

Talga and Biomer sign Joint Development Agreement for Graphene in Thermoplastics

Australian advanced materials technology company, Talga Resources Ltd (“**Talga**” or “**the Company**”) (**ASX:TLG**), is pleased to advise it has signed a Joint Development Agreement (“**JDA**”) with Biomer Technology Ltd (“**Biomer**”), a UK based polymer manufacturing and technology company, to co-develop graphene-enhanced thermoplastics for potential commercialisation in the healthcare and coating markets.

This initiative is in the composites sector under Talga’s graphene commercialisation strategy. Highlights of the JDA include:

- Creation of new multifunctional thermoplastic polyurethanes incorporating Talga functionalised graphene (“**Talphen[®]**”) in Biomer polymers.
- Includes terms for evaluation, five (5) years exclusive supply in the event of commercialisation of products and intellectual property ownership.
- Commercialisation of successful products for targeted biomedical and coating applications can be facilitated through Biomer’s existing global-scale commercial clients.

Under the terms of the JDA Biomer will design and synthesise thermoplastic polyurethanes (“**TPU**”) incorporating Talga’s graphene (“**Talphen[®]**”) products for evaluation in biomaterial (medical devices) and industrial coating (marine anti-fouling) amongst other applications.

The incorporation of amounts of Talphen[®] into Biomer’s proprietary TPU is expected to improve a range of key performance characteristics including:

▶ chemical resistance	▶ mechanical strength
▶ wear & abrasion resistance	▶ biocompatibility/biofouling
▶ surface finish	▶ electrical conductivity

The Talphen[®] enhanced TPU will be evaluated alongside Biomer’s commercially available TPU and other polymers under development with Biomer’s global industrial partners.

Talga Managing Director Mark Thompson: “*Talga is excited to enter this agreement with Biomer that provides an accelerated path to new polyurethane products and expanded commercial opportunities. Biomer has an extensive network of advanced polymer materials technologies experts and commercial/customer relationships that can be leveraged to accelerate Talphen[®] into the world of polyurethane products.*”

We look forward to working with Biomer through the JDA to incorporate Talphen[®] into Biomer products with a view to enhancing people’s lives through advanced biomedical healthcare products, reducing eco-impacts of ship coatings in the marine environment and improvements to many other polyurethane based products”.

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Biomer Managing Director Simon Dixon: *“Biomer are excited to work with Talga on the significant potential for graphene in our proprietary high performance polymers and the opportunities it presents for advancing both design and manufacturing in the biomedical and specialty industrial market sectors.*

Understanding the technological capabilities for graphene is fundamental to unlocking the potential for this material. We look forward to working with Talga’s research team in Cambridge and its unique functionalised graphene formulations which, through the JDA, will provide the ideal platform to realise these opportunities.”

Background and Agreement

Graphene is carbon and humans are carbon based. Thus graphene enhanced polymers have the potential to provide reduced implant rejection sensitivity and improve biocompatibility, more durable plastic components for joint and vascular replacements, and utilise graphene’s self-healing properties and electrical conductivity to enhance a host of biomedical applications. Inversely it may be engineered to have biocidal properties, providing a potential pathway to metal-free anti-foul marine coatings.

The market potential is significant with the existing thermoplastic polyurethane market size exceeding 21.7 million tonnes products¹ and total market value c.US\$57.8 billion² including, automotive, aerospace, coatings, healthcare products, and many other applications.

Preparation of functionalised formulations for incorporation with Biomer products and testing is planned to commence next month. Talga Technologies Limited (Cambridge, UK) will prepare and supply the Talphene® products and interface with Biomer staff to fulfil work programme outcomes and deliverables.

Under the JDA Talga and Biomer will co-fund R&D, material supply prototype development, manufacturing process development, and internal and external testing. Biomer’s target customers have also agreed to participate in product testing programs. Anticipating successful outcomes the companies have agreed in advance to incorporate commercial terms that include minimum 5 year exclusive supply of Talga graphene on jointly developed products, and terms of intellectual property rights. Other commercial terms including pricing are to be further agreed and specified during product development.

About Biomer Technology

Biomer Technology is a UK company focusing on the design, engineering and manufacture of high performance polymers for applications in high value medical devices and large volume industrial polyurethane markets.



The company’s facilities include R&D and prototyping laboratories for polymer and component development, micro and cell biology laboratories together with bulk polymer manufacturing operations. Their clients include world leading multinational manufacturers of products using polyurethanes.

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About Talga

Talga Resources Ltd (“Talga”) (ASX: TLG) is a vertically integrated advanced material company enabling stronger, lighter and more functional graphene and graphite enhanced products for the global coatings, battery, construction and polymer composites markets.

Talga has significant advantages owing to its 100% owned high grade natural graphite deposits in Sweden, processing innovations and product technology. Joint development programs are underway with a range of international corporations. www.talgaresources.com

Polyurethane market

According to a 2017 Market Research Future report³ the global polyurethane market is projected to reach US\$81.7 billion by 2022 (at CAGR of 6.5%). Growth is escalating due to high demand of lightweight and durable materials in end user industries such as electronics appliances, coatings, foams (furniture), footwear, packaging, lightweight automotive interior components, biomedical devices and more.

The supply chain of polyurethanes includes raw material suppliers, polymerisers, product manufacturers, and end users. Graphene may potentially be incorporated directly into polymerisation processes, or sold as formulated masterbatches or in liquid and powder additives.

The major (non-Chinese) key players of the polyurethane market are BASF SE (Germany), Dow Chemical Company (U.S), Huntsman Corporation (U.S), Eastman Chemical Company (U.S.) and Nippon Polyurethane Industry Co. Ltd. (Japan).

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References

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2. Polyurethane Market Size by Product 2016-23; Global Market Insights Report ID: GMI387
3. Polyurethane Market Research Report- Forecast to 2022; Market Research Future report May 2017

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