

Keeping Things Cool in Space



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In December 2012, Irish surface technology company Enbio got the breakthrough every start-up dreams of - it landed a substantial contract with the European Space Agency. This brought international peer recognition and positioned the company as a serious player in the space arena.

In simple terms, Enbio has developed a ‘sunscreen’ that protects satellites travelling through space. All going to plan, the company’s technology will be used on board the Solar Orbiter satellite mission to the Sun in 2017.

At the core of the company’s success is CoBlast a patented platform technology developed by company founder, John O’Donoghue. “Our technology offers unique surface solutions to challenges across multiple sectors including aerospace, energy, automotive and medical devices,” he says.

“CoBlast is the grit blasting of a mixed media stream of particles to the surface of a metal in order to strip off and replace the naturally occurring oxide layer. All modern lightweight metals have this layer and it makes it difficult to join anything to those surfaces. We have found a way past that natural barrier and what is underneath is highly reactive. If you can put something onto that surface before the oxide layer naturally grows back – which happens in a fraction of a second – it will bind strongly to the metal, if it has an affinity for it.”

In the case of the Solar Orbiter mission, the CoBlast technology is being used to produce “black” surfaces that combine extreme thermal and ultra-violet radiation stability, robustness, and electrical conductivity. Together they provide satellites and their payloads with better protection from extreme solar radiation than is currently available.

Enbio, a UCD spin-in company, has been based at NovaUCD since 2011 when the company relocated from Cork. “Being based at NovaUCD, in particular, and UCD, in general, has made this new phase of Enbio sing,” says John O’Donoghue.

“It’s a stimulating environment to work in and a rich environment in which to recruit. There is also the interaction with the wider University, which is invaluable. The team at NovaUCD has also facilitated everything we needed to do to get our manufacturing plant up and running.”

One of Enbio’s key collaborators at UCD is Dr Denis Dowling, Director of the UCD Surface Engineering Research Group and winner of the NovaUCD 2012 Innovation Award. Dowling’s extensive experience in this field has led to the successful commercialisation and licensing of a number of the technologies he has developed. These technologies have subsequently been applied in areas as diverse as food science and the biocompatibility of implanted medical devices. Since 2003, Dowling has submitted 14 invention disclosures to UCD’s technology transfer team at NovaUCD.

“NovaUCD provides a framework that allows my research to move to the next stage,” Dowling says. “They help assess the commercial potential of an idea and if it has value they will look after IP and patenting issues as well as licensing the technology to industry.”

Dowling’s connection with Enbio started out through Enterprise Ireland’s Innovation Partnership Programme where UCD’s role was to obtain a fundamental understanding of the technology Enbio wanted to develop. “From the University’s perspective the interaction was highly beneficial as we had the opportunity to work on a challenging new technology. From the company’s point of view our involvement gave it access to our knowledge base and to joint publications it was then able to use when pitching for financial support to develop the company,” Dowling says.

Enbio’s initial focus was the medical devices sector, but when this market proved over-complicated for a start-up to penetrate, it began looking at alternative industries. “I helped them write their first European Space Agency proposal which was successful and they did all the running from there,” Dowling says.

“Being located at NovaUCD is ideal for a company like Enbio as it provides a framework and a facility that allows entrepreneurs to develop as part of a community. If you’re working on a start-up on your own and you have a bad day it can be very negative.

“At NovaUCD entrepreneurs can bounce ideas and get access to the people they need through networking with like-minded individuals. This sort of collegial engagement is very valuable in terms of helping a company to get going,” Dowling adds.

“If you were to ask me what’s the essence of being here at NovaUCD, I’d have to say it’s the calibre of the people. It’s just a fantastic place to be,” John O’Donoghue says.