National Argon Map: an AuScope Initiative
$^{40}Ar/^{39}Ar$ 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 Athmospheric Sciences, Univ. of Melbourne
Project Title: *Timing of Devonian granitic magmatism across the northern part of the mid/lower crustal Selwyn Block, western Lachlan Fold Belt*
Sample Number(s) (including IGSN if one exists): YOU-1 (ALMONDS Granite)
Mineral separation required? Yes or No: no
Date submitted: March 2021

GEOGRAPHIC AREA/ PROVINCE/ BASIN : western Lachlan Fold Belt	
1:250k SHEET NAME: Wangaratta 1:250000 geological map	**NUMBER:** 29392
1:100k SHEET NAME: Wangaratta 1:100000 topo sheet	**NUMBER:** 8125
LOCATION METHOD: (GPS: WGS84 / AGD66 / AGD84 / GDA94)	
ZONE: 55	
EASTING:	**NORTHING:**
LATITUDE: -36.20605	**LONGITUDE:** 145.77286

STRATIGRAPHIC UNIT FORMAL NAME *: Youarang Granite (GSV granite number 208)
STRATIGRAPHIC UNIT INFORMAL NAME: same
LITHOLOGY: 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 $^{40}Ar/^{39}Ar$ 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 $^{40}Ar/^{39}Ar$ age (e.g. Cenozoic, Mesozoic, Paleozoic, Proterozoic, Archean – provide estimated numerical age range if possible):

No existing radiometric dating; a Late Devonian age (370-380 Ma) is expected based on radiometric dating of other granites in the region (e.g. Warby Range, 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 drilled boulders deposited on eastern side of Benalla-Tocumwal Rd (C371), ca 400 m N of Lawrence Bros quarry (quarry is also in Youarang Granite but was shut on day of visit). The boulders are clearly of local origin (western side of road is a granitic roadcut)

Lithological characteristics (rock description):

Well-preserved medium-grained granite. Youarang Granite is listed as 'unassigned' in the Wangaratta 1:250000 geology sheet (Maher et al. 1997), however Rossiter (2003) cites evidence such as high ASI, high P_2O_5 and the presence of cordierite as reason to justify an S-type classification

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

The Youarang Granite (ca. 30 km^2) intrudes lower Ordovician Pinnak Sandstone (Adaminaby Group) of the Tabberabbera Zone (see Wangaratta 1:250000 geol. map); contacts with the Pinnak are preserved along the northern margin of the pluton; everywhere else, primary contacts are covered by Pleistocene Shepparton Fm.

Thin section description (if available):

n/a

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

n/a

Relevant bibliographic references:

Maher, S, Vandenberg, AHM, McDoinald, PA and Sapurmas, P, 1997 The geology and prospectivity of the Wangaratta 1:250000 map sheet area. Victorian Initiative for Minerals and Petroleum Report 46

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