

National Argon Map: an AuScope Initiative

$^{40}\text{Ar}/^{39}\text{Ar}$ Geochronology Laboratory Sample Submission Form

This form must be fully completed before any work can be submitted to the Laboratory.

Person submitting samples: Naina (PhD student- MinEx CRC), ANU
Project Title: Cambro-Ordovician magmatism and deformation at the eastern margin of Gondwana, South Australia: Insights into tectonic processes and mineral potential
Sample Number: N1922 (2 samples)
Date submitted:

GEOGRAPHIC AREA/ PROVINCE/ BASIN: Mount Boothby Conservation Park, Padthaway Ridge	
1:250k SHEET NAME: Pinnaroo	NUMBER: S15414
1:100k SHEET NAME: Coonalpyn	NUMBER: 6826
LOCATION METHOD: (GPS: WGS84 / AGD66 / AGD84 / GDA94) WGS84	
ZONE:	
EASTING:	NORTHING:
LATITUDE: -35.88972°	LONGITUDE: 139.7658°

STRATIGRAPHIC UNIT FORMAL NAME: Padthaway Suite
STRATIGRAPHIC UNIT INFORMAL NAME: Boothby Rocks
LITHOLOGY: Porphyritic granite

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

Dating Objective

What is the geological question $^{40}\text{Ar}/^{39}\text{Ar}$ analysis will address?

The granites outcropping in south-east South Australia have been poorly dated through U-Pb 15-20 years ago, and have never been dated using Ar-Ar geochronology, doing so would help in constructing the thermal history of these A-type granites.

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

Magmatic crystallisation, alteration, metamorphic and cooling ages.

Mineral target(s) for dating (provide approximate K content if known):

Mineral targets for this sample are Biotite (9%K) and K-Feldspar (11%K) content.

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

Estimated age for this unit is 400Ma.

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

Sample Information

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

The sample was collected from outcrops in Mount Boothby Conservation Park (-35.88972°, 139.7658°).

Lithological characteristics (rock description):

Coarse-grained granite with orange K-Feldspar+mafics+ sparse plagioclase and quartz.

Thin section description (if available): No thin section description available.

Photograph(s) e.g. field site, hand-specimen, photomicrograph: : Below is a photograph of the marcollat granite from my PhD field trip in September 2019.



Relevant bibliographic references:

Rochow, K. A. (1971). Geology of the Naracoorte 1:25000 Sheet Area. Department of Mines South Australia.