

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: 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): BL-HBDa
Mineral separation required? Yes or No: No
Date submitted:

GEOGRAPHIC AREA/ PROVINCE/ BASIN : Drummond Basin	
1:250k SHEET NAME: Emerald	NUMBER: SE-55-15
1:100k SHEET NAME: Zig Zag	NUMBER: 8351
LOCATION METHOD: (GPS: WGS84 / AGD66 / AGD84 / GDA94) GDA-94	
ZONE: 55	
EASTING: 147.29472E	NORTHING: 23.59855S
LATITUDE:	LONGITUDE:

STRATIGRAPHIC UNIT FORMAL NAME *:
STRATIGRAPHIC UNIT INFORMAL NAME: Billaboo Volcanic
LITHOLOGY: Lamprophyre.

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? Dating of this rock, plus a basalt and rhyolite from the same volcanic complex will give an indication of how long this volcanic edifice was active and perhaps constrain the date of when corundum was elevated to the surface. A lamprophyre dyke in Montana, USA, is an important commercial source of blue sapphires.

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 $^{40}\text{Ar}/^{39}\text{Ar}$ age (e.g. Cenozoic, Mesozoic, Paleozoic, Proterozoic, Archean – provide estimated numerical age range if possible): The age is expected to be in the Paleogene Period in the Cenozoic.

Sample Information

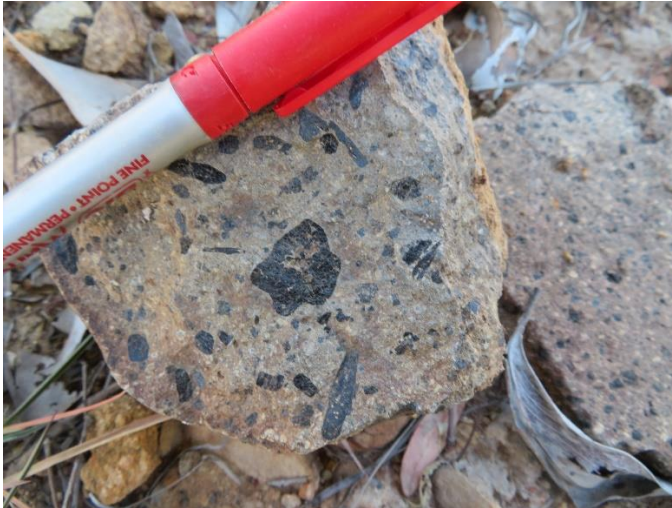
Location description (e.g. a sample of x was collected from y, z km from abc town): The rock sample was collected 45km SW of Rubyvale, Central Queensland.

Lithological characteristics (rock description): Lamprophyre with large idiomorphic black hornblende phenocrysts to over 2cm.

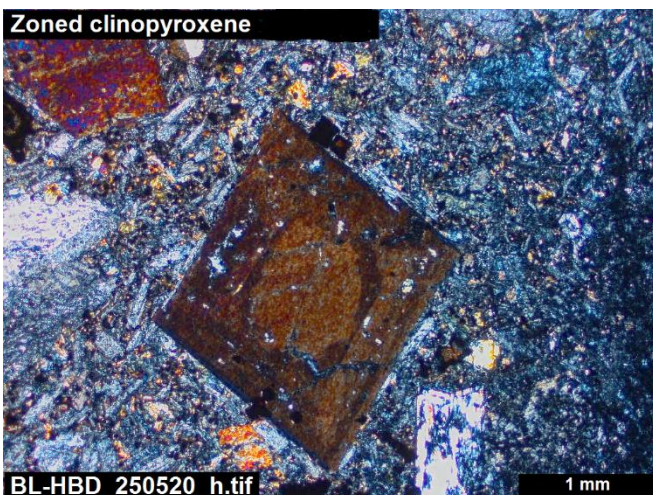
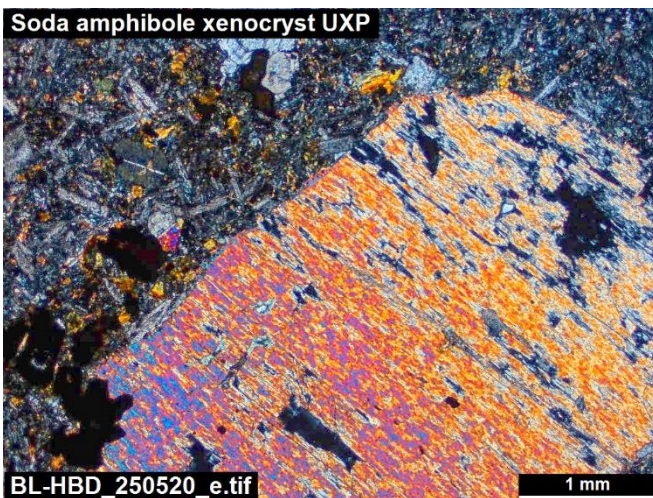
Relative age constraints (pertinent geological relationships with surrounding rock units and any previous geochronology): The volcanic edifice intrudes upper Devonian to lower Carboniferous sediments of the Drummond Basin.

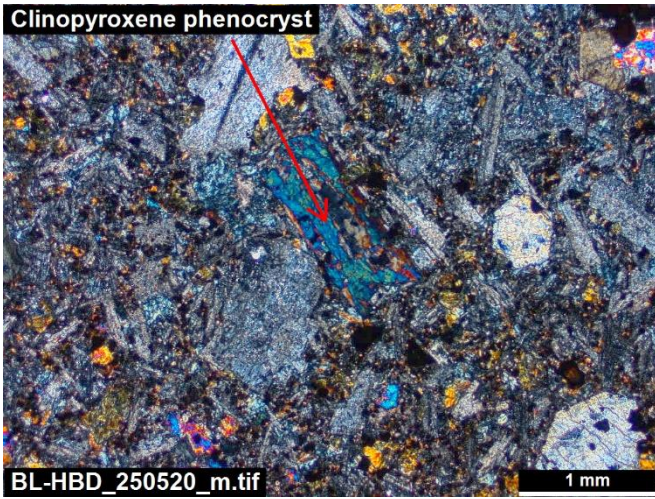
Thin section description (if available): Lamprophyre with large idiomorphic phenocrysts of sodic amphibole, sometimes larger than 2cm, also with idiomorphic phenocrysts of titanite (sometimes displaying hourglass structure), other clinopyroxenes and alkali feldspars in a finer grained matrix of the same minerals.

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



Field image of hornblende lamprophyre





Relevant bibliographic references: