

V634A Monazite Mz4 Compositional Maps

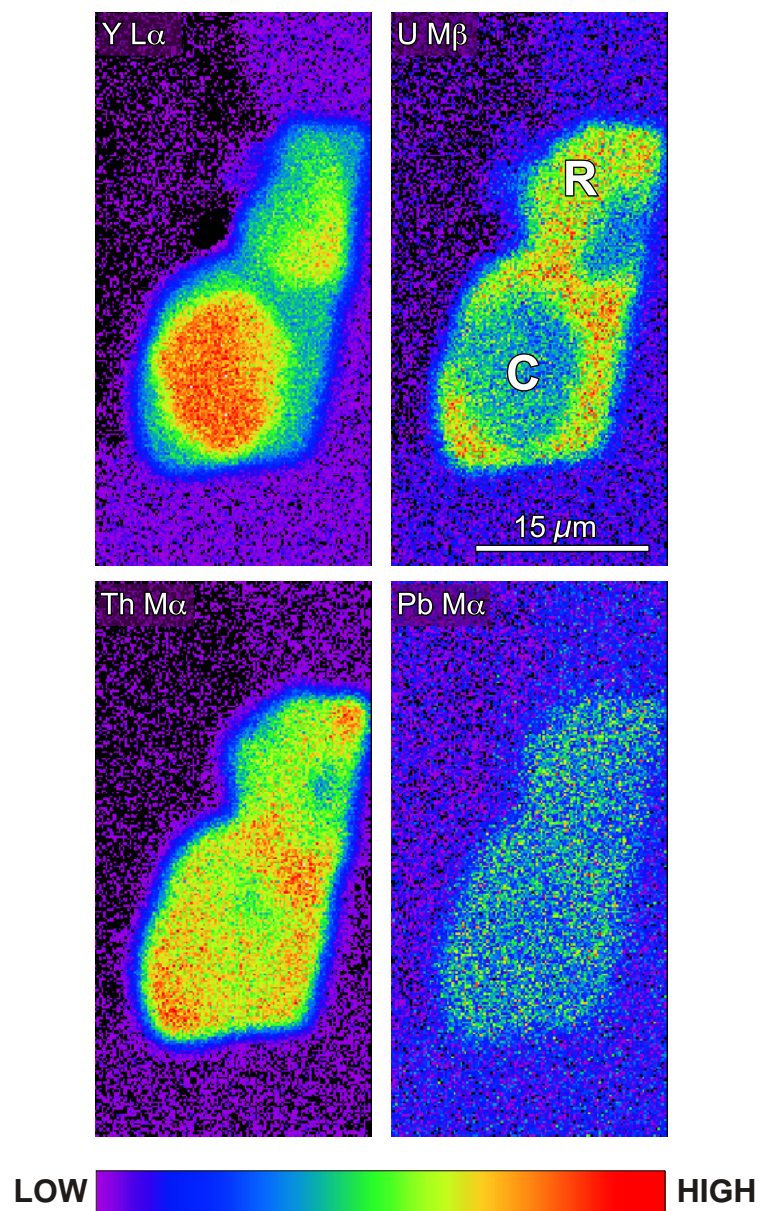


Figure 9. X-ray compositional maps of Y, U, Th and Pb for monazite Mz4 from sample V634A from the outer edge of a garnet core. Maps show relative Y enrichment in the core (C) and relative U enrichment in the rim (R).

V436A Monazite Compositional Maps

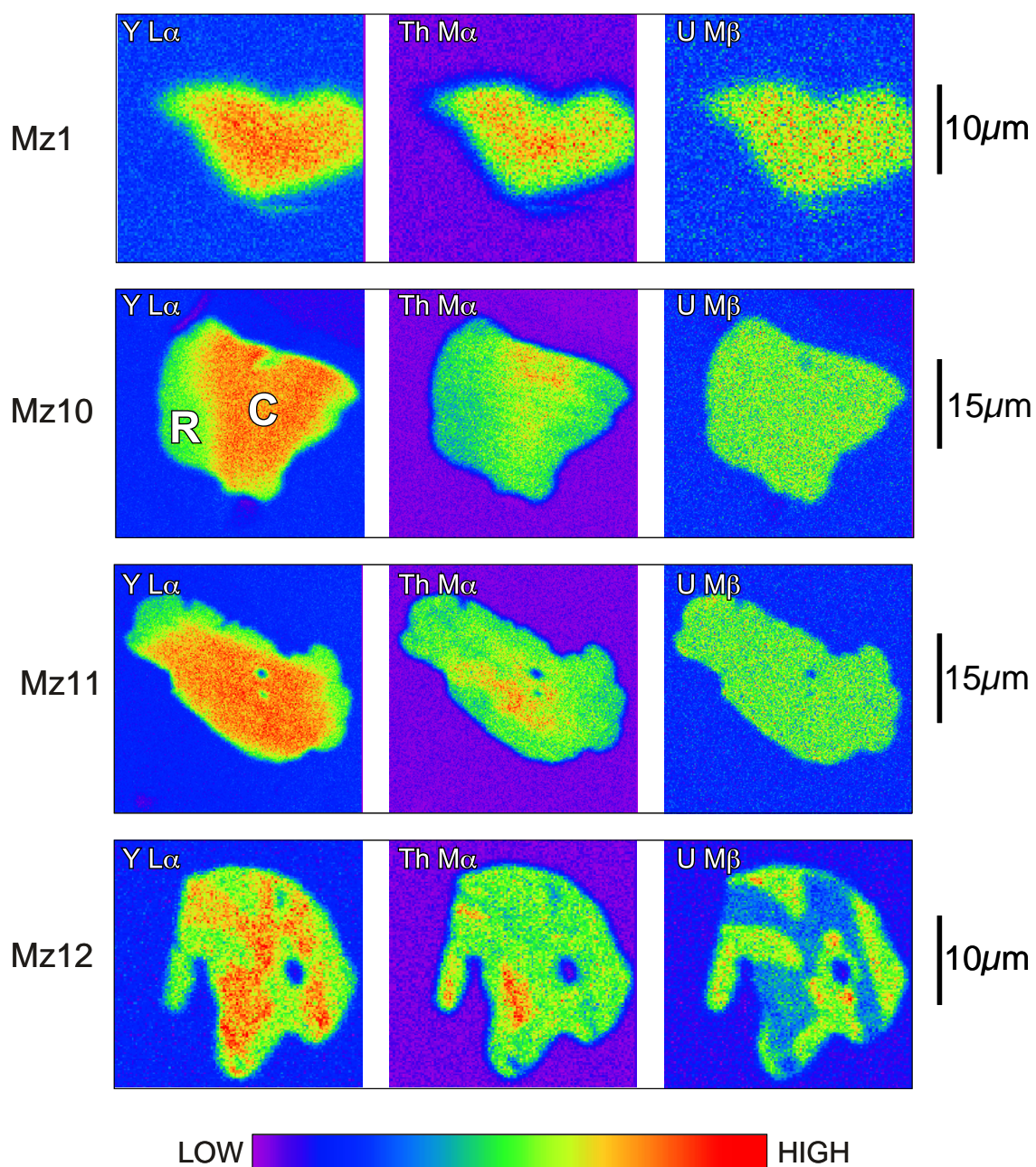


Figure 10. X-ray compositional maps of Y, U and Th for monazite grains Mz1, Mz10, Mz11, and Mz12 from sample V436A. Mz1 is from a garnet core, Mz10 and Mz11 are from the edge of the garnet core and Mz12 is from the garnet rim of same porphyroblast (see fig. 4). Compositional map for Mz10 shows high Y cores with relatively low Y overgrowths. Compositional map for Mz12 shows a small zone of relative Th enrichment surrounded by interpenetrating areas of high U and high Y. Note that composition maps for monazites grains M1, M10 and M11 show little zoning in U whereas the compositional map monazite Mz12 shows complex zoning in U.

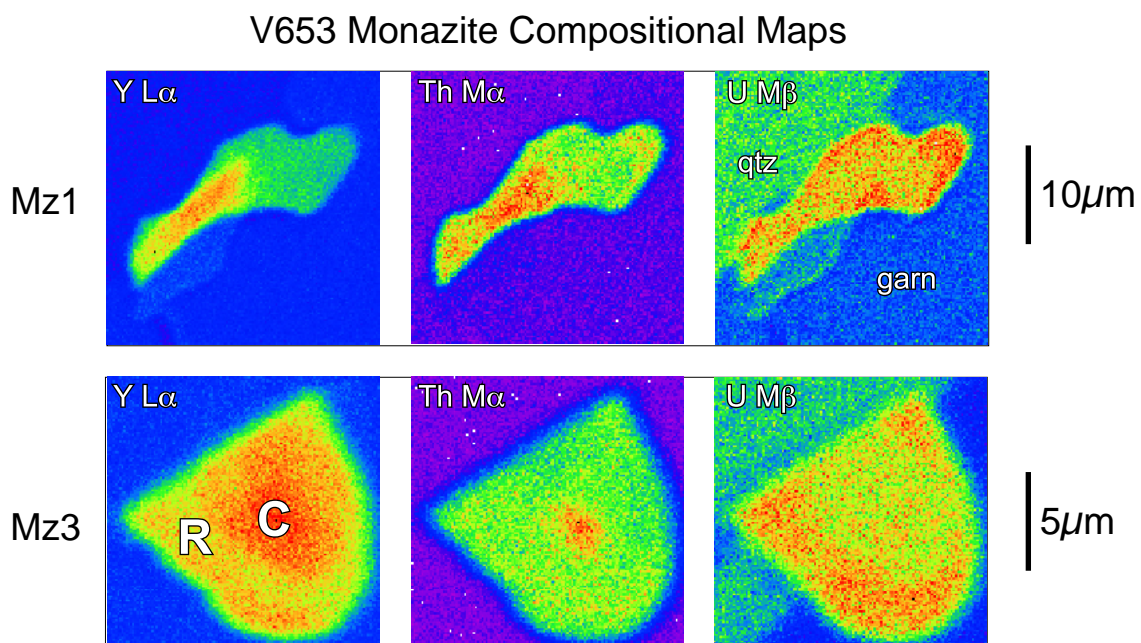


Figure 11. X-ray compositional maps of Y, U, Th for monazite grains Mz1 and Mz3 from sample V653. Monazite Mz1 is from the edge of a garnet porphyroblast and Mz3 is in an inclusion from a garnet rim. Compositional maps show core and rim for Mz3 with a relatively high Y core and relatively high U rim. Compositional maps for Mz1 show similar zoning with less well-defined core and rim.

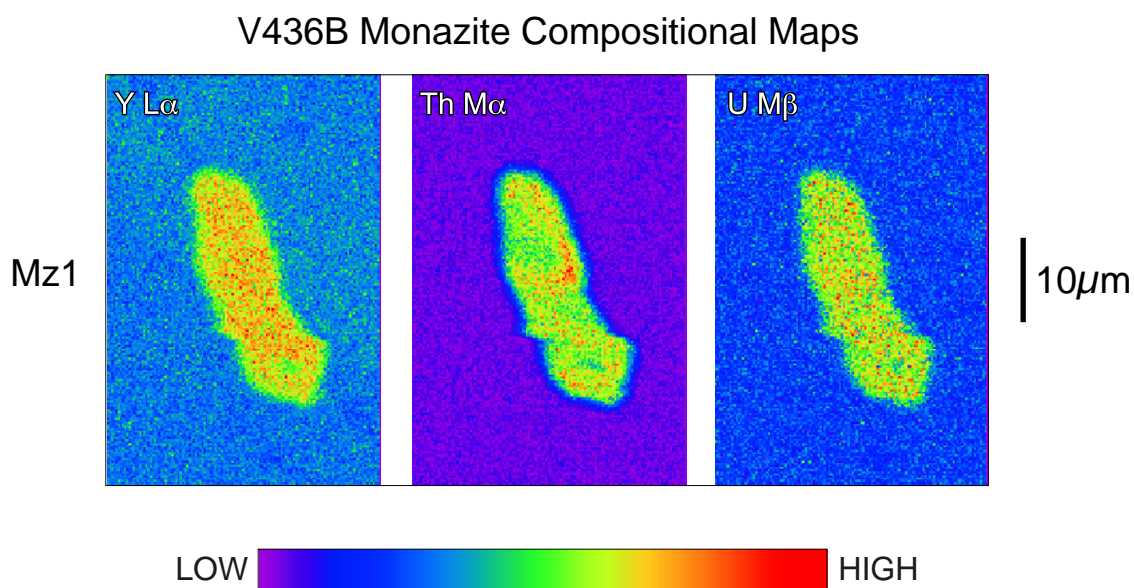


Figure 12. X-ray compositional maps of Y, U and Th for monazite Mz1 from the rim of a garnet porphyroblast (see also fig. 6).

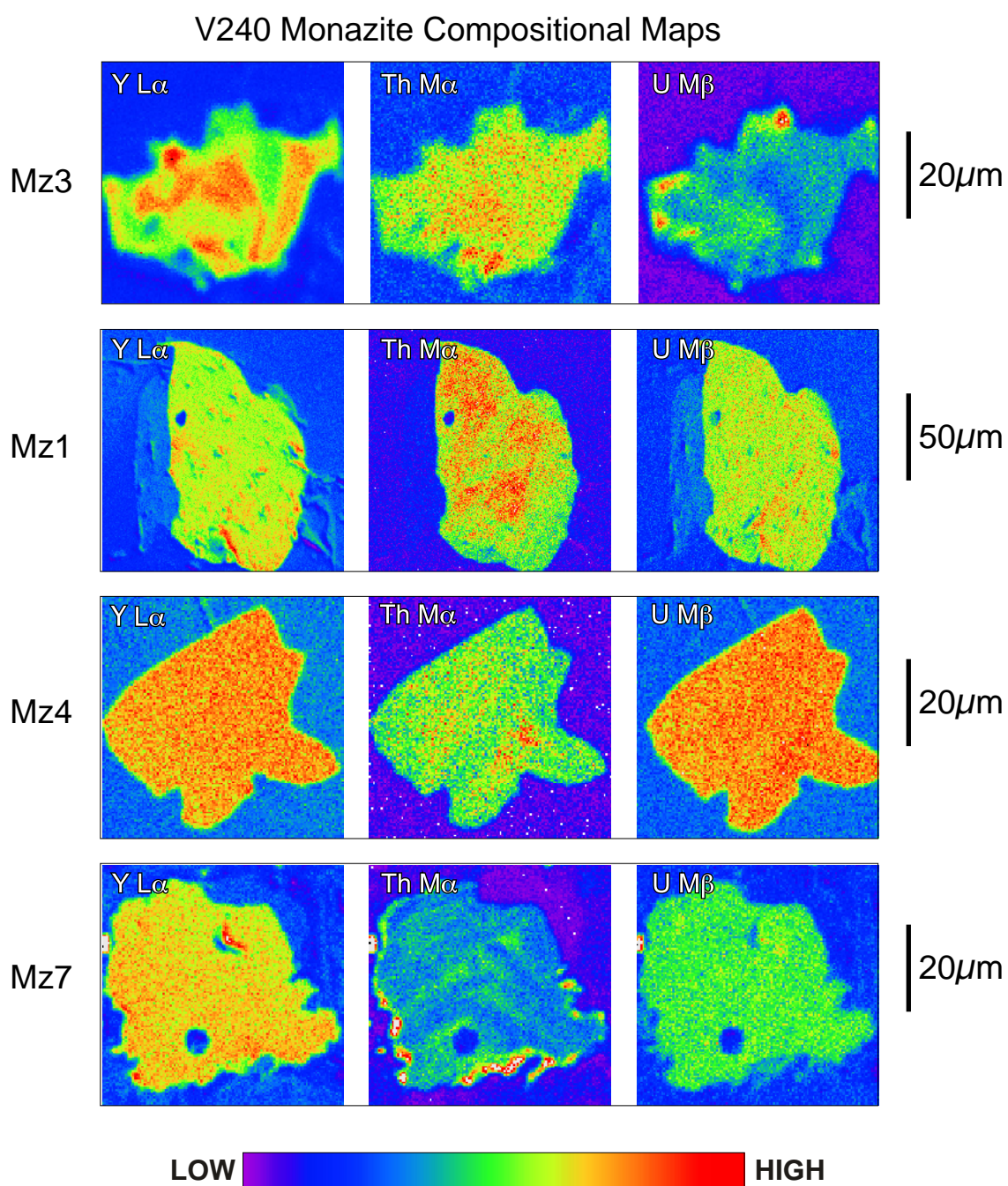


Figure 13. X-ray compositional maps of Y, U and Th for monazite grains Mz1, Mz3, Mz4 and Mz7 from sample V240. SHRIMP analyses were collected for all 4 grains and positions of SHRIMP points are shown for Mz1 and Mz7 in figure 8. Monazite grains trapped as inclusions (e.g. Mz1 and Mz4) have smooth surfaces whereas matrix grain have highly irregular surfaces (Mz7).

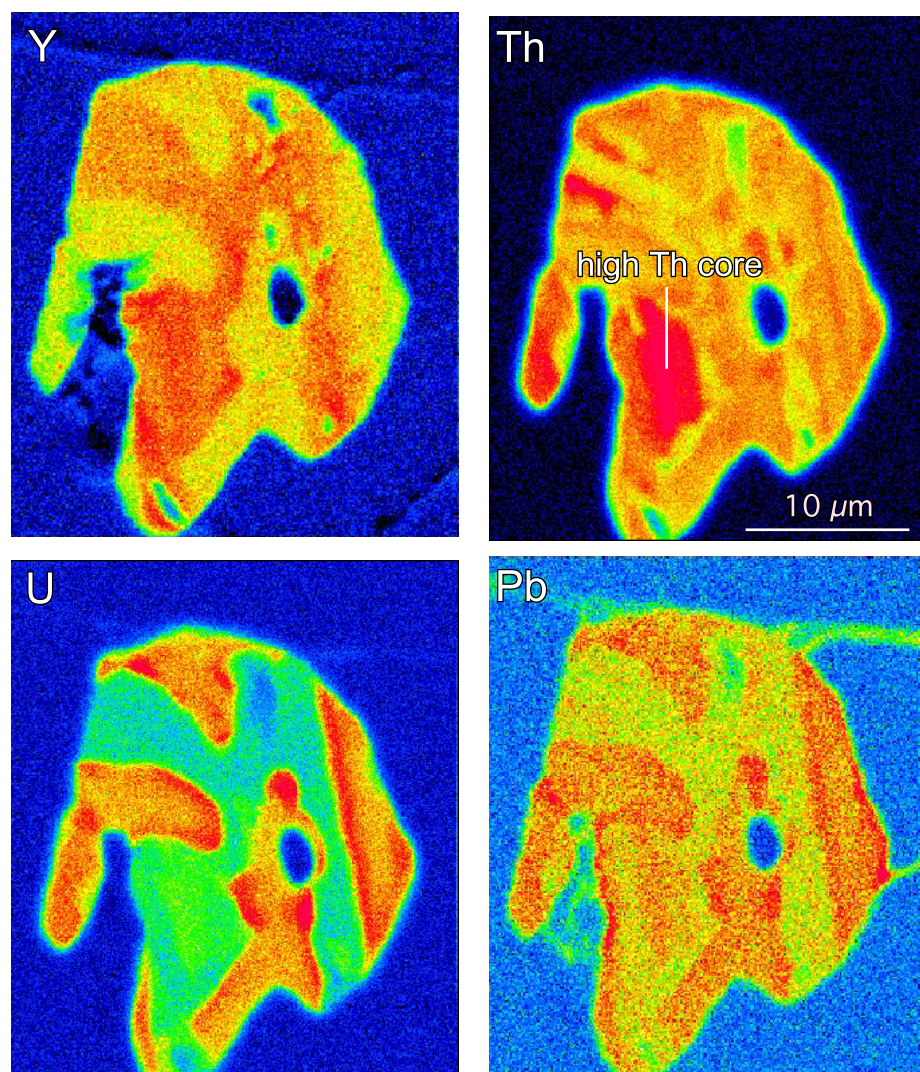
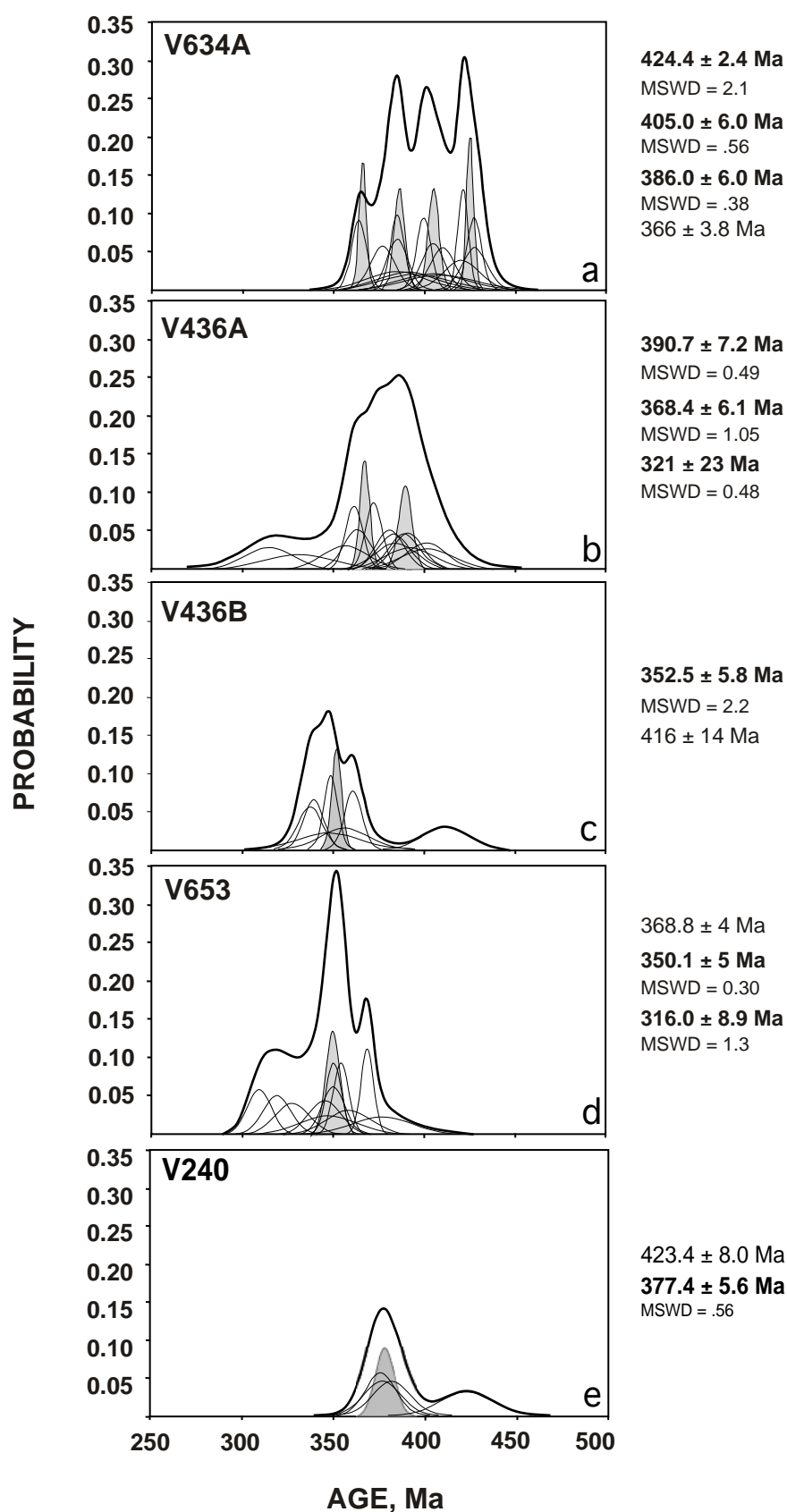


Figure 14. X-ray compositional maps of Y, U, Th and Pb for monazite grain Mz12 from sample V436A collected at the JEOL Application and Research Center. Pb X-ray intensities were collected on three spectrometers and then added or stacked to produce false color map. Note that zones of higher Pb correspond directly with zones of higher U and Th.

Figure 15. Probability distribution curves for the 5 sample dated: V634A, V436A, V436B, V653, and V240. Sample ages reported are for weighted averages of monazite populations in bold. Other ages reported are for single monazite grains that were considered to be significant, e.g. single monazite grains trapped in garnet core. Small curves are normal distribution curves calculated for single monazite curves with mean and stddev calculated from a number of analyses. Grey filled curves are normal distribution curves for weighted averages. Heavy line represents the total probability curve for the sample calculated as the sum of all of the single monazite curves.

Probability Curves for Electron Microprobe Ages



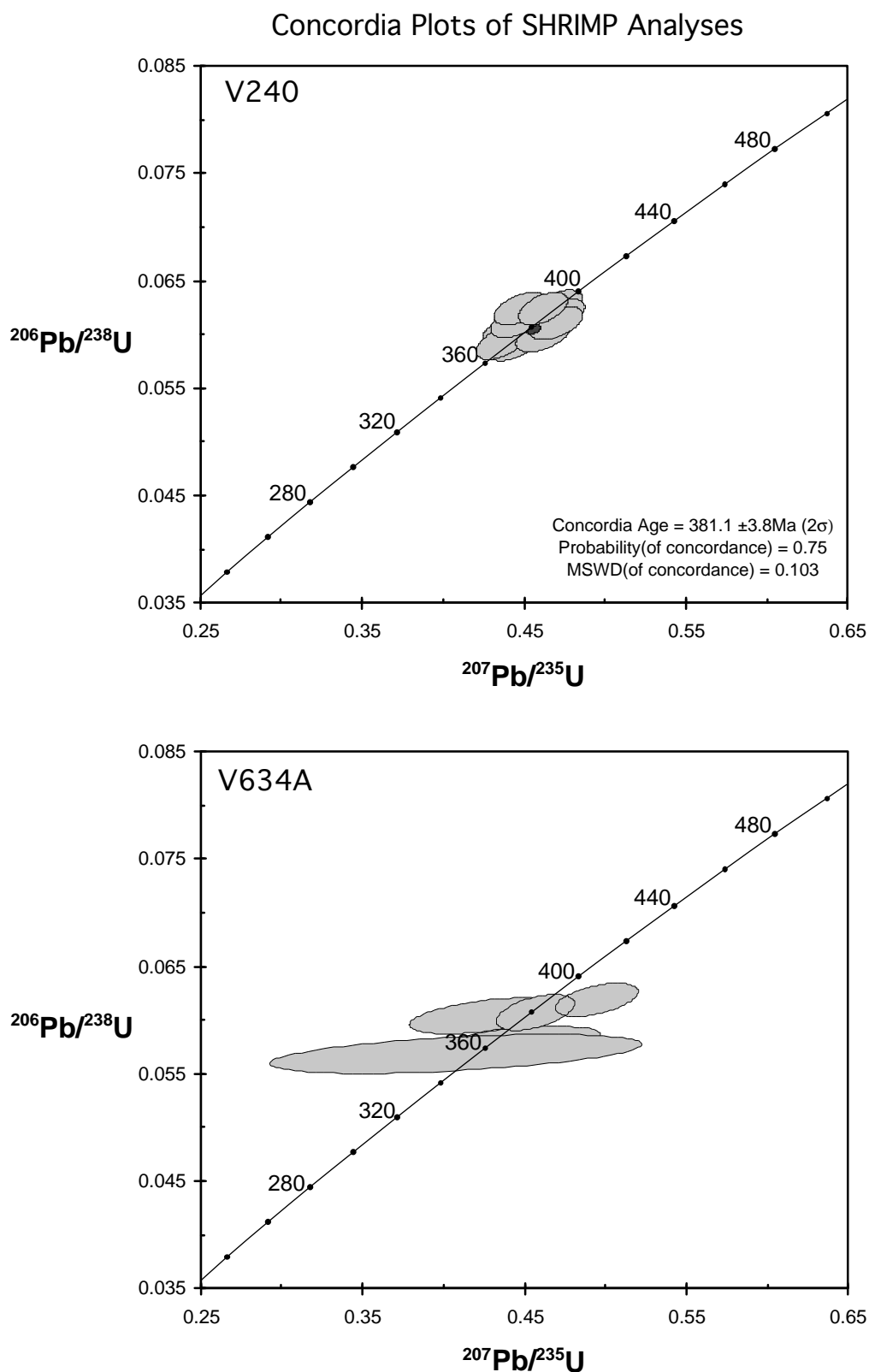


Figure 16. Concordia plots for SHRIMP analyses of monazite from samples V240 and V634A. Error ellipses are plotted for each analysis at the 1-sigma confidence level. A single concordia age is reported for sample V240 while no concordia is reported for V634A because of contamination from garnet.

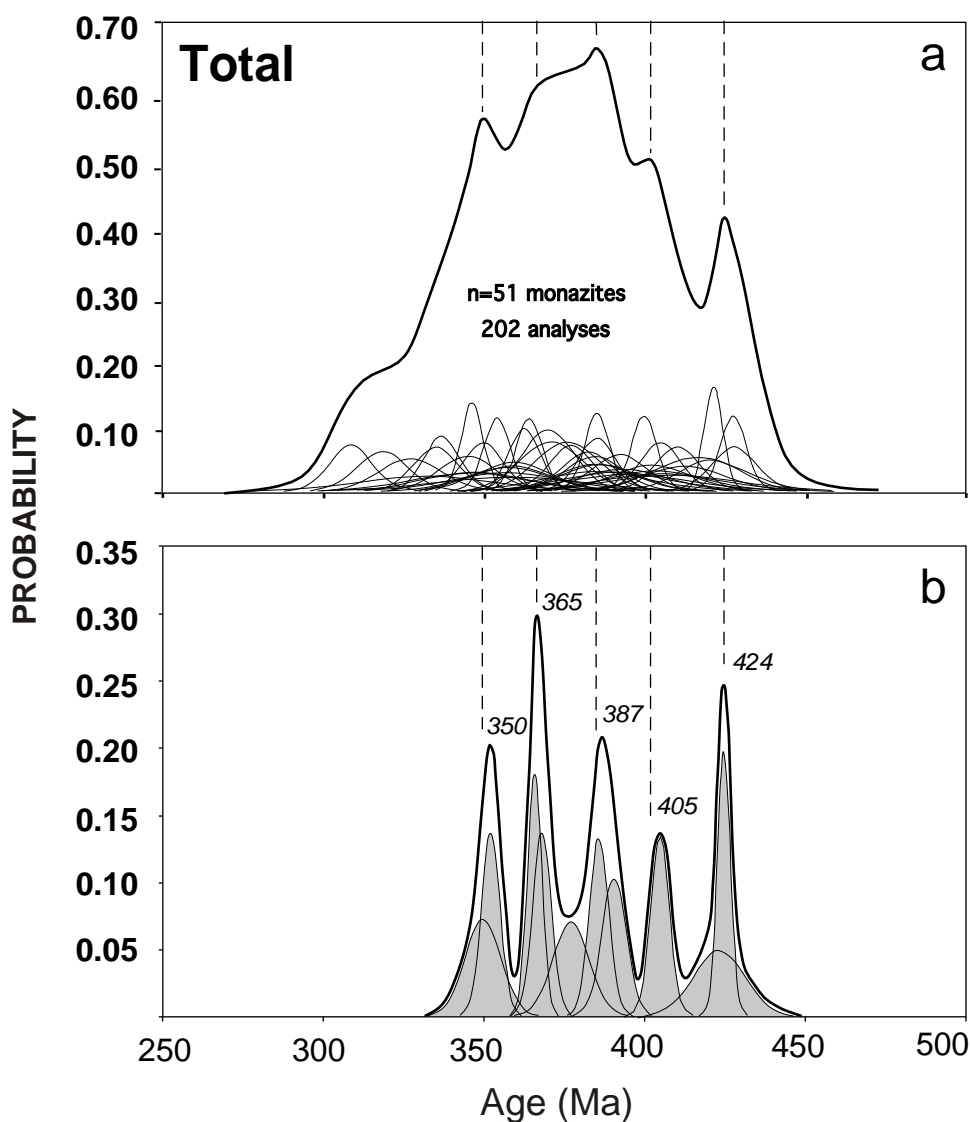


Figure 17. Probability distribution curves for total dataset plotted from individual monazite grains (a) and weighted averages (b). Small curves are for individual monazites and greyed curves are weighted averages. Heavy curve is determined as the sum of of the curves below. Vertical dashed lines show ages determined from single samples (weighted averages).