

National Argon Map: an AuScope Initiative

⁴⁰Ar/³⁹Ar Geochronology Laboratory Sample Submission Form

This form must be completed and returned to Marnie Forster (Marnie.Forster@anu.edu.au) before any work can be commenced in the Argon Laboratories.

Person submitting samples: Roland Maas
Affiliation: School of Geography, Earth and Atmospheric Sciences, Univ. of Melbourne
Project Title: <i>Timing of Devonian granitic magmatism across the northern part of the mid/lower crustal Selwyn Block, western Lachlan Fold Belt</i>
Sample Number(s) (including IGSN if one exists): CROS-2 (Crosbie Granite)
Mineral separation required? Yes or No: no
Date submitted: March 2021

GEOGRAPHIC AREA/ PROVINCE/ BASIN : western Lachlan Fold Belt	
1:250k SHEET NAME: Bendigo	NUMBER: GSV Cat. NO. 29416
1:100k SHEET NAME: Heathcote 1:50000 Geological Map	NUMBER: 7824-3
LOCATION METHOD: (GPS: WGS84 / AGD66 / AGD84 / GDA94)	
ZONE: 55	
EASTING:	NORTHING:
LATITUDE: -36.7897	LONGITUDE: 144.8554

STRATIGRAPHIC UNIT FORMAL NAME *: Crosbie Granite (GSV granite number 289)
STRATIGRAPHIC UNIT INFORMAL NAME: same
LITHOLOGY: S-type granite

DRILLHOLE ID (if applicable):
PROSPECT (if applicable):
DEPTH FROM (metres):
DEPTH TO (metres):

* Stratigraphic Unit names can be searched and checked within the Australian Stratigraphic Units Database via the following link: <https://asud.ga.gov.au/>

Dating Objective

What is the geological question ⁴⁰Ar/³⁹Ar analysis will address?

Detailed timing of Devonian granitic magmatism in northern part of Bendigo, Melbourne and Tabberabbera Zones

What type of age(s) are expected? (e.g. magmatic crystallisation, metamorphism, fluid alteration/mineralisation, cooling, shearing etc):

Mica cooling age, approximates magmatic crystallization, no issues with smearing of ages often observed for U-Pb zircon

Mineral target(s) for dating:

Biotite

Estimated ⁴⁰Ar/³⁹Ar age (e.g. Cenozoic, Mesozoic, Paleozoic, Proterozoic, Archean – provide estimated numerical age range if possible):

No existing radiometric dating; expected age Late Devonian, 365-380 Ma (Rossiter, 2003)

Sample Information

Location description (e.g. a sample of x was collected from y, z km from abc town):

Sample collected from weathered surface outcrop in the Crosbie Nature Reserve west of the Northern Hwy (B75), along Granites Track, ca. 300 m west of turnoff from Derrinal-Crosbie Rd (Slater, 1999; Wohlt and Edwards, 1999)

Lithological characteristics (rock description):

Slightly weathered medium-grained granite

Relative age constraints (pertinent geological relationships with surrounding rock units and any previous geochronology):

The Crosbie Granite is a small (ca 5 km east-west) body with considerable additional subcrop. It intrudes Lower Ordovician Castlemaine Supergroup metasediments and Cambrian rocks of the Heathcote Greenstone Belt at the eastern margin of the Bendigo Zone. It is partially overlain by Permian glaciogenic sediments of the Wild Duck Formation (see Wohlt and Edwards, 1999)

Thin section description (if available):

n/a

Photograph(s) e.g. field site, hand-specimen, photomicrograph:

n/a

Relevant bibliographic references:

Edwards, J, Wohlt, KE, Slater, KR, Olshina, A, 1998 Heathcote and parts of Woodend and Echuca. 1:100000 map area geological report. Report of the Geological Survey of Victoria 108

Rossiter, AG, 2003 Granitic rocks of the Lachlan Fold Belt in Victoria. In: WD Birch (ed) Geology of Victoria, Geological Association of Victoria Special Publication 23, 217-237

Slater, KR 1999 Heathcote 1:50000 geological map. Geological Survey of Victoria

Wohlt, KE and Edwards, J, 1999 Heathcote 1:50000 geological map. Geological Survey of Victoria