

National Argon Map: an AuScope Initiative

$^{40}\text{Ar}/^{39}\text{Ar}$ 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): GLA-2 (Glenaroua Granite)
Mineral separation required? Yes or No: no
Date submitted: March 2021

GEOGRAPHIC AREA/ PROVINCE/ BASIN : western Lachlan Fold Belt	
1:250k SHEET NAME: Melbourne 1:100000 geological map	NUMBER: GSV Cat. NO. 29374
1:100k SHEET NAME: Nagambie 1:100000 topo map	NUMBER: 7924
LOCATION METHOD: (GPS: WGS84 / AGD66 / AGD84 / GDA94)	
ZONE: 55	
EASTING:	NORTHING:
LATITUDE: -37.11917	LONGITUDE: 144.89078

STRATIGRAPHIC UNIT FORMAL NAME *: Glenaroua Granite (GSV granite number 287)
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 $^{40}\text{Ar}/^{39}\text{Ar}$ 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 and avoids some problems encountered in U-Pb zircon dating.

Mineral target(s) for dating:

Biotite

Estimated $^{40}\text{Ar}/^{39}\text{Ar}$ 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, Vandenberg et al., 2000)

Sample Information

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

Sample collected from eastern part of this small pluton, roadcut Mollison/Pyalong-Seymour Rd, ca. 3.5 km east of Pyalong Township and the Northern Hwy (B75)

Lithological characteristics (rock description):

Medium-grained granite (S-type)

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

The Glenaroua Granite is a small S-type pluton very similar to the Pyalong Granite of the nearby Cobaw Complex (Rossiter, 2003). It intrudes upper Silurian Dargile Formation of the western Melbourne Zone

Thin section description (if available):

n/a

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

n/a

Relevant bibliographic references:

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

Vandenberg, AHM et al, 2000 The Tasman Fold Belt System in Victoria. Geological Survey of Victoria, Special Publication