Body Armor Company Successfully Raising Money Through Crowdfunding

By Scott Burton

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A Sedgefield-based nano-materials company is pioneering a technologically advanced type of body armor with money raised through crowdfunding. Graphene Composites (GC) is now approaching the funding target of its fourth campaign.

The company uses a combination of ingredients, including graphene and aerogels, to produce a variety of extremely unique composites. These composites are some of the most resilient, strongest and among the lightest weight materials ever made.

Graphene Composites' products are targeted to the aerospace industry, renewable energy and body armor manufacturers. GC is hoping its pitch on Crowdcube will raise £100,000 and are offering 0.99% of the company's equity in exchange.

GC and its partner, the Center for Process Innovation, have raised over £91,000 so far. With several patents pending, the Sedgefield-based partnership is extremely optimistic.

The monies raised during this round of funding will be used in developing a brand new product, the GC Shield. This armor shield is designed to slip into a backpack to protect against a low velocity gun or knife attack.

Graphene Composites claims that a number of GC Shields can be quickly linked together to form a GC Shield Wall. The wall could protect a whole group of people gathered in the same space. This is a brand new way of providing personal security.

The company is planning to launch GC Shield this summer and expect US schools to show a great deal of interest. Funds raised are for initial production as well as getting the GC Shield certified as ballistic and stab resistant.

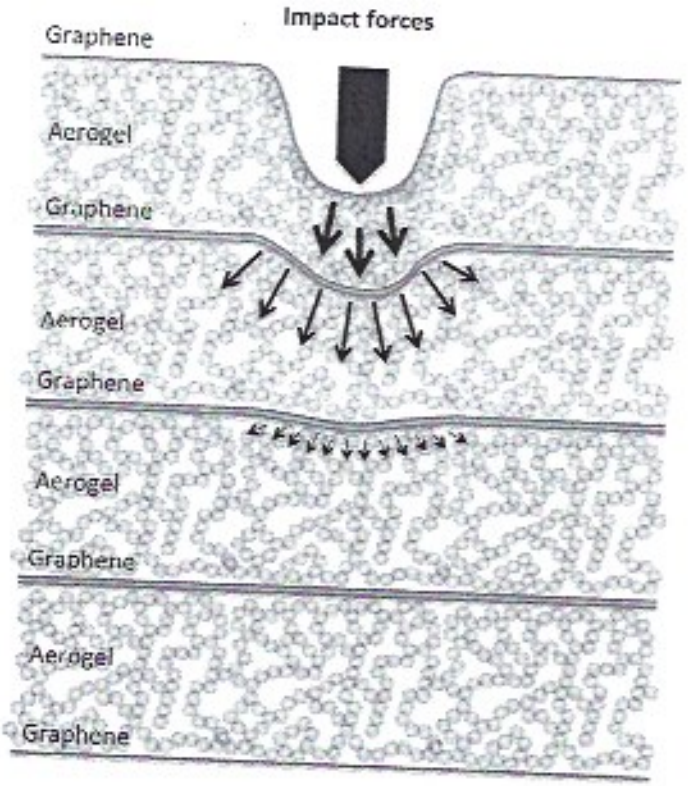
Chief Executive Sandy Chen founded Graphene Composites eight years ago. As a visionary and entrepreneurial investment analyst, he imagined there would be many applications for a graphene/aerogel composite. GC's innovative team also includes Graham Laycock, Finance Director and Dr. Steve Devine, Chief Technology Officer.

GCL Composite Armours

Armour

The first product application that we have developed using our GCL composite technology is flexible body armour; our prototypes currently deliver UK Home Office-standards of stab and bullet protection with less than half the weight of existing armours.

GCL armour is comprised of alternating layers of GCL graphene/aerogel and other bullet- and stab-resistant materials; this graphic shows the multi-layer structure:



The key difference between how GCL composite armour works versus other armours is force dispersion. Other armours (e.g. steel, Kevlar/Dyneema, ceramic) stop a bullet by the sheer strength of their materials - but the impact force of the bullet remains concentrated in a tight cone that travels through the material itself, often causing a spall effect where bits of the material break off on the other side of the impact.

In contrast, GCL composite armour works by dispersing the force of impact over a much larger area; thus each successive layer of GCL composite dissipates the impact forces more, slowing a bullet down until it stops. There is much less (if any) spalling that occurs with GCL composite armour.

Here is a photo of our GCL composite armour in ballistics testing; the force dispersion can be seen in the yellow patches around the rifle bullet hole, which formed as the impact force of the rifle bullet was dispersed through knife stabs from earlier testing. Note that the ballistic clay behind our sample remained intact, showing that the impact forces were largely dispersed before they reached the ballistic clay.



.22LR rifle point blank 250 Joules

26-layer G+PX60/Aerogel/Dyneema

Source: GCL proprietary technology, patent pending.

... and here is a close-up photo, showing the flexibility of multiple layers of a prototype version of our GCL composite:

