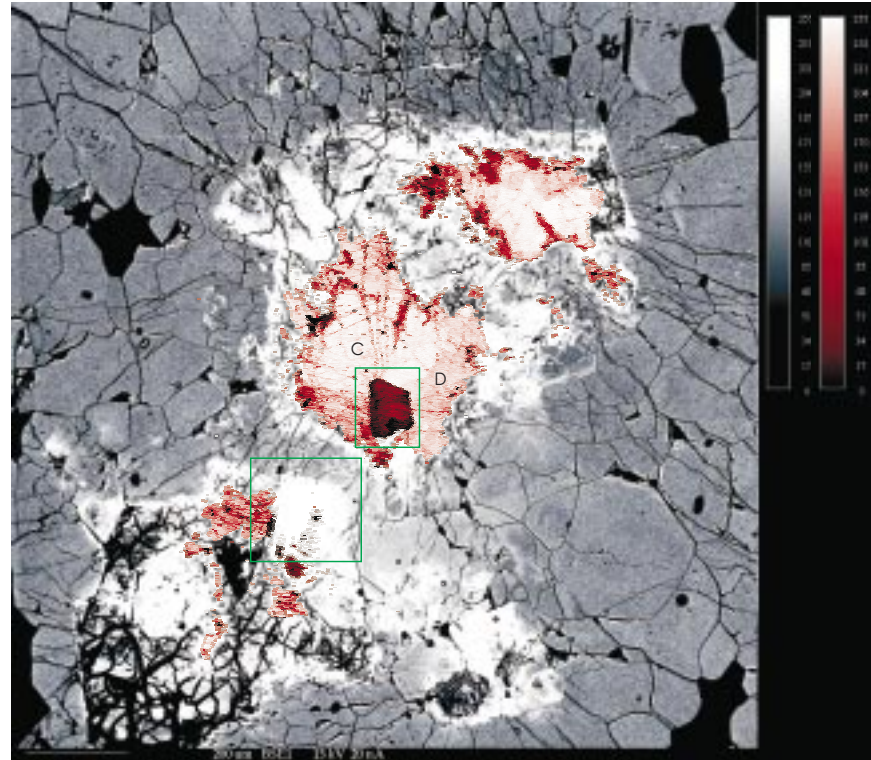
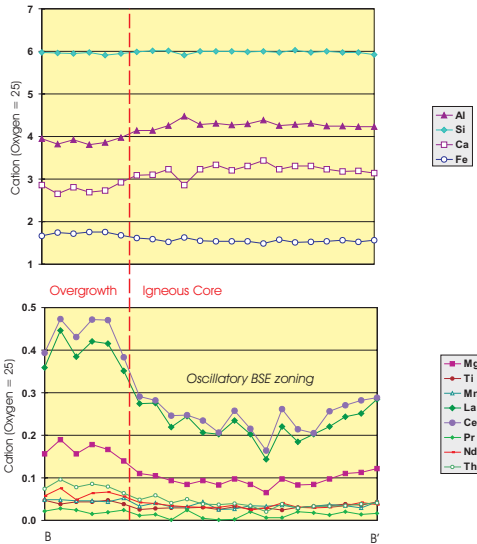
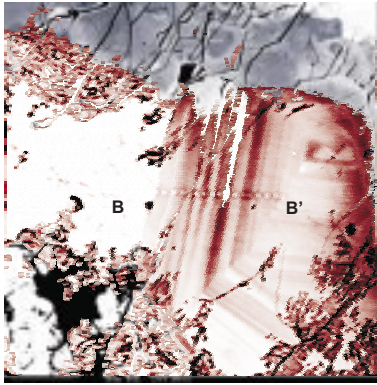


# Looking Beyond Thermobarometry



Colorized back scatter electron images (BSE) of the center of thin section 00ERG04. The images were constructed by assembling and separately coloring two images of the same regions, each adjusted to maximize compositional contrasts in epidote (blue) and allanite (red). Plagioclase and quartz are represented in black. Amphibole is also present within this thin section, but none is within close proximity with the allanite grains. The location of the two side images are shown by boxes on the overview image above.

The BSE images reveal igneous allanite cores surrounded by anhedral, non-centered metamorphic overgrowths. The igneous cores are characterized by sharp oscillatory zoning patterns that are euhedral in shape. The cores are bounded by metamorphic allanite overgrowths or by epidote. Two different overgrowths were identified based on intensity and can be seen in the above image near the smaller box ("C" and "D"). The overgrowths are anhedral, non-centered around the igneous core, and have interpenetrating boundaries with the epidote. Metamorphic allanite is also present without an igneous core.

Quantitative analysis of the allanite grains reveals differences in the levels of heavy vs light ions of the cores and overgrowths of the allanite. The igneous cores have lower levels of cesium, lanthium, and magnesium than the overgrowths, but have higher amounts of aluminum and calcium. The two overgrowths also have differing compositions, with the paler of the two (shown as "C" in the above diagram) higher in cesium and lanthium by ~0.1 cations and calcium is higher by ~0.05 cations.

The allanite may represent the formation (igneous cores) and subsequent metamorphism (overgrowths) of the Bronson Hill amphibolites. Catlos et al. (2000) have developed a method of dating allanite based on thorium and lead compositions using the ion-microprobe. Future work with this sample will include the dating of the core and two overgrowths to determine a better history for the northern Connecticut Bronson Hill amphibolites.

