



 innovations report

- stry
- struction
- Automotive Engineering
- Communications Media
- Earth Sciences
- Ecology, The Environment and Conservation
- Health and Medicine
- Information Technology
- Interdisciplinary Research
- Life Sciences and Chemistry
- Machine Engineering
- Materials Sciences
- Medical Engineering
- Physics and Astronomy
- Power and Electrical Engineering
- Process Engineering
- Science Education
- Studies and Analyses
- Transportation and Logistics

Search



Healthcare Communications

Standing by to help you formulate and execute your marketing strategy. Contact us today.

Voxcellerate LLC

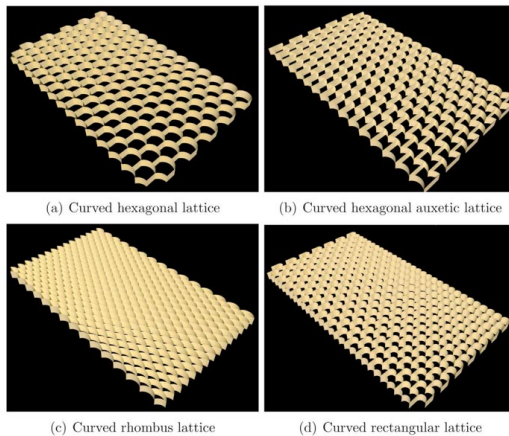
[Open >](#)

[Home](#) / [Studies and Analyses](#) / [Study introduces framework to understand new class of curved lattice materials](#)

[Studies and Analyses](#)

01.12.2021

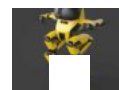
Study introduces framework to understand new class of curved lattice materials



Family of curved 2D lattices conceived and analysed in the study (a) The curved hexagonal lattice, (b) The curved hexagonal auxetic lattice, (c) The curved rhombus lattice, and (d) The curved rectangular lattice. Credit: S. Mukherjee

A new study from Swansea University has introduced a framework to calculate the material properties of a new class of two-dimensional curved hexagonal lattices that could be used in the production of improved mechanical metamaterials found in bio-engineering, stretchable electronics, impact absorption and soft robots.

Video



LEONARDO, the bipedal robot, can ride a skateboard and walk a slackline
07.10.2021 / [Video](#)



The world's first adaptive high-rise opens
06.10.2021 / [Video](#)



Fountain of youth for ageing stem cells in bone marrow
14.09.2021 / [Video](#)



The Mobile Robot that Charges the E-Car
22.07.2021 / [Video](#)



NASA space lasers map meltwater lakes in Antarctica with striking precision
08.07.2021 / [Video](#)



Ultrathin semiconductors electrically connected to superconductors for the first time
07.07.2021 / [Video](#)



The research published in the [Composite Structures](#) journal, outlines how the research team from the university's Faculty of Science and Engineering pioneered the new framework of calculations, known as generalised closed-form expressions.

Dr Shuvajit Mukherjee who co-authored the study said: "This paper represents fundamental analytical approaches to obtain the most general closed-form expressions of the equivalent material properties of 2D hexagonal lattices. This work captures a large class of geometry. Introduction of the curved beam as constituent beam members of the unit cell of the lattice enrich the design space and enhance the flexibility of the structure."

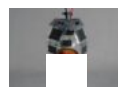
Co-author, **Professor Sondipon Adhikari** said: "The introduction of a curved beam element in the unit cell results in increasing the flexibility of the lattice and it also expands the design space for lattice materials. The closed-form expression can be utilised as a benchmark solution for future numerical and experimental investigations. It also can be exploited to obtain user-defined mechanical properties."

Journal: *Composite Structures*
 DOI: [10.1016/j.compstruct.2021.114859](https://doi.org/10.1016/j.compstruct.2021.114859)
 Article Title: *The in-plane mechanics of a family of curved 2D lattices*
 Article Publication Date: 3-Nov-2021



Underwater robot offers new insight into mid-ocean "twilight zone"

17.06.2021 / [Video](#)



Electrohydraulic arachno-bot a fascinating lightweight

17.06.2021 / [Video](#)

Holes in the solar atmosphere

09.06.2021 / [Video](#)

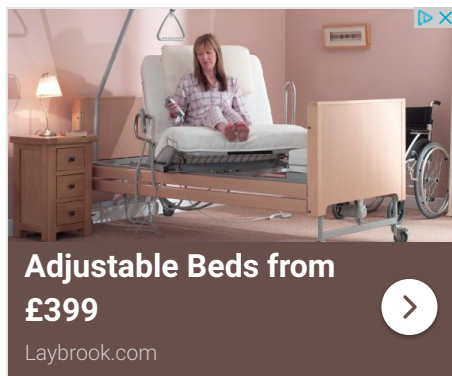
The biodegradable battery

04.06.2021 / [Video](#)

Anzeige

Categories

- Agricultural and Forestry Science
- Architecture and Construction
- Automotive Engineering
- Awards Funding
- Business and Finance
- Communications Media
- Corporate News
- Earth Sciences
- Ecology, The Environment and Conservation
- Event News
- Health and Medicine
- Information Technology
- Innovative Products
- Interdisciplinary Research
- Life Sciences and Chemistry
- Machine Engineering
- Materials Sciences



Media Contact

Delyth Purchase
Swansea University
d.purchase@swansea.ac.uk

Original Source

<https://www.sciencedirect.com/science/article/pii/S0263822321012988>



Media Contact

Delyth Purchase
Swansea University
EurekaAlert!

All latest news from the category: **Studies and Analyses**

innovations-report maintains a wealth of in-depth studies and analyses from a variety of subject areas including business and finance, medicine and pharmacology, ecology and the environment, energy, communications and media, transportation, work, family and leisure.



- Medical Engineering
- Physics and Astronomy
- Power and Electrical Engineering
- Process Engineering
- Science Education
- Seminars Workshops
- Social Sciences
- Statistics
- Studies and Analyses
- Technology Offerings
- Trade Fair News
- Transportation and Logistics

← Previous

Next →

The long-term effects of sepsis: years of treatment and care needs

09.12.2021 / [Studies and Analyses](#)

Creating good friction: Pitt engineers aim to make floors less slippery

01.12.2021 / [Studies and Analyses](#)

The formation of the North American Monsoon: a unique case in the world

26.11.2021 / [Studies and Analyses](#)

NASA study traces decade of ammonia air pollution in Africa

18.11.2021 / [Studies and Analyses](#)

[Back to home](#)

Comments (0)

Write a comment

Comment

Name

Email

Send

Newest articles

Physics and Astronomy

Towards quantum states of sound

Researchers make key steps towards generating quantum states of sound inside a microscopic device using laser light and single-photon measurements. Across the globe, researchers can now generate and control quantum...

10.12.2021

Physics and Astronomy

Polariton parametric oscillator in perovskite microcavity

Halide perovskites provide a promising platform for nonlinear, low-threshold polaritonic devices that work at room temperature. Optical parametric oscillators (OPOs) have been widely applied in areas ranging from spectroscopy photonics...

10.12.2021

Life Sciences and Chemistry

Fine-tuning motivation in the brain

A characteristic of depression is a lack of motivation. Cold Spring Harbor Laboratory (CSHL) Professor Bo Li, in collaboration with CSHL Adjunct Professor Z. Josh Huang, discovered a group of neurons in...

10.12.2021

[More articles →](#)

Partners & Sponsors

Process Engineering
Science Education
Studies and Analyses
Transportation and Logistics

Innovative Products
Interdisciplinary Research
Life Sciences and Chemistry
Machine Engineering

Process Engineering
Science Education
Studies and Analyses
Transportation and Logistics

Earth Sciences
Ecology, The Environment and Conservation
Health and Medicine
Information Technology

Materials Sciences
Medical Engineering
Physics and Astronomy
Power and Electrical Engineering

[IMPRESSUM](#) [DATA POLICY](#)

© innovations-report 2021