

# National Argon Map: an AuScope Initiative

## $^{40}\text{Ar}/^{39}\text{Ar}$ Geochronology Laboratory Sample Submission Form

*This form must be fully completed before any work can be submitted to the Laboratory.*

<b>Person submitting samples:</b> Naina (PhD student- MinEx CRC), ANU
<b>Project Title:</b> Cambro-Ordovician magmatism and deformation at the eastern margin of Gondwana, South Australia: Insights into tectonic processes and mineral potential
<b>Sample Number:</b> N1903
<b>Date submitted:</b>

<b>GEOGRAPHIC AREA/ PROVINCE/ BASIN:</b>	
<b>1:250k SHEET NAME:</b> Barker	<b>NUMBER:</b> S15413
<b>1:100k SHEET NAME:</b> Mobilong	<b>NUMBER:</b> 6727
<b>LOCATION METHOD: (GPS: WGS84 / AGD66 / AGD84 / GDA94) WGS84</b>	
<b>ZONE:</b>	
<b>EASTING:</b>	<b>NORTHING:</b>
<b>LATITUDE:</b> 35°06'04"S	<b>LONGITUDE:</b> 138°59'56"E

<b>STRATIGRAPHIC UNIT FORMAL NAME:</b> Kanmantoo Group
<b>STRATIGRAPHIC UNIT INFORMAL NAME:</b> Kanmantoo Group
<b>LITHOLOGY:</b> Sandstones, siltstones, occasionally sulphidic; metamorphosed. Boudinaged quartz vein intruding andalusite mica-schist of Kanmantoo Group.

<b>DRILLHOLE ID (if applicable):</b>
<b>PROSPECT (if applicable):</b>
<b>DEPTH FROM (metres):</b>
<b>DEPTH TO (metres):</b>

### Dating Objective

***What is the geological question  $^{40}\text{Ar}/^{39}\text{Ar}$  analysis will address?***

Ar-Ar of the Kanmantoo metasediments would give a detailed history of the thermal events and metamorphic history of meta-sediments of the group.

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

Metamorphic, cooling ages etc.

***Mineral target(s) for dating (provide approximate K content if known):***

White mica (10% K)

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

The estimated age for the intruding quartz vein is 450Ma.

***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 near the Kanmantoo Mine area (35°06'04"S, 138°59'56"E)

***Lithological characteristics (rock description):***

The sample is a boudinaged quartz vein with white mica flakes (phenocrysts) with red iron-staining, azurite and

malachite staining (blue) intruding andalusite mica-schist of Kanmantoo Group. The mica-schist fabric wraps around the intruding vein.

**Thin section description (if available):** No thin section available.

**Photograph(s) e.g. field site, hand-specimen, photomicrograph:** Below is a outcrop view highlighting the dyke intruding Mannum Granite. This image was captured during my PhD field trip in June 2019.



**Relevant bibliographic references:**

Jago, J. B., Gum, J. C., Burt, A. C., & Haines, P. W. (2003). Stratigraphy of the Kanmantoo Group: A critical element of the Adelaide Fold Belt and the Palaeo-Pacific plate margin, Eastern Gondwana. *Australian Journal of Earth Sciences*, 50(3), 343-363.