National Argon Map: an AuScope Initiative
$^{40}Ar/^{39}Ar$ 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: N1914 (2 samples)
Date submitted:

GEOGRAPHIC AREA/ PROVINCE/ BASIN:	
1:250k SHEET NAME: Naracoorte	**NUMBER:** SJ5402
1:100k SHEET NAME: Lucindale	**NUMBER:** 6924
LOCATION METHOD: (GPS: WGS84 / AGD66 / AGD84 / GDA94) WGS84	
ZONE:	
EASTING:	**NORTHING:**
LATITUDE: -36.54306°	**LONGITUDE:** 140.3661°

STRATIGRAPHIC UNIT FORMAL NAME: Marcollat Granite
STRATIGRAPHIC UNIT INFORMAL NAME: Marcollat Granite
LITHOLOGY: Granite, green to olive-green, coarse-grained; green feldspars, smoky quartz and amphibole. A-ty tectonic.

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

Dating Objective

What is the geological question $^{40}Ar/^{39}Ar$ 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 Hornblende (0.5%K) and K-Feldspar (11%K) content.

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

Estimated age for this unit is 480Ma.

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 the south-east South Australia outcropping in the Murray Basin (-36.54306°, 140.3661°).

Lithological characteristics (rock description):
Granite, green to olive-green, coarse-grained; green feldspars, smoky quartz and amphibole. A-type, post-tectonic.

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.