

Sample 10 of 20: 46920

Person submitting samples: Dave Kelsey
Affiliation: Geological Survey of Western Australia
Project Title: Tectonism and Exhumation of the Paterson Orogen and East Pilbara Craton margin
Sample Number(s) (including IGSN if one exists): 46920
Mineral separation required? Yes or No: yes
Date submitted:

GEOGRAPHIC AREA/ PROVINCE/ BASIN : Rudall Province	
1:250k SHEET NAME: Gunanya	NUMBER: SF51-14
1:100k SHEET NAME: Gunanya	NUMBER: 3451
LOCATION METHOD: (GPS: WGS84 / AGD66 / AGD84 / GDA94) GDA94	
ZONE: 51	
EASTING: 461750.00	NORTHING: 7455400.00
LATITUDE: -23.00932000	LONGITUDE: 122.62674000

STRATIGRAPHIC UNIT FORMAL NAME *:
STRATIGRAPHIC UNIT INFORMAL NAME: Talbot Zone metasedimentary unit
LITHOLOGY: muscovite + quartz schist

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?

What is the cooling/exhumation age from this sample?

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

Cooling/exhumation.

Mineral target(s) for dating:

Muscovite

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

Mid- to Late-Neoproterozoic

Sample Information

Location description (e.g. a sample of x was collected from y, z km from abc town):WAROX database (field observations) site GSDSJW46920.

Lithological characteristics (rock description):

Muscovite-rich quartz + muscovite schist. Quartz is strongly recrystallised and shows strong internal deformation features. Muscovite defines a crenulated fabric. The rock contains only quartz + muscovite. Muscovite is abundant and grain size is around 0.5 mm and above.

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

The maximum and minimum depositional ages of the Talbot Zone metasedimentary unit are c. 2500 and 1760 Ma, respectively. The c. 1760 Ma Kalkan Supersuite intrudes the metasediments and so provides the lower age

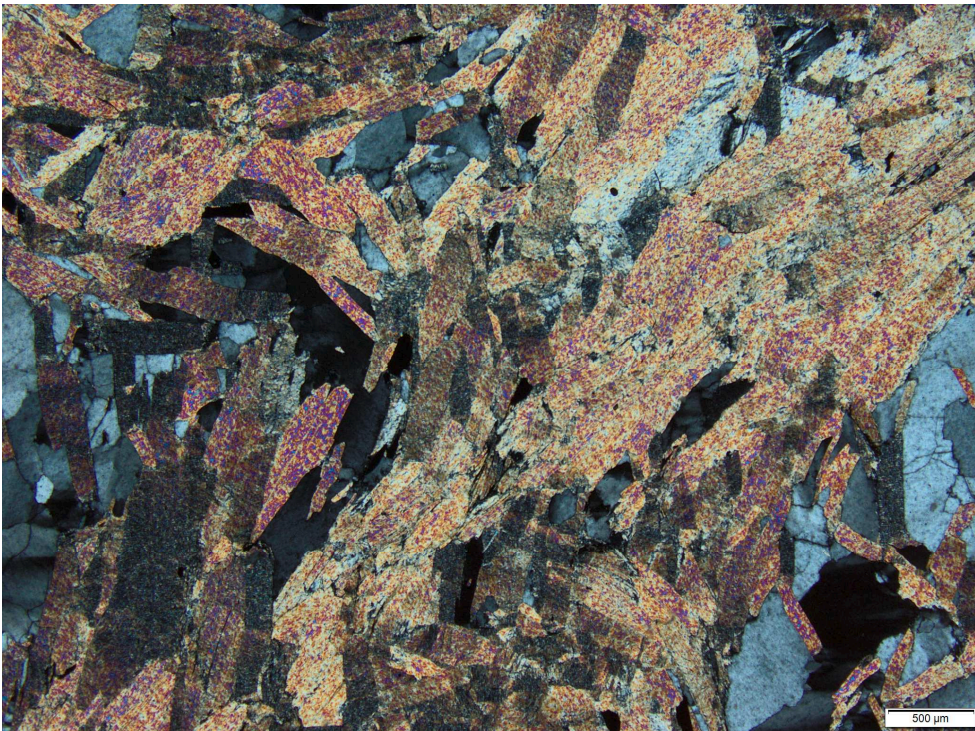
constraint. Cooling/exhumation age is expected to be Neoproterozoic, corresponding to the Miles (c. 810 – 650 Ma) or Paterson (c. 550 Ma) Orogenies.

Thin section description (if available):

Muscovite-rich quartz + muscovite schist. Quartz is strongly recrystallised and shows strong internal deformation features. Muscovite defines a crenulated fabric. The rock contains only quartz + muscovite. Muscovite is abundant and grain size is around 0.5 mm and above.

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

Note that the thin section has been ground too thin, so the birefringence is lower than it should be.



Relevant bibliographic references:

Bagas, L, Williams, IR and Hickman, AH 2000, Rudall, Western Australia: Geological Survey of Western Australia, 1:250 000 Geological Series Explanatory Notes, 50p.

Bagas, L and Smithies, RH 1998, Geology of the Connaughton 1:100 000 sheet: Geological Survey of Western Australia, 1:100 000 Geological Series Explanatory Notes, 38p.