

## Zeolites from a New Locality at Ben Lomond, New England Region, New South Wales

BRIAN M. ENGLAND

Analytical Technology Group, Environmental Research, BHP Research,  
Newcastle Laboratories, PO Box 188, Wallsend, NSW 2287, Australia

**ABSTRACT.** A roadside quarry on the New England Highway near Ben Lomond in the New England Region of New South Wales has revealed an interesting association of zeolites and other secondary minerals lining vesicles in Tertiary basalt. The zeolites present (chabazite, phillipsite and natrolite) are those characteristic of a silica-undersaturated (alkaline) environment. Associated secondary minerals include radiate globular saponite, calcite and aragonite. The calcite is present in a number of different habits, each showing a different response to ultraviolet light and the aragonite also shows a diverse range in morphology. Zonal distribution of the zeolite species is pronounced with the zoning centred around what appear to have been hydrothermal spring conduits. Two distinct episodes of mineralisation are evident, an early deuteric suite formed during initial cooling of the basalt and a later suite (including chabazite and radiate globular saponite) deposited by a further influx of hydrothermal fluids associated with subsequent proximal hot spring activity. The basalt at this locality has undergone extensive hydrothermal alteration.

ENGLAND, B.M., 1992. Zeolites from a new locality at Ben Lomond, New England Region, New South Wales. Records of the Australian Museum Supplement 15: 55–72.

A small quarry (Fig.1) beside the New England Highway 28 km north of Guyra, excavated during road reconstruction in 1987, has intersected an extensively altered vesicular Tertiary basalt. Vesicles exposed in the quarry face reach 15 cm across and are lined principally with chabazite showing a variety of multiply-twinned (phacolite) habits. Other minerals present at the locality but not always directly associated with the chabazite include saponite (smectite group), aragonite, phillipsite, natrolite and calcite. Crystal size is generally quite small (less than 2 mm), although chabazite crystals to 1.5 cm diameter have been

observed. The larger crystals tend to occur in the smaller vesicles.

The locality displays a number of unusual features including at least two episodes of mineralisation and diverse aragonite and calcite morphologies, the latter showing an equally diverse range of responses to ultraviolet light.

The small size of many of the crystals and the various combinations of species present make this one of the finest localities in Australia for zeolite micromounts. Due to extensive alteration the basalt is unusually brittle, making the collection and trimming of specimens easy.