

## Talga Graphene in Breakthrough Coating Results

**Talga Resources Ltd**  
**ABN 32 138 405 419**

1st Floor, 2 Richardson St,  
 West Perth, WA 6005

T: +61 8 9481 6667

F: +61 8 9322 1935

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

### Corporate Information

ASX Code **TLG, TLGOA**

Shares on issue **181.9m**

Options (listed) **44.9m**

Options (unlisted) **36.2m**

### Company Directors

**Keith Coughlan**

Non-Executive Chairman

**Mark Thompson**

Managing Director

**Grant Mooney**

Non-Executive Director

**Stephen Lowe**

Non-Executive Director

- **Coating steel with Talga's graphene significantly increases corrosion protection by up to 74% in peer review study**
- **Validates global potential of Perth-based Talga's graphene for large volume coatings sector**

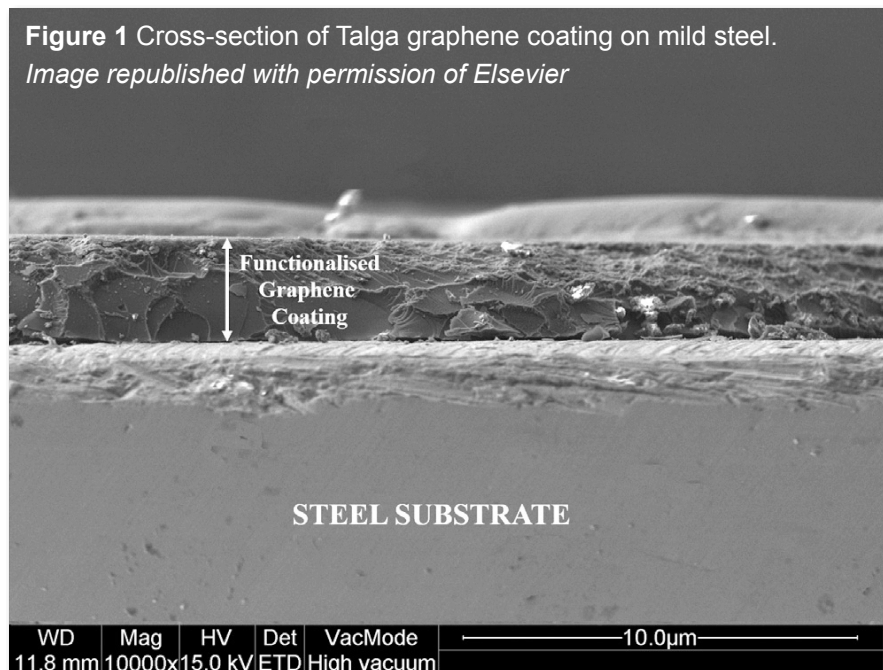
Advanced materials development company, Talga Resources Ltd ("Talga" or "the Company") (ASX Code: TLG) has made a key breakthrough in the global \$120 billion a year coatings industry with a peer review study evaluating and supporting the use of Talga's graphene in a steel coating to withstand or minimise corrosion.

The peer study, "Functionalised Graphene as a Barrier Against Corrosion", is published in the scientific journal *FlatChem* and available by open access via the publisher, *Elsevier*<sup>1</sup>.

In the study, researchers used Talga's graphene nanoplatelets produced at the Company's pilot test facility in Rudolstadt, Germany to manufacture a base reference coating for testing corrosion resistance on mild steel (Fig 1). The test was underpinned by emerging evidence that graphene's high impermeability, high electrical conductivity and ultra-thin shape may prove a new and effective additive to improve coatings of many types, particularly anti-corrosion coatings.

Results from the peer reviewed tests demonstrated dramatic improvements in corrosion resistance from the addition of just 0.1% Talga graphene, confirming its ability to inhibit contributors of corrosion, even at very low concentrations.

**Figure 1** Cross-section of Talga graphene coating on mild steel.  
*Image republished with permission of Elsevier*



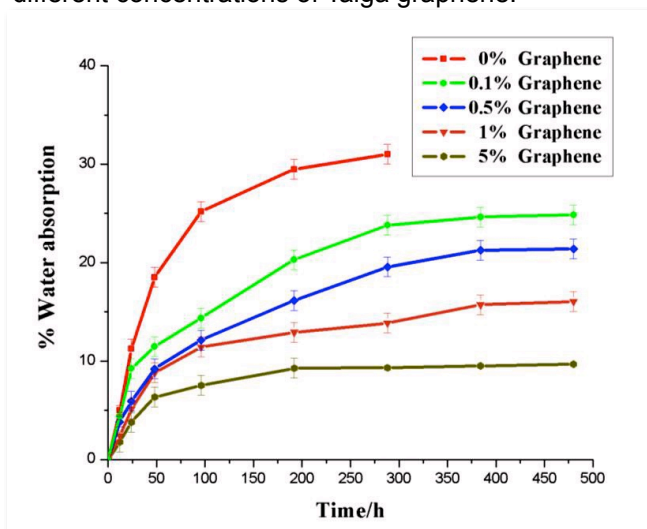
Water absorption, a key contributor to corrosion, was significantly reduced by 74% using a concentration of 5% Talga graphene (see Fig 2). Furthermore, this coating formula sharply decreased the speed and severity of corrosion on steel in salt exposure tests (see Fig 3).

These results support Talga's aim of targeting its Talphene™ brand graphene products (see ASX:TLG 16 Aug 2016) into the global coatings industry, reported to be worth more than \$120 billion per annum and which consumes over 40 million tonnes per annum of materials<sup>2</sup>.

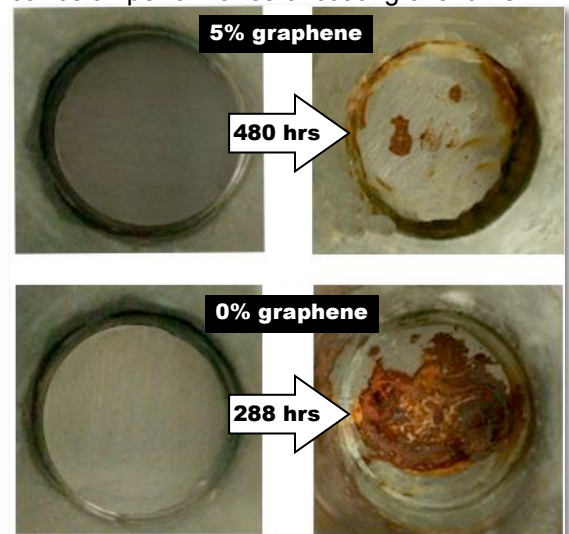
The latest study also supports and extends work by the researchers on graphene in anti-corrosion coatings as an eco-friendly alternative to toxic chromium based coatings<sup>3,4</sup>.

Talga, with its unique and innovative bulk graphene producing method, is aiming to provide the required low cost, high quality graphene in large volumes to cater to the enormous coating industry's demands. A video interview with Talga Resources Managing Director Mark Thompson discussing the findings can be viewed at <http://www.talgaresources.com/irm/content/videos.aspx?RID=366>

**Figure 2** Water absorption over time by coatings with different concentrations of Talga graphene.



**Figure 3** Salt immersion tests showing corrosion performance of coating over time.



## Background

Corrosion is reported to cost \$2.2 trillion annually in economic impacts through the maintenance and replacement costs of infrastructure and equipment, particularly transport and shelter infrastructure, which has high impact costs of failure<sup>3</sup>.

According to the World Steel Association, the vast majority of global steel products are coating pre-treated and the market share for chrome-free coatings is expanding rapidly. Global leading suppliers of steel pre-treatment products include Chemetall Group, Henkel AG, PPG Industries, Nippon Paint Ltd and Beckers Group who compete to pre-treat world production of steel and aluminium amounting to many million tonnes per month<sup>2</sup>.

For further information, visit [www.talgaresources.com](http://www.talgaresources.com) or contact:

Mark Thompson  
 Managing Director  
**Talga Resources Ltd**  
 T: + 61 (08) 9481 6667

Jeremy McManus  
 Commercial Manager  
**Talga Resources Ltd**  
 T: + 61 (08) 9481 6667

## References

- 1 *Functionalised Graphene as a barrier against corrosion*, K.S. Aneja et al, **Flatchem**, Elsevier September 2016 <http://www.sciencedirect.com/science/article/pii/S2452262716300058>.
- 2 *Study 3135 Coatings*, **Freedonia** Industry Report, March 2014.
- 3 *Graphene against corrosion*. **Nature Nanotechnology**, October 2014.
- 4 *Graphene based anticorrosive coatings for Cr (VI) replacement*, **Nanoscale**, September 2015.

*Note: All images republished with permission of Elsevier.*

## About Talga

**Talga Resources Ltd** ("Talga") (ASX: TLG) is an advanced material minerals company developing graphene and micrographite products for the coatings, energy storage, construction products and composites markets. Talga products have significant potential advantages in performance, value and application owing to unique ore and patent pending process technology.

Talga sources graphite ore from its 100% owned deposits in Sweden, with pilot test processing at the Company's pilot test facility in Germany. Collaborative testing is underway with a range of corporations including industrial conglomerate Tata, Jena Batteries and UK listed Haydale.