Composite Foam

Tech ID: 28984 / UC Case 2016-102-0

SUMMARY

UCLA researchers in the Department of Mechanical and Aerospace Engineering have developed a novel composite foam for impact applications.

BACKGROUND

Polymeric materials used for impact resistance often strain-harden, causing the skeleton struts and beams to stiffen up, the pores to collapse, and large stress buildup. This results in a sudden drop in the stress of the material with minimal energy absorption and momentum trapping. To circumvent these issues, phase transformation in a material is used as an energy dissipation mechanism, but current state of the art foams (i.e. Poron®) are only efficient at ambient conditions.

INNOVATION

Researchers led by Professor Vijay Gupta have developed a novel composite foam using preformed lattices. The two-component blend has enhanced impact absorption properties, particularly at higher pressures, making it useful for very high energy impacts. Likewise, this composite foam outperforms Poron® under similar conditions and displays similar impact performance under a wide range of cold and hot temperature conditions (-17 ˚C to 50 ˚C). This composite foam material can be made from organic or inorganic materials and any commercial foam (polyurethanes, D30, polyuria, etc.) can be used.

APPLICATIONS

- Porous foam for impact applications
- Materials for cushioning or sealing
- Impact protection

ADVANTAGES

- Outperforms Poron®
- Excellent performance for a wide range of temperatures (-17 ˚C to 50 ˚C)
- Efficiently manages incoming impact energy
- Superior impact attenuation properties
- Made from organic or inorganic materials
- Can use commercial foams

STATE OF DEVELOPMENT

Composite foam materials have been fabricated and extensively tested.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,933,609	03/02/2021	2016-102

CONTACT

UCLA Technology Development Group
ncd@tdg.ucla.edu
tel: 310.794.0558.

INVENTORS

- Gupta, Vijay

OTHER INFORMATION

KEYWORDS

Composite foam, two-component blend, porous foam, high pressure, wide temperature range, impact energy, cushioning, sealing, impact protection, impact attenuation

CATEGORIZED AS

- **Engineering**
  - Engineering
  - Other
- **Materials & Chemicals**
  - Composites
  - Other

RELATED CASES

2016-102-0

UCLA Technology Development Group

10889 Wilshire Blvd., Suite 920,Los Angeles,CA 90095

https://tdg.ucla.edu

Tel: 310.794.0558 | Fax: 310.794.0638 | ncd@tdg.ucla.edu