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TOPAZ RESEARCH AGREEMENT ENTERED INTO WITH UNIVERSITY OF NEW SOUTH WALES

TopTung has entered into an agreement with the University of New South Wales (UNSW) to conduct research into developing fibres of mullite from aluminosilicate raw materials such as topaz. For this purpose TopTung has registered a wholly-owned subsidiary TopFibre (Pty) Limited to partner with the UNSW.

The research programme to be undertaken at the School of Materials Science and Engineering will have a specific goal to explore the potential for developing fibres of mullite from aluminosilicate raw materials such as topaz. The work will involve the mineralogical and microstructural characterisation of the mullite fibres as well as analysis of the mullite-glass-mullite interface using these and other techniques.

The goal of the project will be to assess the feasibility of topaz for use in the generation of these fibres and to provide the basic data for an ARC* Linkage Project proposal application in late 2016 on the generation of single-crystal mullite fibres from these mineral resources. This potential co-funded Federal Government 3-year research programme will, if successful, include the commercial viability of producing single-crystal mullite fibres from topaz, which are high-value products.

Topaz and research background

The topaz mineralisation at the Torrington Project is an integral constituent of the silixite which is the host to the bulk of the tungsten mineralisation. In appearance the silixite is similar to a relatively coarse grained white sandstone / quartzite (see photograph below).

The topaz ($\text{Al}_2\text{SiO}_4(\text{FOH})_2$) appears to be distributed evenly throughout the silixite bodies with a reported average content of 18% and a grain size average of close to 2mm.

In the 1980's a consortium of companies focussed on topaz production at Torrington building a pilot plant for topaz recovery with the concentrate product being used to produce mullite, a refractory mineral. Despite proving the high performance of the product, the consortium could not obtain financial support for large scale mining and processing of topaz and eventually the individual companies went their separate ways. During this time, some of the topaz was used in the shipping industry as an abrasive (sand blasting).

*Australian Research Council



There were also extensive studies conducted at CSIRO and later at UNSW (until about 2006) on the potential mullite products that can be produced from the topaz, including fibres before commercial funding ran out.

Topaz has an average SG of 3.5 vs that of quartz with an average SG of 2.65, so in the planned gravimetric spiralling and tabling processing plant the topaz will be recovered either during the initial processing to recover the tungsten, or afterwards by re-treating the middling and waste streams. At a processing rate of 500,000 tpa of silexite, it is theoretically possible to co-produce in the order of 90,000 tpa of topaz as a by-product. This sheer volume of topaz that may be produced as by-product warrants research into its potential markets and products as both a bulk industrial feedstock material and / or high-added value small volume commodity. Success in this research endeavour will contribute to the financial robustness on the project and remove the reliance of producing one product (tungsten) only.

Dr Leon Pretorius will represent the owner's team and be directly involved with the UNSW research.

For, and on behalf of, the Board of Directors,

Dr Leon Pretorius
Executive Chairman
TopTung Limited

For any enquiries please contact Leon Pretorius on 0419 702 616 or Martin Kavanagh on 0419 429 974