

# THOMAS SWAN

## INDUSTRY PROBLEM STATEMENT

Thomas Swan & Co. Ltd. is a leading independent manufacturer of performance and speciality chemicals, manufacturing over 100 commercial products. With activities in the USA and China and a global network of distributors, Thomas Swan exports to over 80 countries worldwide.

Graphene is well recognised as the wonder material of modern science and was the focus of the Nobel Prize in 2010. It has unique properties and is both the strongest and most conductive material known to man. Potential applications for graphene are wide ranging and include next generation electronic devices, mechanically strengthened plastics and new thermoelectric materials.

Production of pristine, high quality graphene on an industrial scale is a significant challenge to industry. The development of a graphene manufacturing process is the latest venture for Thomas Swan's Advanced Materials Division which already manufactures industrial grades of single-wall carbon nanomaterials.

## CRANN VALUE ADD

CRANN PI Professor Jonathan Coleman and his team have published a number of papers and patents on the exfoliation of graphene and other 2D materials. Thomas Swan has funded an industrial focussed research project collaborating with CRANN and utilising Prof Coleman's expertise in the field of graphene production to develop methods to produce high quality pure graphene on an industrial scale.

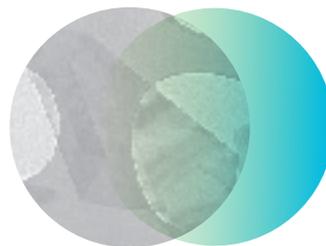
Thomas Swan has placed a processing engineer in CRANN to work full time with Professor Coleman's team for two years. Embedding a researcher in residence with CRANN ensures the programme is continually aligned to the company's strategy and also provides Thomas Swan oversight on the full portfolio of research within CRANN allowing them to ascertain if these technologies would be of value to the company. This partnership is a model for how world leading technology developed by academia can be identified and commercially exploited to provide both economic and societal benefit.

## CRITICAL CRANN ENABLERS

- Materials knowledge and expertise.
- Synthesis, processing and advanced characterisation of nanomaterials.
- Mechanical, optical and electrical testing of nanomaterials.
- Training of industry staff and the transfer of commercially valuable knowledge.
- Advanced microscopy for materials characterisation.

## ENGAGEMENT TYPE

**Direct Industry Funded Collaborative Project.** Direct industry funded projects give the company a strong voice in collaborative or contract research projects and bypass the need to wait for funding calls.



*“We are delighted to be working with CRANN and Trinity College Dublin on such an exciting project... I look forward to developing a scalable production route of true, high purity graphene”*

*Harry Swan, Managing Director, Thomas Swan*



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*100% Direct Industry  
Funded Programme*

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