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: Ian T Graham
Affiliation: UNSW Sydney
Project Title: Geology, Petrology and Gem Minerals of the Anakie Gemfields, central Queensland
Sample Number(s) (including IGSN if one exists): KD-01
Mineral separation required? Yes or No: No
Date submitted:

GEOGRAPHIC AREA/ PROVINCE/ BASIN : Anakie Inlier	
1:250k SHEET NAME: Emerald	**NUMBER:** SE-55-15
1:100k SHEET NAME: Rubyvale	**NUMBER: 8451**
LOCATION METHOD: (GPS: WGS84 / AGD66 / AGD84 / GDA94) GDA-94	
ZONE: 55	
EASTING: 147.60333E	**NORTHING:** 23.01248S
LATITUDE:	**LONGITUDE:**

STRATIGRAPHIC UNIT FORMAL NAME *:
STRATIGRAPHIC UNIT INFORMAL NAME: Eatonvale Volcanic
LITHOLOGY: Basaltic pyroclastic.

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? This sample was collected from an unmapped volcanic edifice, possibly a nested maar. This feature is incorrectly shown as the Iron Hut Monzonite on geological maps of the area. As such, this is a possible elevator of corundum to the surface. Rock outcrops are very fresh so is likely younger than mapped Hoy Basalt Plugs. A known date will add to data concerning the volcanic architecture of Central Queensland.

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

Mineral target(s) for dating: NONE (whole rock).

Estimated $^{40}Ar/^{39}Ar$ age (e.g. Cenozoic, Mesozoic, Paleozoic, Proterozoic, Archean – provide estimated numerical age range if possible): The sample is expected to be Miocene in age (upper Cenozoic).

Sample Information

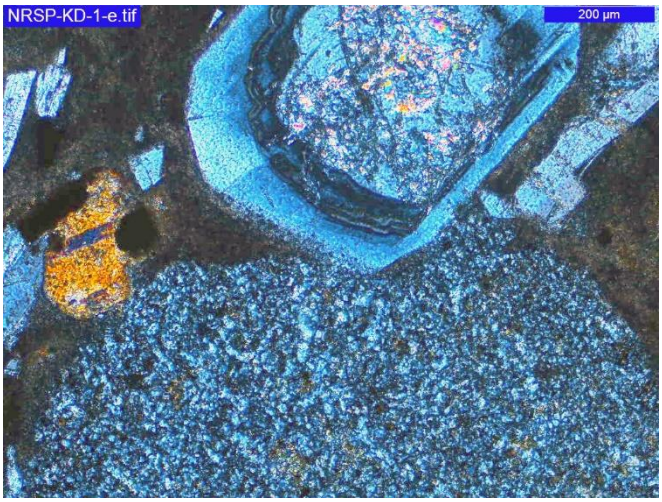
Location description (e.g. a sample of x was collected from y, z km from abc town): This sample was collected from outcrop some 44.8km NW of Rubyvale.

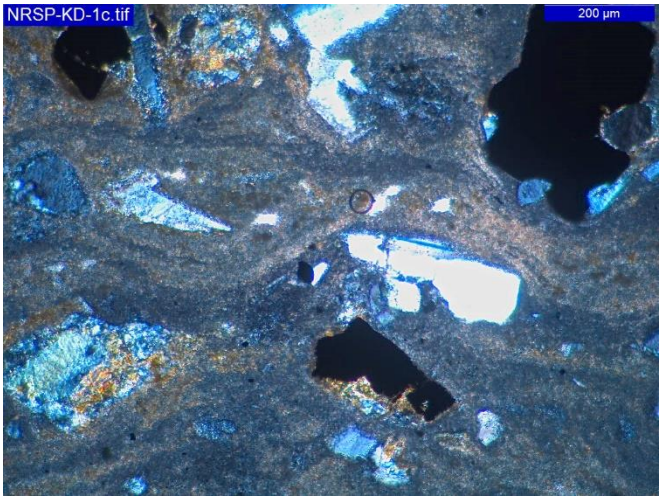
Lithological characteristics (rock description): Mid-grey fine-grained volcanic rock with large rounded fragments of ash which sometimes exceed 1cm in diameter.

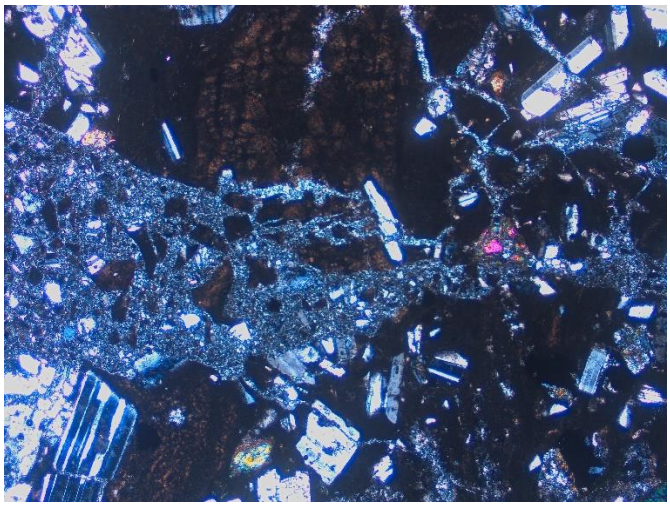
Relative age constraints (pertinent geological relationships with surrounding rock units and any previous geochronology): Intrudes mid -to late Devonian Iron Hut Monzonite.

Thin section description (if available): KD-01 is a basaltic pyroclastic rock with an extremely variable texture as shown below. Altered rock fragments, alkali and plagioclase crystals (sometimes idiomorphic), pyroxenes and balls of ash are within a cryptocrystalline groundmass of altered glass and microlites. Drop structures are observed as well as evidence of phreatomagmatic processes.

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







Relevant bibliographic references: