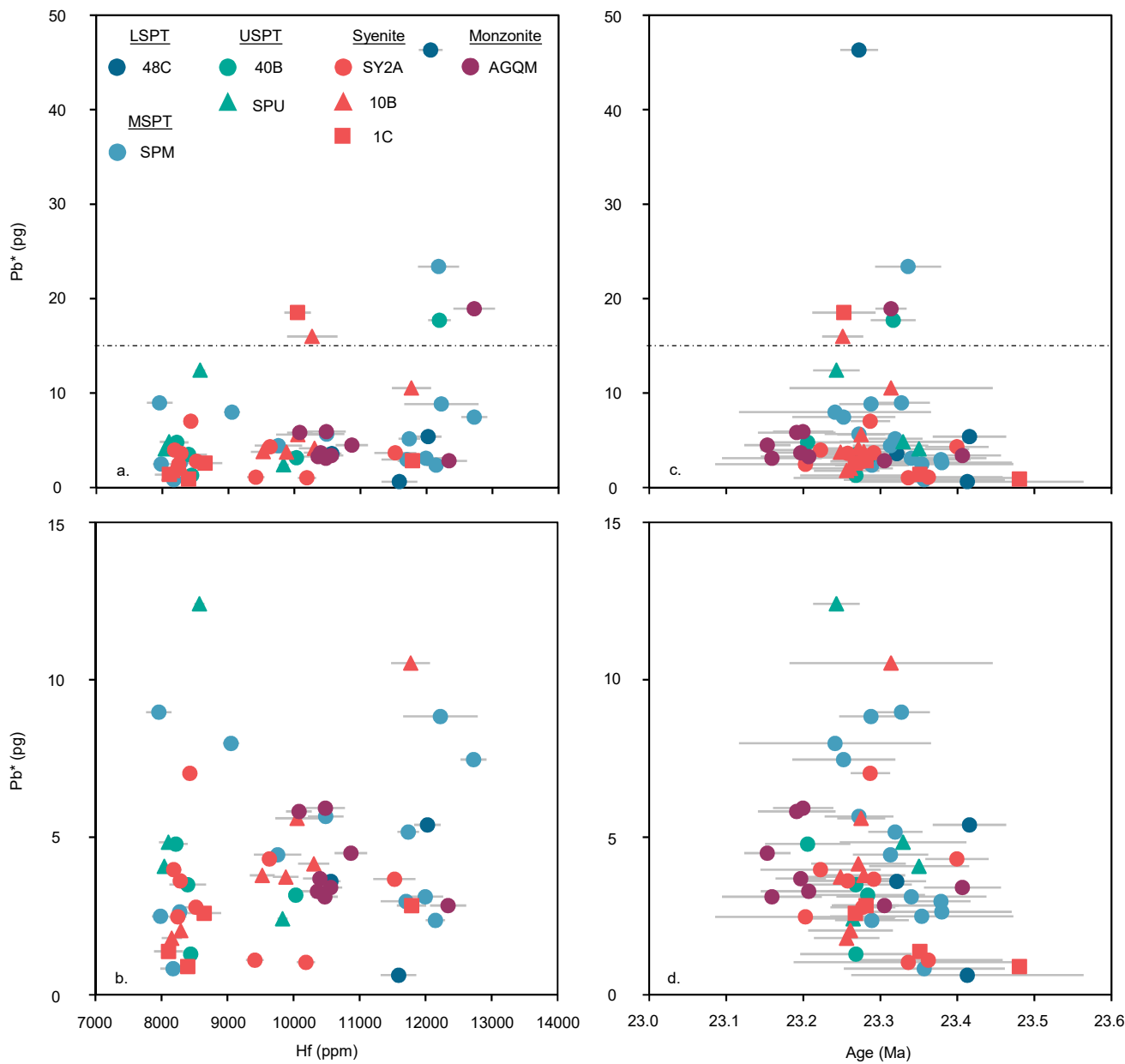


Figure S4. Zircon radiogenic Pb contents (Pb\*) vs. (a, b) Hf and (c, d) age. Plots in (b) and (d) are zoomed in region below dashed lines in (a) and (c). There is no relationship between zircon Pb\* and Hf or age in any of the samples.

Supplemental Material 2.

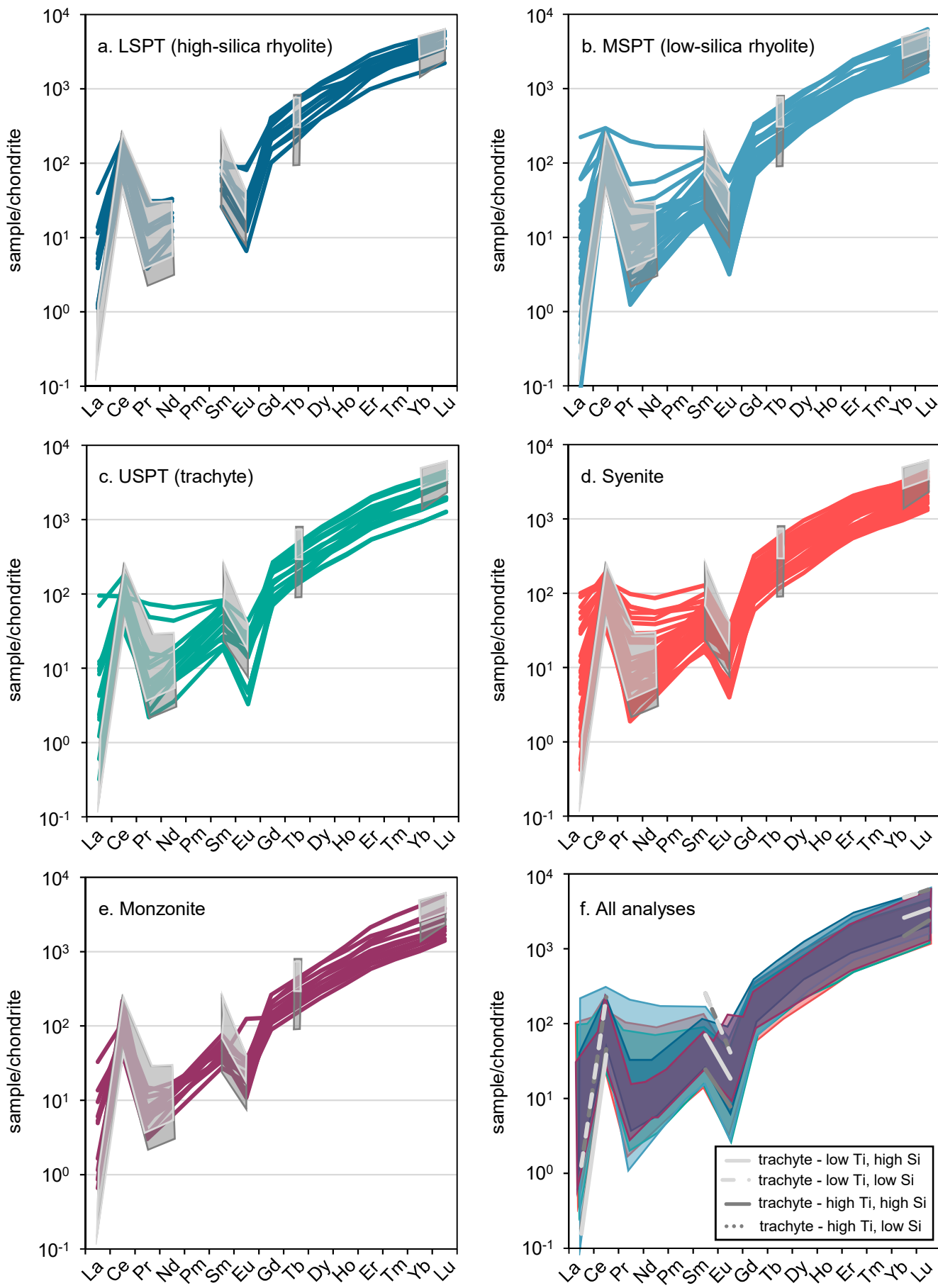


Figure S5. Zircon REE from TIMS-TEA and trace element modeling from a trachyte parent melt (1Tspupa; Kennedy et al. 2016) for each sample. Fields on each plot cover simulation results for a range of melt SiO<sub>2</sub> contents (SiO<sub>2</sub> at zircon saturation to 77 wt. % SiO<sub>2</sub>) for max (dark gray) and min (light gray) melt TiO<sub>2</sub> availability. REE patterns for maximum and minimum Ti availability and melt SiO<sub>2</sub> are shown in panel (f).

Supplemental Material 2.

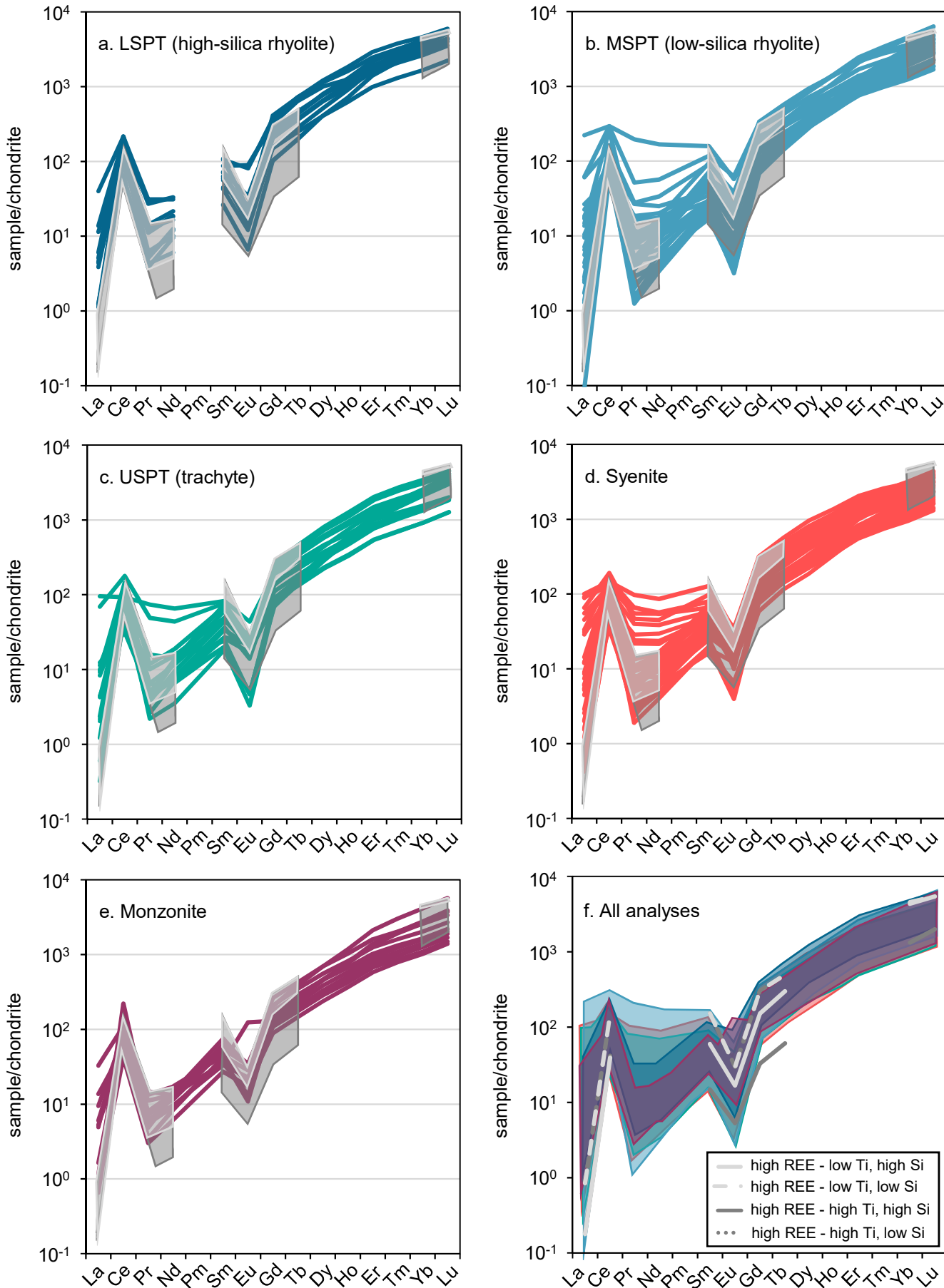


Figure S6. Zircon REE from TIMS-TEA and trace element modeling from a high-REE trachyte parent melt (4Tspup; Kennedy et al. 2016) for each sample. Fields on each plot cover simulation results for a range of melt  $\text{SiO}_2$  contents ( $\text{SiO}_2$  at zircon saturation to 77 wt. %  $\text{SiO}_2$ ) for max (dark gray) and min (light gray) melt  $\text{TiO}_2$  availability. REE patterns for maximum and minimum Ti availability and melt  $\text{SiO}_2$  are shown in panel (f).