ASX ANNOUNCEMENT **20 October 2014**

CSIRO Study Finds Opportunities in Graphite & Graphene 3D Printing

HIGHLIGHTS:

- **Study identifies two potentially scalable manufacturing techniques that may produce high quality graphene and graphite at low cost and high volumes**
- **Extended partnership with CSIRO under discussion to conduct further research to identify commercial solutions to both graphene production and graphene composite polymer production techniques**
- **Kibaran in discussion with a number of high-tech groups for the manufacture of graphite-based 3D printed objects and components**

Kibaran Resources Limited (ASX: KNL) is pleased to advise its 50% owned subsidiary, 3D Graphtech Industries Pty Ltd ('Graphtech') has received results from a collaborative CSIRO white paper study that has identified two opportunities that could produce high volume/high quality graphene and a pathway for the development of graphene inks for fused filament fabrication 3D printing.

Graphtech - a research and development company co-owned equally with 3D Group Pty Ltd - is now assessing the two potential opportunities:

- The development of a scalable manufacturing technique to produce a high-volume of high quality graphene at low cost
- The development of a piece of equipment to produce graphene composite polymer thermoplastic filament for extrusion 3D printers that contain graphene

Both opportunities have the potential to deliver commercial solutions, but are subject to further research and development by Graphtech and the CSIRO.

Graphtech engaged the CSIRO (refer to ASX announcement 25 August 2014) to undertake the study, with a scope of identifying opportunities in 3D printing and fused filament fabrication using the application of graphite and graphene inks.

Additionally, Kibaran has separately commenced discussions with a number of groups interested in a partnership arrangement for the production of unique, high quality, graphite-based 3D printed parts and objects. This will enable Kibaran to have direct participation in the rapidly evolving 3D printing industry, with accelerating technological development forecast to drive the market value from the current US$3.8 billion to US$16.2 billion by 2018[1].

In particular, graphene is projected to revolutionise the 3D printing process due to its unique one-atom thick structure coupled with its strength, flexibility and ability to conduct electricity better than traditional metals such as copper[2].

Kibaran is also pursuing the use of graphite and expanded graphite in other sectors outside of 3D printing where significant applications exist that could revolutionise the way carbon-based products are produced.

Kibaran Executive Director Andrew Spinks commented: "Currently no suitable processes exist to produce in large volumes and at a low cost a high quality graphene where the lattice that connects the atoms are undamaged and intact. The CSIRO has however identified two potential graphene production methods that will need to be researched further. Graphtech and the CSIRO are now in discussions to determine the length, cost and deliverables of the research program."

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[1] *Canalys 3D printing forecast 2013-2021* - http://www.canalys.com/static/press_release/2014/canalys-press-release-310314-3d-printing-market-grow-us162-billion-2018_0.pdf

[2] Graphene Flagship - http://graphene-flagship.eu/

Frank Pertile, Managing Director of 3D Group Pty Ltd commented "We are pleased with the findings of the CSIRO white paper, particularly with the review of the current market landscape and identification of the existence of considerable opportunities around graphene production and graphene composite polymer manufacturing. We now look forward to working with CSIRO to develop a pathway forward as the research has confirmed that this presents as a significant opportunity for Graphtech. We have already commenced dialogue with a number of groups domestically and internationally which are particularly interested in our work in this area and have already identified applications for what we are seeking to develop."

About 3D Group

3DG is an emerging 3D technology company focused on upstream and downstream opportunities associated with additive manufacturing, also referred to as 3D printing. 3DG has been established with a clear strategy to become Australia's leading integrated multi-platform 3D printing company.

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