

**Detrital and metamorphic ages from the Meguma Group, Mahone Bay area:  
 $^{40}\text{Ar}/^{39}\text{Ar}$  data from muscovite separates and whole rock samples**

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Cambrian-Ordovician metasediments of the Meguma Group underlie most of southwestern Nova Scotia and host numerous (mainly) Devonian peraluminous granitoid plutons. Metamorphic grade ranges from lower greenschist facies (locally subgreenschist facies) to upper amphibolite facies. One problem in interpreting the geologic history of the Meguma Group is the apparent inconsistency between discordant  $^{40}\text{Ar}/^{39}\text{Ar}$  whole rock ages suggesting metamorphism at *ca.* 405 Ma, and related regional structures affecting rocks as young as *ca.* 385 Ma.

Petrographic examination shows the existence of several generations and morphologies of muscovite in the sandstones and slates of the Goldenville and Halifax formations. These include fine-grained matrix sericite, long detrital grains preserved in the sandy units of the Goldenville Formation, and in the slatier units of the Halifax Formation, small grains that define the regional metamorphic cleavage.

Six muscovite separates and a whole rock analysis gave

maximum ages of 600 and 560 Ma for detrital grains and ages of 395 to 391 Ma for regional metamorphism. A whole rock sample with muscovite randomly overgrowing a strong cleavage gives an age of 388 Ma, interpreted as the lower limit (with respect to muscovite closure temperature) for regional metamorphism in this area. Spectra from detrital muscovites are disturbed with evidence of argon loss, presumably due to regional metamorphism. Samples with abundant cleavage-parallel muscovite produced spectra ranging from a virtual plateau to a disturbed spectrum showing the effects of detrital muscovite partially reset to a metamorphic age. A seventh muscovite separate produced a flat spectrum with an age of 376 Ma.

These data are generally consistent with previous results from detrital and metamorphic minerals, but provide additional constraints of the thermal history of the lowest grade part of the Meguma Group.