LAWSONITE PSEUDOMORPHS IN THE SCHISTS OF SYROS, GREECE

ABLE, Lindsey M. and BRADY, John B., Department of Geology, Smith College, Northampton, MA 01063, lable@smith.edu

The island of Syros belongs to the Attico-Cycladic crystalline massif, which experienced a high-pressure, low-temperature blueschist metamorphism in the late Cretaceous (Bröcker and Enders, 1999) as a result of the northeastward subduction of the Apulian microplate beneath the Eurasian plate (Okrusch and Bröcker, 1990). The P-T conditions during this event varied between 12-20 kb and 450-500°C, and were followed by a lower-pressure greenschist overprinting upon exhumation in the Miocene (Schliestedt et al., 1987). This overprinting destroyed much of the previous high-pressure assemblages with the exception of the islands of Syros and Sifnos, which retain some of the highest-grade metamorphic assemblages in the Attico-Cycladic belt (Wijbrans et al., 1993).

The common assemblage of blueschist metabasaltic rocks on the island is glaucophane + epidote + phengite ± garnet ± omphacite ± rutile ± titanite. A little-studied feature of the Syros blueschists is the presence in some outcrops of lumpy diamond-shaped masses, ranging from 0.2-3.0 cm in size. We believe these features are pseudomorphs of lawsonite porphyroblasts. They have also been found in graphitic schist and chlorite schist on the island. The pseudomorphs consist mainly of the mineral assemblage zoisite + phengite + other minerals such as chlorite and/or albite, depending upon the rock type. In some cases the pseudomorphs retain remnant lawsonite.

Lawsonite is stable under P-T conditions similar to those proposed for the Cretaceous event, but would have been unstable during the subsequent lower-pressure greenschist event. The lawsonite would have reacted during decompression to form other minerals, perhaps creating the pseudomorphs now visible on Syros as suggested by Sperry (2000). This study seeks to understand the formation of the lawsonite pseudomorphs through investigating the mineral assemblages of the various Syros rock types containing lawsonite pseudomorphs, and to use this information to constrain the PT path of the Syros rocks.

Northeastern Section - 36th Annual Meeting (March 12-14, 2001)

Session No. 7--Booth# 25
Undergraduate Research I (Sponsored by Geology Division, Council on Undergraduate Research) (Posters)
Sheraton Burlington: Lake Champlain Exhibition Hall
8:30 AM-12:00 PM, Monday, March 12, 2001