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NovaUCD

Licensing Opportunity

Improved strength of composite parts for Additive Manufacturing

VALUE PROPOSITION

65% increase in strength of composite fibre parts manufactured by additive manufacturing compared to current state of the art

Substantial increase in composite part mechanical strength

Substantial enhancement in the interfacial bond strength with the composite resin

Application of nm thick coatings

MARKET

Automotive, medical devices and aerospace sectors are key beneficiaries markets of enhanced additive manufacturing technology

Intellectual Property

Trade Secret technology based on processing Know-how

OPPORTUNITY

Research Collaboration, License

Innovation developed by the Surface Engineering Group (www.ucd.ie/surfaces) in substantially increasing the mechanical performance of composite parts manufactured by additive manufacturing.

Additive manufacture (grew by 35% in 2013 to over $3 billion) is transforming a number of industry sectors including key markets such as automobile (expected to reach $1.1 billion by 2019) and aerospace (10.2% of additive manufacturing's global revenues). Using additive manufacturing, it is possible to develop an agile manufacturing environment, which can reduce the lead time from conception to the production stage by upto 70%.

A difficulty for components fabricated by additive manufacturing however is that the mechanical strength is approximately 60% that of polymers produced using conventional processes such as injection moulding. Recently technology to fabricate composite parts by additive manufacturing has been developed. A substantial increase in mechanical properties has thus been achieved by the Surface Engineering Group. By tailoring the surface chemistry of the fibres used in these composites UCD researchers have been able to achieve a further doubling in mechanical strength of the resulting composites, compared with those fabricated using untreated fibres.

Performance of dog-bone shaped samples produced by additive manufacturing and tested under tensile test;
Sample 1: Polymer part
Sample 2 : Composite fibre part
Sample 3: Enhanced surface composite fibre technology part

Technology Description

Scalable technology for additive manufacturing

Low cost add-on technology to existing systems

Rapid Deployment and installation possible

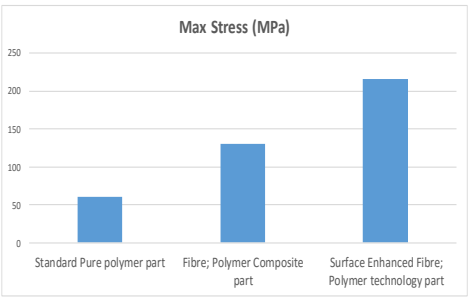
Uses commercial equipment technology proven in a wide range of industrial sectors

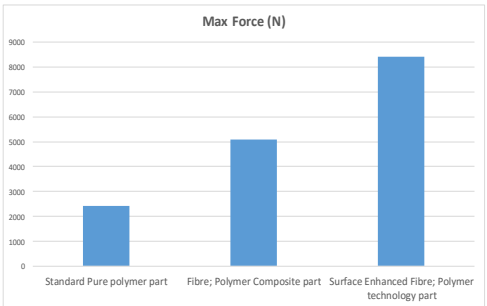
Substantial enhancement in the interfacial bond strength with the composite resin.

Key Features

65% increase Max Force (N) versus current state of art (Nylon and Glass fibre) for identical samples

49% increase in elongation at break versus Nylon and Glass fibre parts for identical samples





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Putting Knowledge to Work

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About Us

The mission of UCD Research & Innovation is to enhance the value and quality of UCD's innovation activities in order to achieve the maximum impact for the University, its partners, and for social and economic life in Ireland in the wider world.

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