Impact Resistant Composites and Tough Materials

Tech ID: 23350 / UC Case 2012-554-0

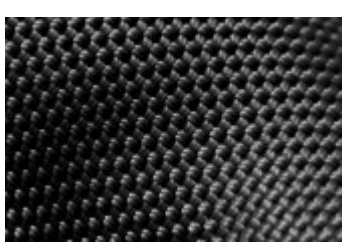
PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,452,587	09/27/2016	2012-554

BRIEF DESCRIPTION

Manufacturers have been looking for a next-generation of composite materials that can absorb the shock and impact of intense collisions and accidents. Some plastic composites and metal alloys have offered the advantage of being light weight, but they are still limited in their ability to have comparable shock resistance to their heavier metal counterparts. Further, their high costs have made them cost prohibitive for their limited benefits.





FULL DESCRIPTION

UCR Professor David Kisailus has developed a novel fiber reinforced composite that can combine shock resistance and shock attenuation into the same material design. The fiber reinforced composite can be made using a variety of fibers such as glass, carbon, aramid, organic polymer, etc., while the surrounding reinforced matrix can be made using materials such as ceramic or epoxy.







This fiber reinforced composite has a proprietary stacked fiber design within the elastic material. This novel architecture and design has shown the ability to reflect or deflect shock waves along with the mutual benefit of absorbing energy.

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OTHER INFORMATION

KEYWORDS

impact resistant, impact attentuation, reinforced composite, fiber, polymer, ceramic, epoxy, military, law enforcement, automotive, athletic equipment

CATEGORIZED AS

- **Engineering**
  - Engineering
- **Materials & Chemicals**
  - Ceramics
  - Composites
  - Nanomaterials
  - Polymers
  - Thin Films
- **Security and Defense**
  - Other
- **Transportation**
  - Automotive

RELATED CASES

2012-554-0

ADVANTAGES





These new age composites are light weight and its shock resistant properties can be used in a multitude of areas. Such applications for this exciting technology could be in the military or in law enforcement (i.e. body armor, vehicle armor, structural components); on the athletic fields (i.e. sports equipment, protective gear, helmets); or in the automotive industry (i.e. body panels, bumpers, support structures).





The University of California is actively seeking licensing partnerships for this technology. Two patents are pending for this technology.

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