

Sample 8 of 20: 115629

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): 115629
Mineral separation required? Yes or No: yes
Date submitted:

GEOGRAPHIC AREA/ PROVINCE/ BASIN : Rudall Province	
1:250k SHEET NAME: Rudall	NUMBER: SF51-10
1:100k SHEET NAME: Connaughton	NUMBER: 3452
LOCATION METHOD: (GPS: WGS84 / AGD66 / AGD84 / GDA94) GDA94	
ZONE: 51	
EASTING: 461787.11	NORTHING: 7488285.59
LATITUDE: -22.71225000	LONGITUDE: 122.62791000

STRATIGRAPHIC UNIT FORMAL NAME *:
STRATIGRAPHIC UNIT INFORMAL NAME: Talbot Zone metasedimentary unit
LITHOLOGY: muscovite–biotite 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 RHS115629.

Lithological characteristics (rock description):

Medium-grained qz-bt-mus schist. In outcrop interlayered with quartz–biotite–feldspar schist. Lesser muscovite. Schistosity 60/150.

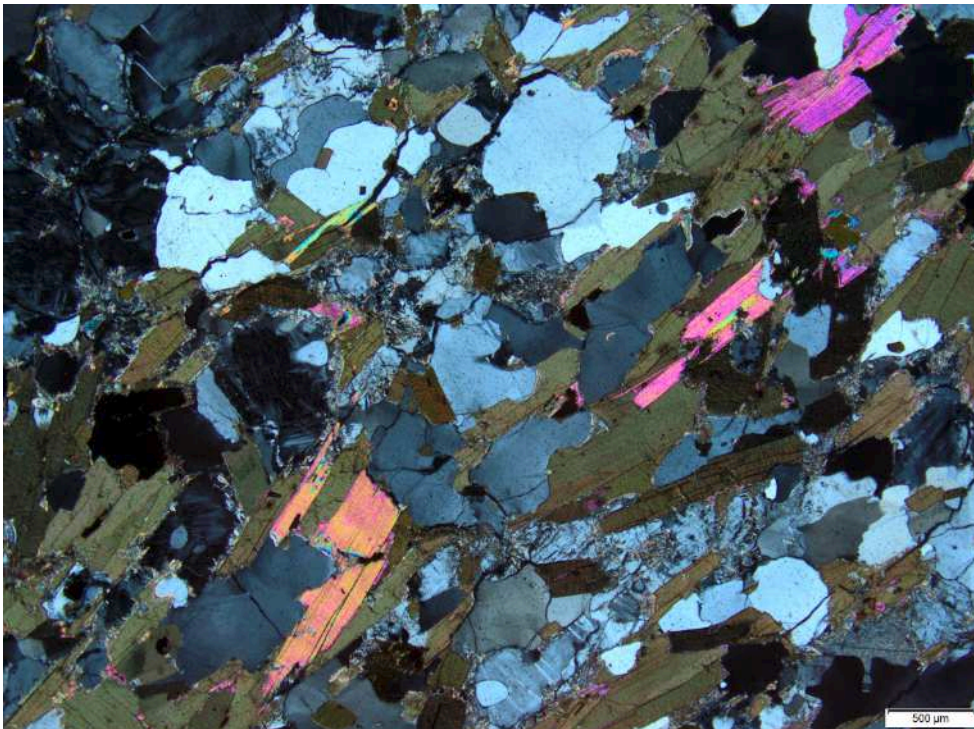
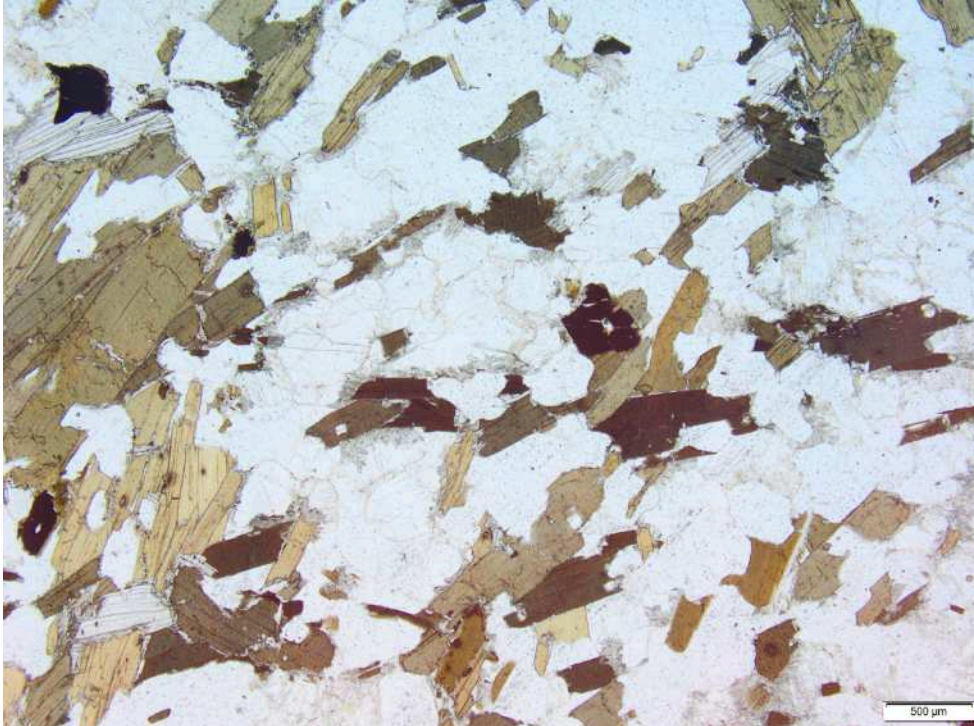
Relative age constraints (pertinent geological relationships with surrounding rock units and any previous geochronology):

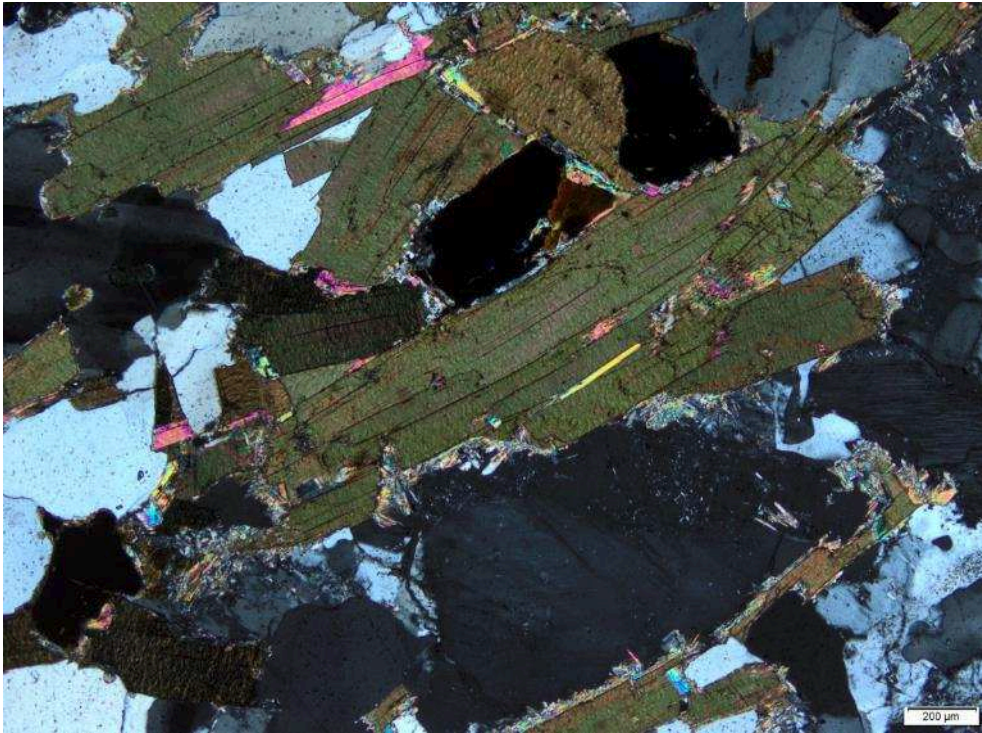
The maximum and minimum depositional ages of the Talbot Zone metasedimentary unit are c. 2500 and 1760 Ma, respectively. The c. 1760 Ma Kalkan Supersuite intrudes the metasediments and so provides the lower age constraint. Cooling/exhumation age is expected to be Neoproterozoic, corresponding to the Miles (c. 810 – 650 Ma) or Paterson (c. 550 Ma) Orogenies.

Thin section description (if available):

Medium-grained quartz–biotite–muscovite schist. In outcrop interlayered with quartz–biotite–feldspar schist. Biotite is more abundant than muscovite. Biotite and muscovite define a moderately strong fabric, though there are patches with weak fabric. Feldspar is plagioclase, microcline and perthite. Quartz and feldspar have an inequigranular–interlobate shape. Fe–Ti oxide rich, these are of similar grain size to biotite and muscovite. Feldspar is part-altered to needles of muscovite; and some biotite is mantled by part corona of needles of muscovite.

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





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.