MRL Corporation Ltd

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ASX Symbol
MRF, MRFOA

University of Adelaide to confirm strong commercial viability of MRL graphene in pilot study

Next round of extensive testing aimed at refining optimum process for extracting premium-priced graphene from MRL's high-grade graphite; first graphite production later this year.

MRL Corporation (ASX: MRF) is pleased to advise it has taken another key step towards becoming a major supplier of premium-priced graphene, with the University of Adelaide agreeing to undertake a further round of extensive tests on the Company's graphite.

The UoA will initially conduct laboratory tests to determine the optimum electrochemical exfoliation process for extracting graphene from MRL's high-grade Sri Lankan graphite.

The UoA will then assemble a temporary, scaled down pilot plant to test and further optimise this extraction process with a view to maximise yields and minimising the time taken for the exfoliation process.

Previous tests conducted by the UoA returned outstanding results, demonstrating that MRL's graphite was suitable for scalable graphene production.

The tests found the quality of the prepared graphene from MRL's graphite was outstanding and comparable with the quality of graphene prepared by synthetic routes.

They showed that MRL's graphite has very high crystalline carbon content not observed in any other previously tested graphite materials.

A separate round of tests conducted by the University of Adelaide found that the graphene yield percentage from the exfoliated portion of the graphite was more than 90 per cent.

The graphene yield percentage from total graphite was more than 43.6 per cent.

MRL's high graphitic ore and the yield of the graphene conversion are both many times greater than that achieved by most other graphite companies, highlighting the immense commercial potential of MRL's graphite.

Quality consistency, cost and scalability in production remain the greatest challenges for graphene's industrial uptake and application.

Professor Dusan Losic and his team in the University's School of Chemical Engineering will investigate optimisation methods and resources for use with MRL's high grade graphite, in an effort designed to maximise production yields, quality and cost efficiencies. The methods will then be scaled to optimise production in batches that could supply commercial demand.

"Our lab scale results show that electrochemical processing of MRL graphite has considerable potential for development of low-cost and scalable production of high-quality and high-purity graphene. We believe this process when optimised could overcome these constraints and bring graphene and graphene based products at large quantities and lower price to industry consumers," said Professor Losic.

About MRL Corporation Ltd (ASX: MRF)

MRL is aiming to develop an underground mining operation to extract high-grade, crystalline vein graphite, which is unique to Sri Lanka. The Company holds exclusive rights to exploration licenses covering approximately 6,300 hectares in area, with historical workings located within nearly all license grids.

About Graphene

Graphene, the well-publicised and now famous two-dimensional carbon allotrope, is as versatile a material as any discovered on Earth. Its amazing properties as the lightest and strongest material, compared with its ability to conduct heat and electricity better than anything else, mean it can be integrated into a huge number of applications. Initially this will mean graphene is used to help improve the performance and efficiency of current materials and substances, but in the future it will also be developed in conjunction with other two-dimensional (2D) crystals to create some even more amazing compounds to suit an even wider range of applications.

One area of research which is being very highly studied is energy storage. Currently, scientists are working on enhancing the capabilities of lithium ion batteries (by incorporating graphene as an anode) to offer much higher storage capacities with much better longevity and charge rate. Also, graphene is being studied and developed to be used in the manufacture of supercapacitors which are able to be charged very quickly, yet also be able to store a large amount of electricity.

Nature of vein graphite

Sri Lankan graphite deposition model is best described from the 'bottom up': tension fractures formed in the metamorphic sediments, caused by the folding of the sediments, creating 'conduits' for the hydrothermal deposition of high quality vein graphite. Historically, mining of these veins has found the veins generally increase in thickness and grade quality with increasing depth. Graphite veins generally dip steeply at –70° to near vertical, enabling 'narrow vein' extraction mining techniques similar to those used on narrow vein, high-grade gold deposits. The method commonly used is an overhead retreat stoping technique where the high-grade vein graphite is mined and hauled to surface without contamination. The graphite selvages, in contact with the surrounding waste, is hauled to surface and stockpiled for upgrading. The balance of the waste is used to fill the floor of the stope.

Due to the nature of the vein graphite, it is anticipated vein widths of ~25cm, using narrow vein mining techniques can be economically extracted from underground operations.

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