

FIGURE EA-1. BSE image of buddingtonite (bud) with relict muscovite (musc), together with bertrandite (bert) and euclase (euc), which is rare in the pseudomorph.

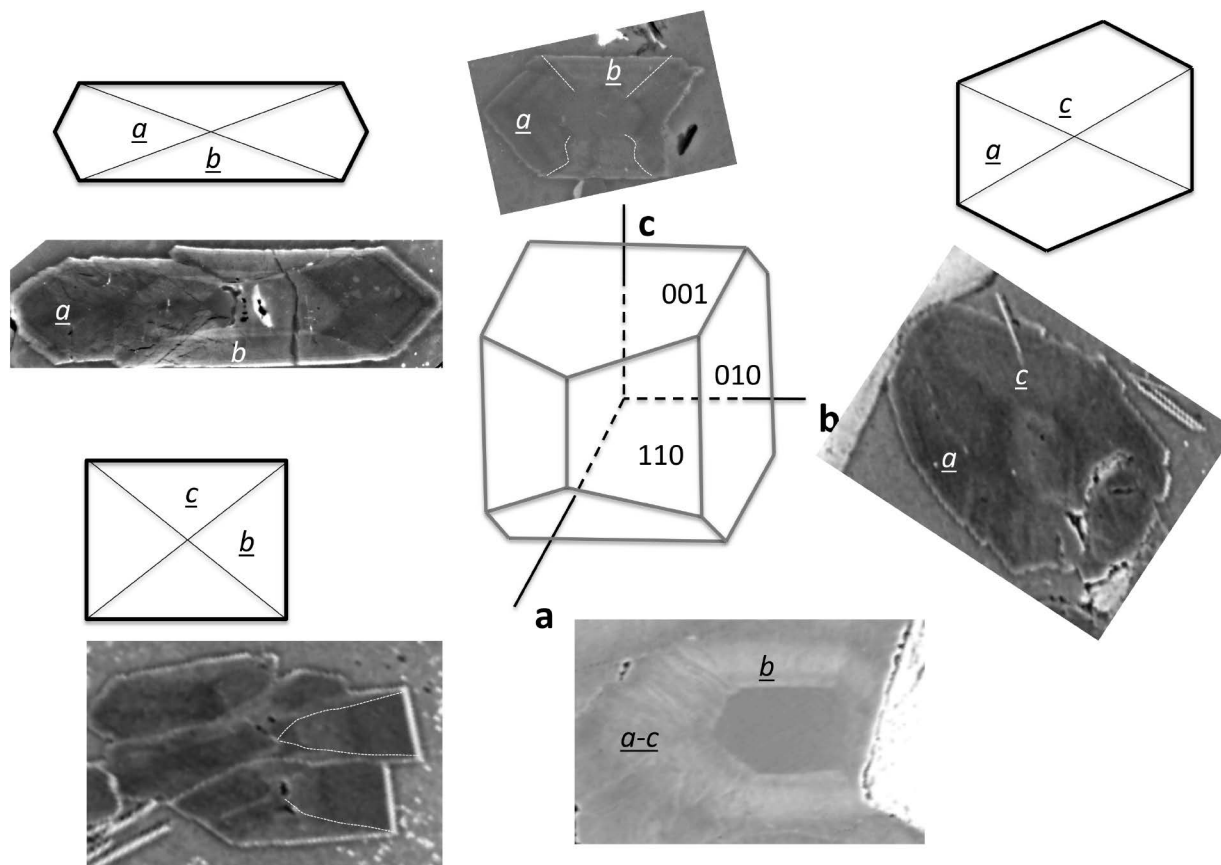


FIGURE EA-2. Schematic drawing of sector zoning in buddingtonite and BSE images of euhedral crystals from the pseudomorph (sectors labeled in *italics, underlined*; some sectors are outlined). High BSE contrast indicates high K-content, low contrast high NH_4 - and “water”-content. The habit is drawn according to crystal drawings in Deer, W.A., Howie, R.A., and Zussman, J., *Framework silicates: Feldspars*; The Geol. Soc., London, 2001. The a-sector in many crystals extends into fibrous crystals (fastest growth direction) and has the lowest K-contents, the b-sector shows a zone with high K-content. Cores are often low in K. Euhedral crystals are platy with growth rates $a > b > c$.

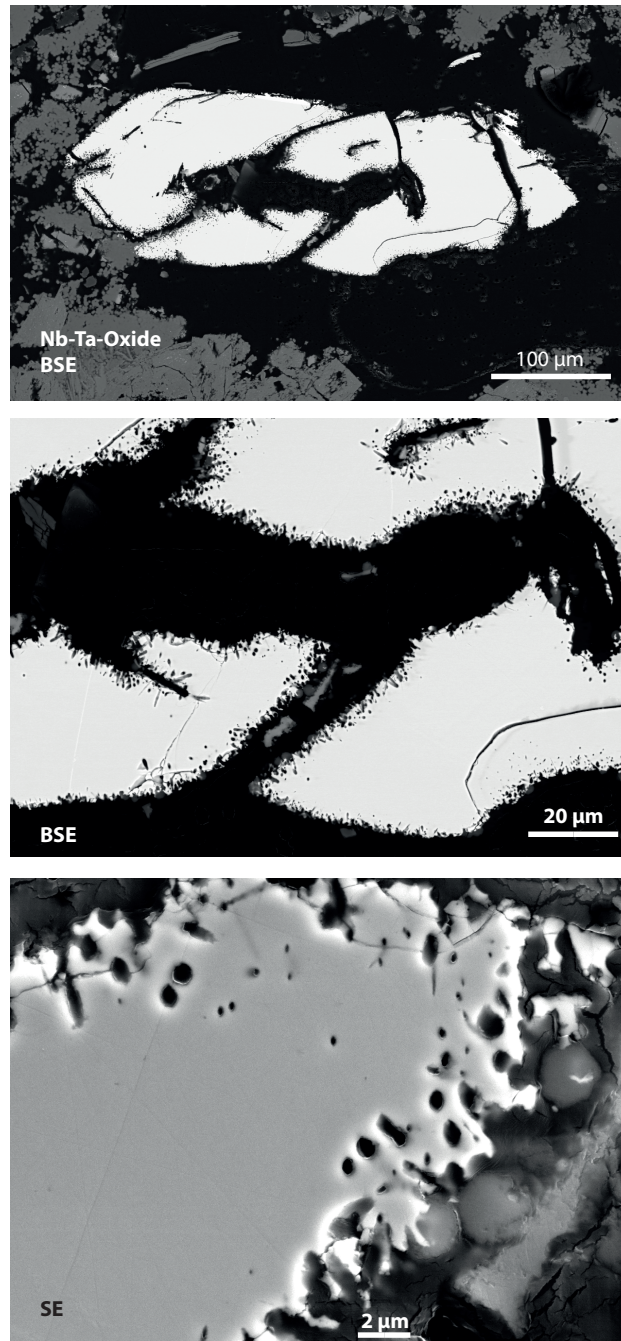


FIGURE EA-3. BSE images of relict columbite with approximately euhedral outline, but with strong indications for dissolution from the outer rim and along cracks into the interior of the grain, and SE image of with μm -sized pores, now filled with epoxy.

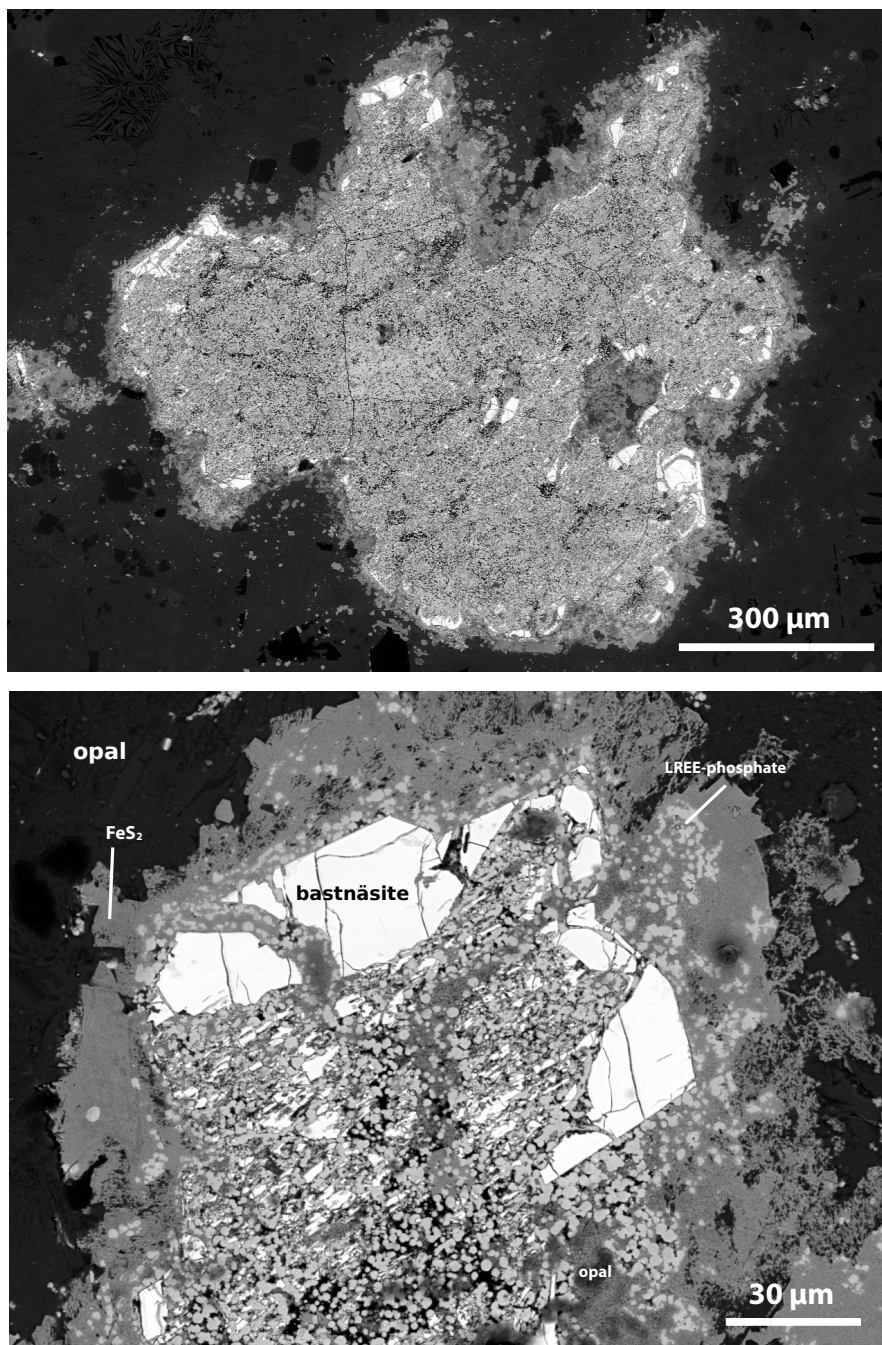


FIGURE EA-4. BSE images of relict bastnäsite-Ce, surrounded by opal with a LREE-phosphate, possibly rhabdophane, with minor amounts of FeS₂, possibly markasite

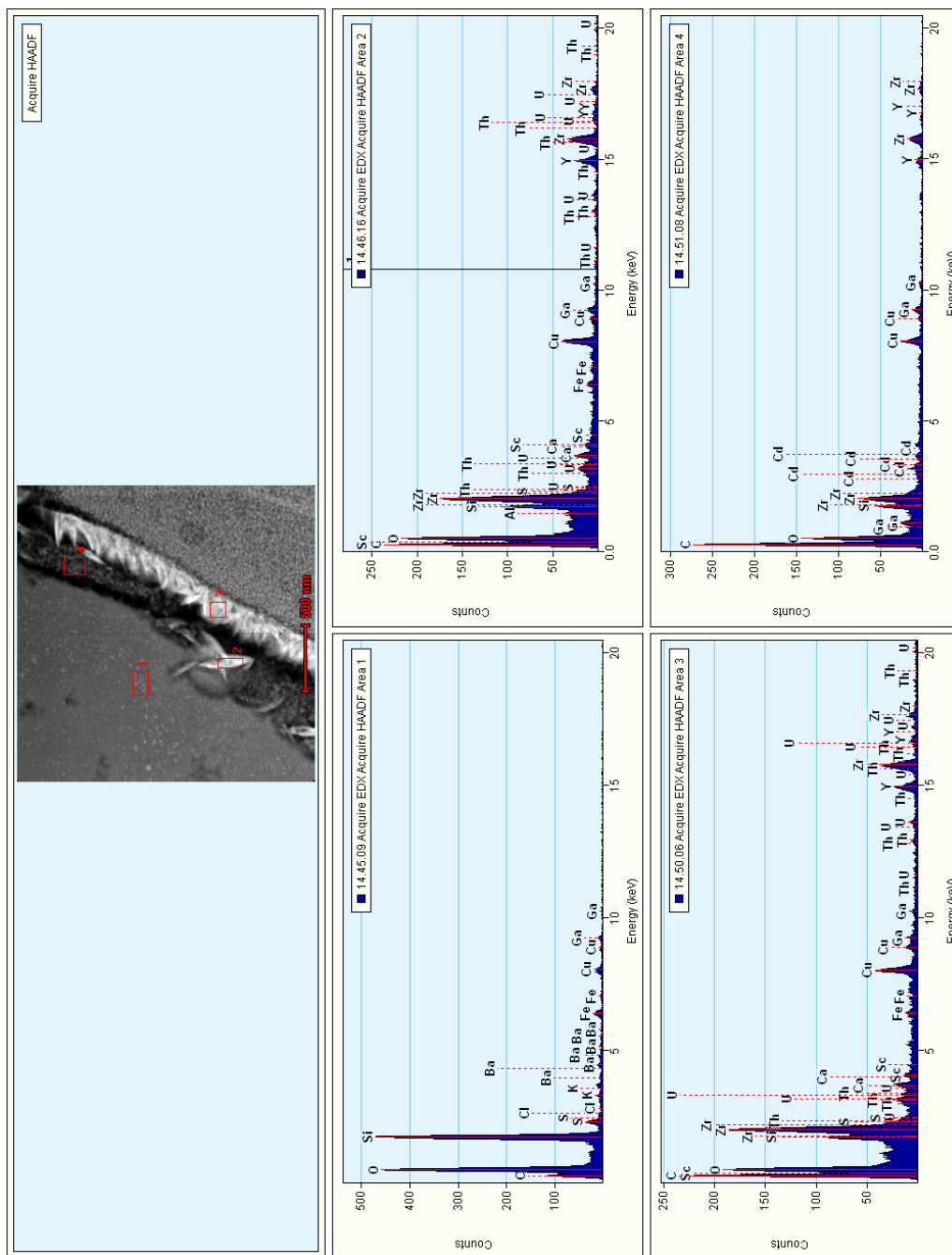


FIGURE EA-5. EDX spectra of FIB foil 4467, across boundary opal-organic matter.

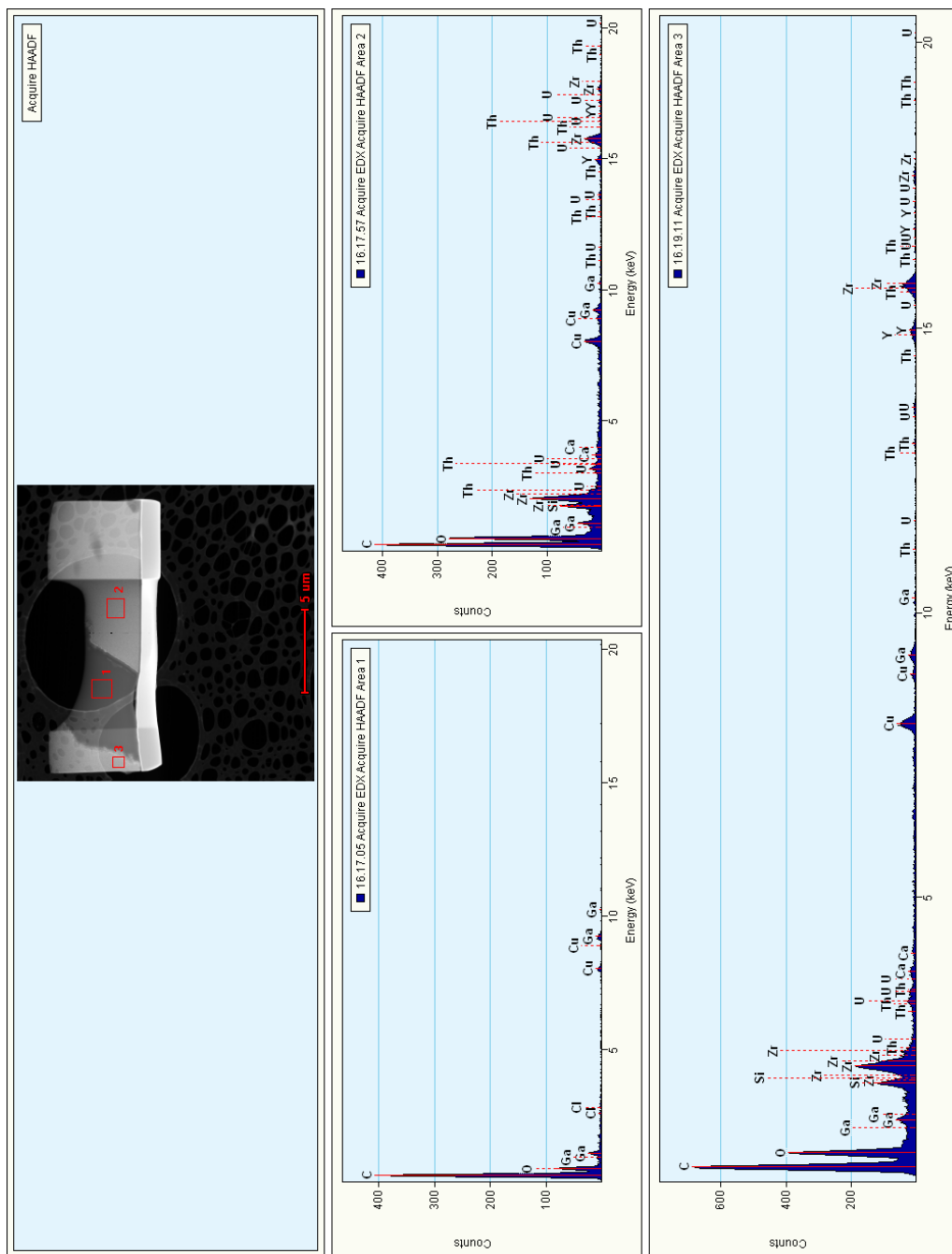


FIGURE EA-6. EDX spectra of FIB foil 4467, across boundary opal-organic matter.

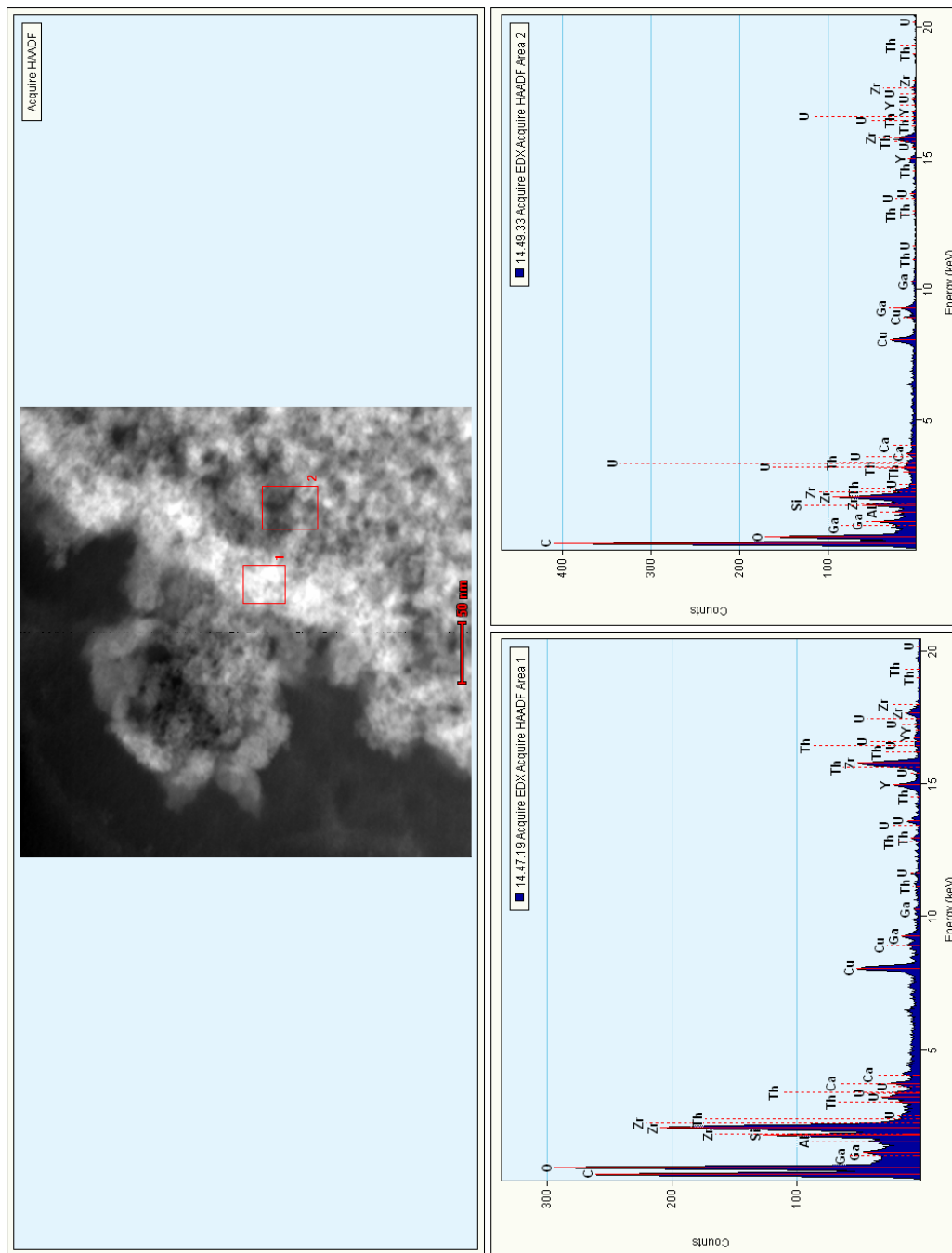


FIGURE EA-7. EDX spectra of FIB foil 4461, across boundary vesicle-organic matter.