



TALGA ENTERS GRAPHENE CONDUCTIVE INKS PROGRAM WITH GERMAN RESEARCH GROUP

Highlights:

- Talga has entered a graphene research and development program with internationally recognised German materials research organisation, Friedrich Schiller University Jena
- Focus on conductive ink development with applications in printed electronics using Talga's graphene
- Friedrich Schiller University has key relationships with potential end users of graphene and Jena area characterised as a hub for technology based industries

Talga Resources Limited (ASX:TLG) ("Talga" or "the Company") is pleased to announce the execution of an agreement to undertake collaborative research with the Friedrich Schiller University Jena ("University Jena") - led by Professor Ulrich S. Schubert and his group ("Schubert Group"). The program has an initial six month duration and will focus on using Talga's graphene to develop better, high efficiency conductive inks suitable for printable, flexible electronics and other applications including batteries.

The significance of undertaking a program with 450 year old University Jena, and specifically the Schubert Group, is the proximity of nearby technology companies and non university research organisations, many of whom are working with University Jena to access its world class analytical facilities. Jena, a high tech growth engine in central Germany, is the home of Carl Zeiss, Ernst Abbe and Otto Schott and hosts a range of internationally recognised companies forming a dense concentration of industry and scientific research capability. The Schubert Group has partnered with companies such as Evonik Industries, JenaBatteries, Chemspeed Technologies and Microdrop Technologies, amongst others, and the program with Talga creates a significant opportunity for Talga to share research results with potential end users of its graphene.

Managing Director Mark Thompson says *"It makes sense for Talga to target the use of its advanced graphene material in high volume applications such as conductive inks where graphene has been used since 2009 to replace carbon black, copper and silver formulations. The ability of graphene to singularly improve conductivity, flexibility, strength and transparency of printable electronic products makes it the 'low-hanging fruit' of graphene commercialisation. Already worth more than the entire current natural graphite market, this single graphene application market is projected to exceed US\$2.8 billion in the next 10 years (Zervos, 2014).*

Talga Managing Director Mark Thompson with University Jena's Professor Ulrich S. Schubert.



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Corporate Information

ASX Code **TLG/TLGO**

Shares on issue **124.59m**

Options (unlisted) **8.10m**

Options (listed) **7.72m**

Company Directors

Keith Coughlan

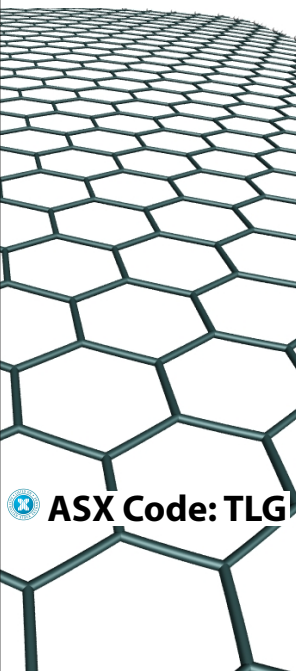
Non-Executive Chairman

Mark Thompson

Managing Director

Grant Mooney

Non-Executive Director



We are at the start of a new wave of material substitution, with Talga's larger and lower cost graphene production methods capable of removing the supply bottleneck from backed-up applications.

Germany is the EU's biggest consumer of graphite and areas of the country like Jena have state of the art analytics, research expertise and large industry end users all integrated and proximal to one another. We look forward to this program with University Jena becoming a springboard to commercialising Talga's graphene in this area."

For further information, please contact:

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References

Zervos, D. K. (2014). Conductive Ink Markets 2014-2024.

About conductive inks

Conductive ink can be used to create printed objects that conduct or store electricity. Inks can be drawn or printed on a variety of substrate materials such as polyester to paper and the transformation from liquid ink to solid printing usually involves drying, curing or melting processes.

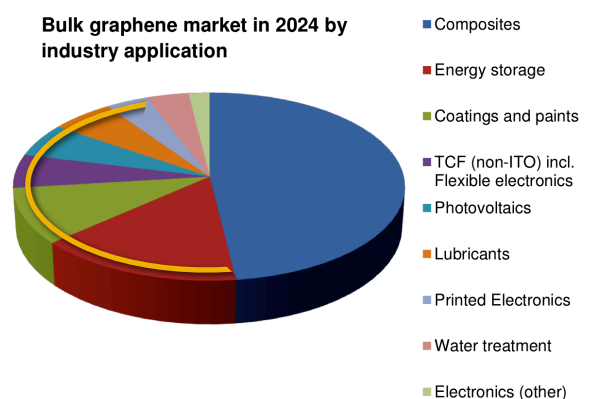
The Photovoltaic industry is the largest consumer of conductive inks, however the increased demand from Display, Radio Frequency Identification, Bio-sensor, and Automotive applications among others are driving new growth. In addition the 'Internet of Things' requires robust, flexible high performing conductive inks in electronic smart packaging devices, alone projected to grow to \$1.7 billion in 2022 from consumer packaged goods with 35 billion units having electronic functionality. Leading players in the conductive ink market are DuPont (U.S.), Henkel (Germany), Heraeus (Germany), Fujikura (Japan), Sun Chemicals (U.S.) and others.

The trend towards efficiency and miniaturization in consumer electronics has also increased the demand for conductive inks to replace the bulky, energy consuming wire and circuits currently serviced by opaque, brittle carbon, silver and copper formulations. Graphene based conductive inks have been around commercially since at least 2009 and can be applied onto low-cost temperature-sensitive, thin, or flexible substrates such as polyethylene, paper, paperboard and label stock on standard printing presses that use existing drying/curing equipment. Graphene enhanced inks provide the promise of:

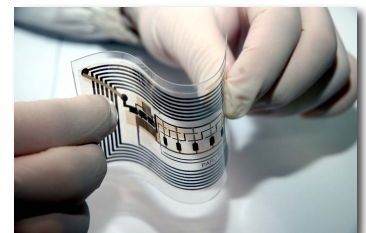
- Higher conductivity - as much as 10x higher than typical carbon inks
- Lower cost - compared to widely used silver based inks
- No high-temperature sintering required for current inks
- True flexible applications where bending, folding, handling, dropping, and even crumpling do not disturb the printed circuitry
- Energy storage batteries printed directly into flexible, plastic substrates

According to the IDTechEx's 'Conductive Ink Market' report, the global conductive ink and paste business will generate \$1.6 billion revenue in 2014.

Fig 1. Bulk graphene market (projected 2024) with industry applications utilising conductive inks marked yellow.



Examples of graphene conductive ink products a) RFID tag and b) mobile phone screen.



About Friedrich Schiller University Jena

The University in Jena was founded in 1558 and today has 19,000 students distributed over ten different faculties. Over 2,000 Ph.D. students are an important base for the University research, that focusses in the fields of LIGHT (Optic and photonic, innovative materials and technologies, soft matter, energy storage), LIFE (microbiology, infection and sepsis research, age research) and LIBERTY (social change, enlightenment, romantic, reformation). Over 380 professors (incl. junior professors) and 7,000 members of staff work at the university and university hospital. In 2008 Jena was awarded the title Germany's "City of Sciences".

Prof. Ulrich S. Schubert, Dean of the Faculty of Chemistry and Earth Sciences, is one of the worldwide leading researchers in Chemistry and Materials Science (ISI "Highly cited researcher" in Materials Science 2014), with an h-index of 74 and over 700 refereed scientific publications. The Schubert Group focusses on the development of new metal-free batteries, self-healing materials and the organ-specific delivery of nanocontainers. One particular speciality of the group is the formulation of functional inks for applications in plastic electronics as well as life sciences. The chemistry, physics and material science program alone at University Jena will have invested approximately €100 million in laboratory equipment/special instruments and new buildings by year end 2015.

About Talga

Talga Resources Limited (Talga) (ASX: "TLG") is a Perth headquartered high tech materials company with its own source of integrated supply from multiple advanced and high grade graphite projects in northern Sweden. The flagship project "Vittangi" is at development stage and like the rest of the projects, it benefits from established high quality infrastructure in Sweden including low cost power, road, rail and ports.

Two of the five graphite projects have unique ore that allows graphite and graphene to be liberated at an atomic level in a ground breaking and extremely cost effective way. The graphene produced is of a high quality and suitable for a range of large volume composite and additive applications as well as high technology applications.

Talga's legacy non graphite assets in Sweden and Australia, including a cobalt rich IOCG, are all to be commercialised to provide funds for the core graphite projects.