

1 September 2016

## POSITIVE METALLURGICAL RESULTS FROM KHARMAGTAI

### HIGHLIGHTS

- Preliminary flotation test work on high-grade tourmaline breccia samples produces excellent recoveries for this level of the study;
- Copper recovery high - up to 95.3%;
- Analysis confirms chalcopyrite is the dominate copper ore;
- Gold recovery was very high (up to 95.4%) and paralleled the copper recovery;
- Optimisation of metallurgical performance will be achieved with additional test work;
- Positive metallurgical test results provide support for the company's ongoing exploration strategy at Kharmagtai.

Xanadu Mines Ltd (ASX: XAM – “Xanadu” or “Company”) has received the full report on new results from preliminary metallurgical test work on diamond core from high-grade tourmaline breccia mineralisation at the Altan Tolgoi deposit within the Kharmagtai copper-gold project, in the South Gobi region of Mongolia.

The metallurgical test work was aimed at producing a float concentrate of copper, gold and silver from tourmaline breccia mineralisation at Altan Tolgoi. The test work was combined with an optical mineralogy study and grinding power requirement testing.

*Xanadu's Executive Director & Chief Executive Officer, Dr. Andrew Stewart, said “These early stage flotation test results on the high-grade tourmaline breccia mineralisation are exceptional. These above average results, achieved at a moderate grind size, indicate high recoveries, and that a standard crushing, grinding and flotation process is all that will be required to extract all the economic minerals from the tourmaline breccia mineralisation. As expected, gold recoveries were also very high. While further testing is required across the ore-body as the project advances, we foresee no significant hurdles to producing a high quality concentrate via standard processing pathways from the tourmaline breccia mineralisation at Altan Tolgoi. These positive metallurgical test results provide more confidence with the drilling underway to expand the resource by targeting mineralisation in the tourmaline breccia. The new results also complement the previous metallurgical studies undertaken on the shallow copper-gold stockwork zones of the orebody.”*



Highlights of the test work include:

- Copper recoveries into a rougher concentrate ranging between 93.6 to 95.3% Cu;
- Gold recoveries into the rougher concentrate ranging between 93.4 to 95.4% Au;
- Silver recoveries into the rougher concentrate ranging between 86.7 to 89.9% Ag;
- Exceptional recoveries from simple flotation testing using low collector addition;
- Simple ore mineralogy with vast majority of copper as chalcopyrite; and
- Indicative grinding power requirements (Bwi 18.9 kWh/t) average for this rock type.

### **METALLURGICAL TEST WORK DETAILS**

Xanadu commissioned Mining Associates Pty Limited to undertake a test work program on mineralised tourmaline breccia samples from the Altan Tolgoi prospect to assess the response to flotation and provide initial data on grinding energy requirements. A single 30kg composite of the coarse reject samples for flotation testing and half core sample were selected for Bond Ball Mill Work Index (BBMWi) determination. The assay head grade of the master composite was 4.37% Cu, 1.86g/t Au and 14.1g/t Ag, which compared reasonably well with the expected grades from the average of the interval assays (sample composite taken from drill hole KHDDH371 between 387m to 403.8m depth).

The sample produced from the material provided responded very well to simple flotation testing with low collector dosage. Overall results are summarised in the table below.

**TABLE 1:** Kharmagtai flotation sighter test results.

FT1-125µm Grind			
	Feed Grade	Recovery to Rougher Concentrate (%)	Concentrate Grade
Cu (%)	4.07	95.3	18.9
Au (g/t)	1.83	93.4	8.33
Ag (g/t)	12.7	86.7	53.7
FT2-150µm Grind			
	Feed Grade	Recovery to Rougher Concentrate	Concentrate Grade
Cu (%)	3.99	94.8	18.2
Au (g/t)	1.62	95.1	7.37
Ag (g/t)	11.4	89.6	48.9
FT3-180µm Grind			
	Feed Grade	Recovery to Rougher Concentrate	Concentrate Grade
Cu (%)	4.13	93.6	17.5
Au (g/t)	1.69	95.4	7.28
Ag (g/t)	11.6	89.9	47.2

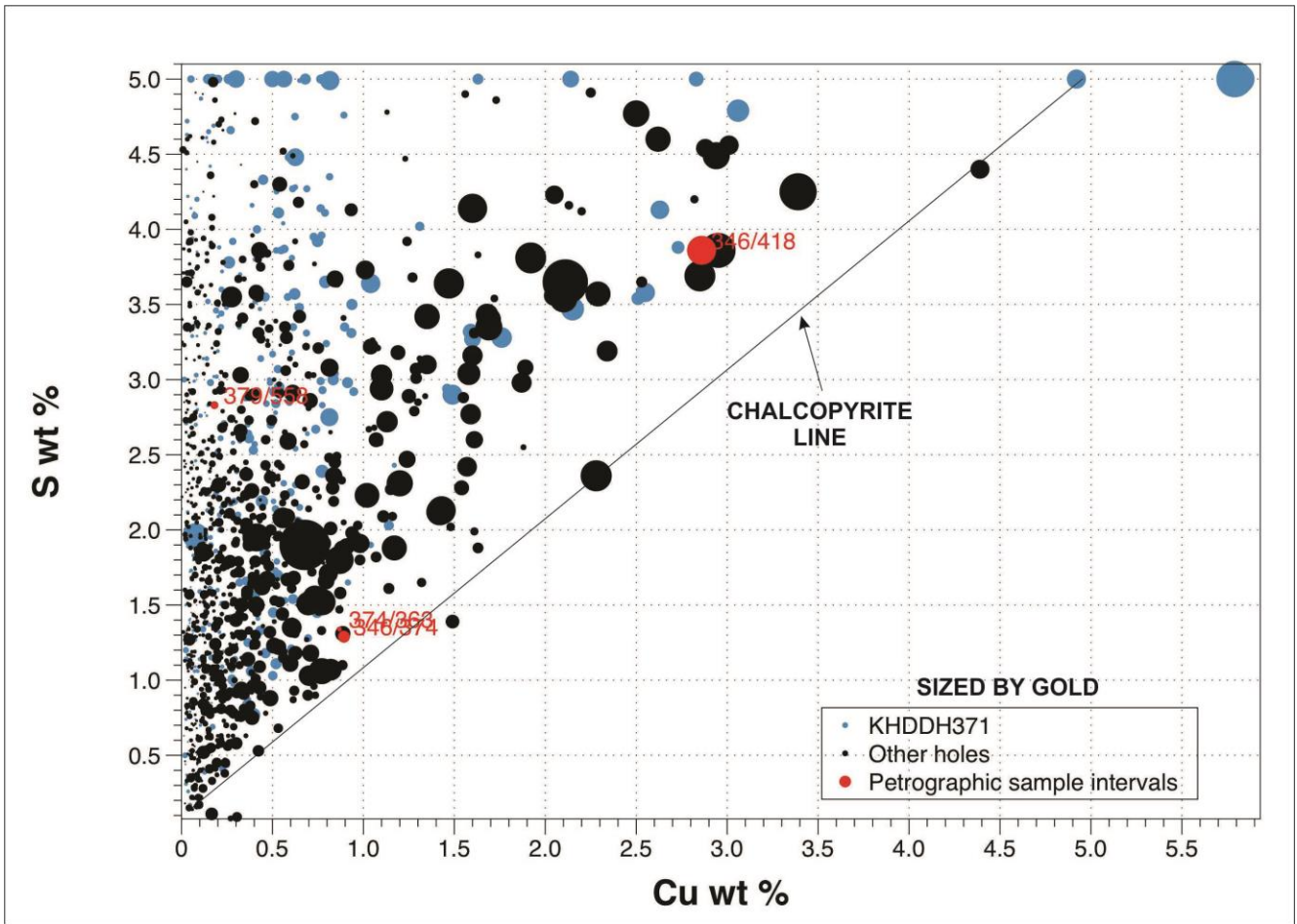
Sequential copper analysis confirmed that copper is almost exclusively present as chalcopyrite.

The estimated simplified mineralogy, based on element assays is approximately 11.8% chalcopyrite, 4.8% pyrite, 2.6% iron-oxide and 80.7% carbonate/silicate. Approximately 96% of the gold is either unidentified gold species (native or electrum) with identical flotation response to the chalcopyrite or is intimately associated with the chalcopyrite.

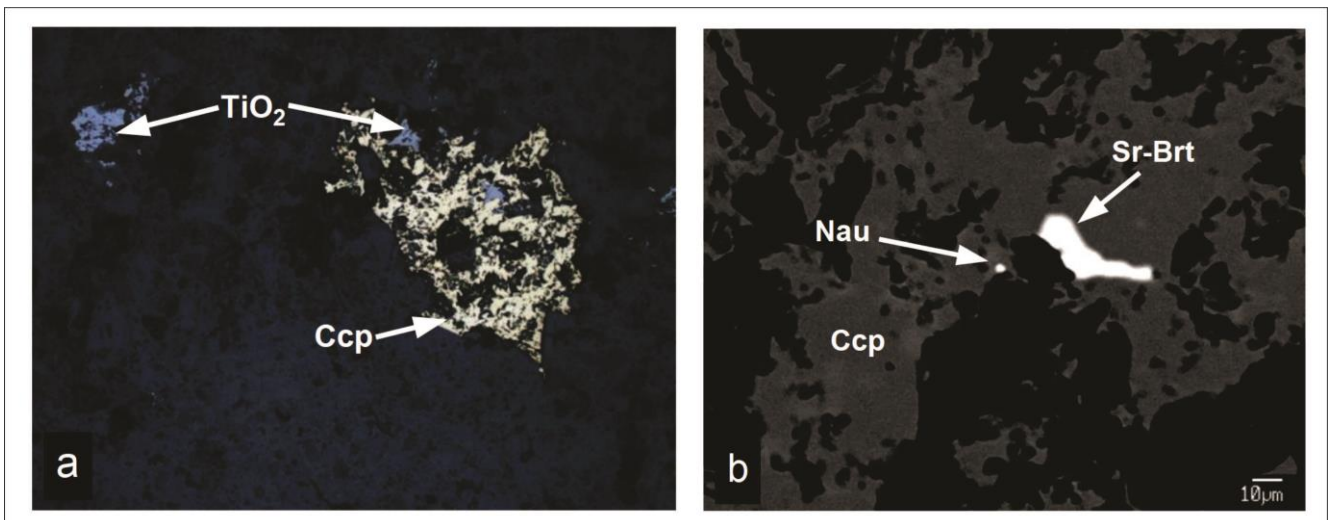
### OPTICAL MINERALOGY

Selected samples were also sent to Clump Mountain Geoscience Pty Ltd for optical mineralogy to determine sulphide types and mineral associations. All samples were investigated using conventional transmitted and reflected light optical microscopy of polished thin sections along with a combination of scanning electron microscope backscattered electron imagery (SEM-BEI) and energy dispersive X-ray spectrometry (EDS) with the latter including reconnaissance semi quantitative estimation (SQEDS) of the composition of tourmalines, chlorites, white micas and epidotes.

The mineralogical work confirmed chalcopyrite and pyrite are the only significant sulphides present (Figure 1). They are accompanied by traces of naumannite (Ag<sub>2</sub>Se) and Ag-free tetrahedrite (Figure 2). High contrast images suggest that the pyrite in these samples grew homogeneously and no arsenic was detectable by EDS.



**FIGURE 1:** Cu:S ratios are compatible with all samples containing an assemblage of pyrite and chalcopyrite with little to no copper being associated with copper species that might have different floatation characteristics. This simplifies the metallurgical process significantly.



**FIGURE 2:** Chalcopyrite in petrological samples with very minor Naumannite.

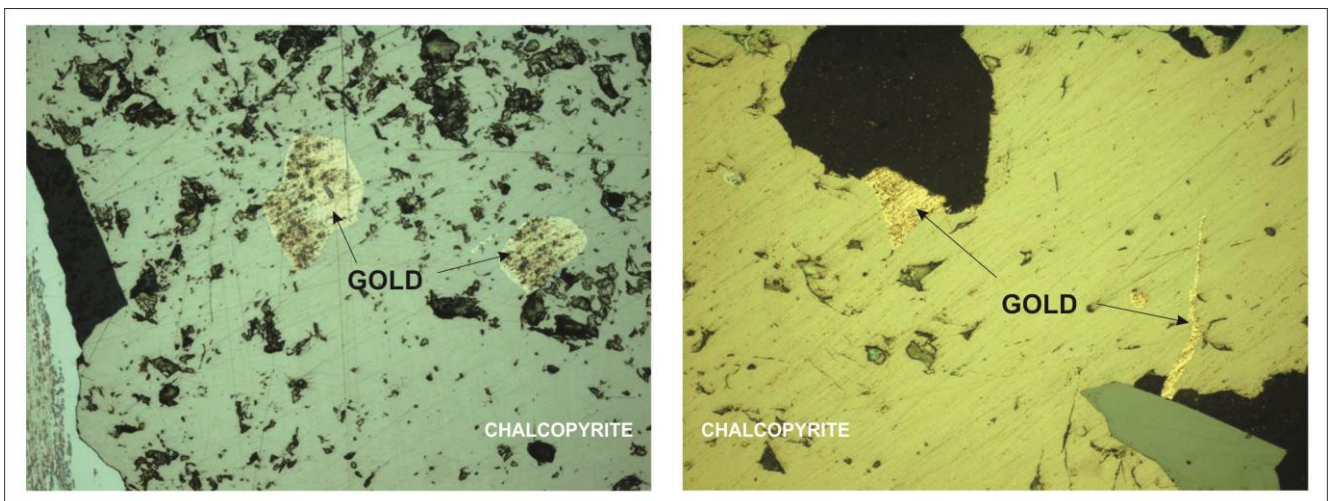
### ORE HARDNESS TEST – BOND BALL MILL WORK INDEX (BBMWi)

BBMWi testing has been completed to obtain milling energy consumption data for the tourmaline breccia ore. These tests returned a BBMWi of 18.9kWh/t to a closing screen of 150 $\mu$ m. This result is considered to be average for this rock type. While due to the limited sample numbers these results are indicative, they do give confidence that the tourmaline breccia ore will pose little challenge to the crushing processes.

### PREVIOUS METALLURGICAL TEST FROM KHARMAGTAI

Previously, metallurgical work for the Kharmagtai copper-gold project was completed by Ivanhoe Mines Mongolia in 2008. This work was conducted on nine copper-gold porphyry stockwork samples from Altan Tolgoi, Tsagaan Sudal and Zesen Uul using a flow sheet specific to Oyu Tolgoi. Samples ranged between 0.25 and 1.5% Cu and 0.2 and 2.5g/t Au and responded well to flotation with an average recovery of 85% copper producing a high quality concentrate containing 28% copper. Gold recoveries to concentrate averaged 60%.

Petrological work conducted on stockwork mineralisation at Altan Tolgoi by geological consultants Pollard and Taylor in 2003 focused in part on documenting the gold deportment. Within this study numerous gold grains were identified, exclusively within on the boundary of the copper bearing species chalcopyrite (Figure 3). These gold grains ranged in size between 1x2 microns up to 120x80 microns.



**FIGURE 3:** Altan Tolgoi stockwork petrology, Pollard and Taylor. Gold grains in chalcopyrite.

**COMPETENT PERSON STATEMENT**

The information in this announcement that relates to exploration results is based on information compiled by Dr Andrew Stewart who is responsible for the exploration data, comments on exploration target sizes, QA/QC and geological interpretation and information. Dr Stewart, who is an employee of Xanadu and is a Member of the Australasian Institute of Geoscientists, has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity he is undertaking to qualify as the “Competent Person” as defined in the 2012 Edition of the “Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves”. Dr Stewart consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this announcement that relates to metallurgical results is based on information compiled by or under the supervision of Craig A Brown, a Member of the Australasian Institute of Mining and Metallurgy, who has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity he is undertaking to qualify as the “Competent Person” as defined in the 2012 Edition of the “Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves”. Craig A Brown consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

*For the purposes of ASX Listing Rule 5.7.1, Xanadu refers to its Table 1 disclosure dated 4 April 2016 which continues to apply as at the date of this announcement. Xanadu is not aware of any new information or data that materially affects the information included in that announcement.*

**For further information, please contact:**

Andrew Stewart  
Executive Director & Chief Executive Officer  
T: +612 8280 7497  
M: +976 9999 9211  
andrew.stewart@xanadumines.com

[www.xanadumines.com](http://www.xanadumines.com)