

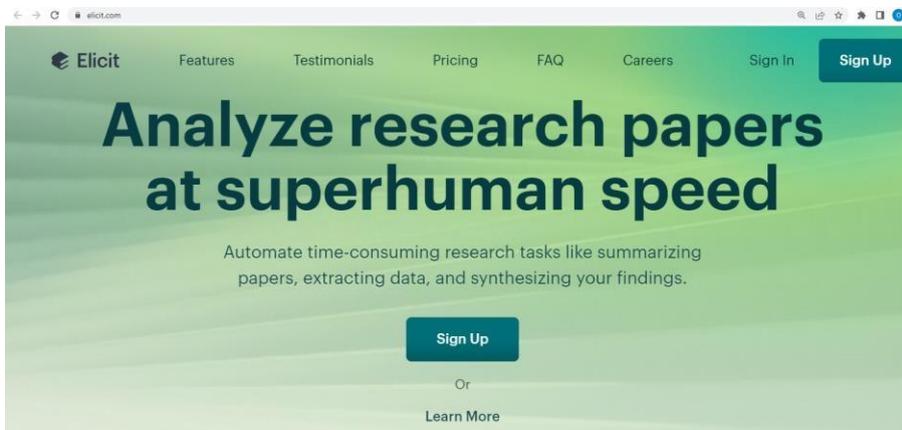
Поиск статей

Поисковой запрос	Материалы с отрицательным коэффициентом Пуассона
Виды работ	Поиск статей. Сохранение статей в виде pdf файлов. Обзор статей. Получение файлов bib для списка литературы. Получение данных о цитировании и ссылках на другие статьи.
Используемые ИИ-сервисы и нейросети	Semanticscholar – НЕДОСТУПЕН Elicit Litmaps
Результат	Произведен поиск статей на заданную тему с помощью сервисов ИИ Elicit, Litmaps. Получены pdf файлы статей для дальнейшего изучения с помощью сервисов ИИ Elicit. С помощью сервиса ИИ Elicit для найденных статей получены данные о методах исследования (добавление столбца Methodology). С помощью сервиса Litmaps получены файлы bib (для создания списка литературы в файлах LaTeX). С помощью сервиса Litmaps получены данные о цитировании и ссылках на другие статьи. С помощью сервиса ИИ Elicit получено Summary – обзор статей на заданную тему.

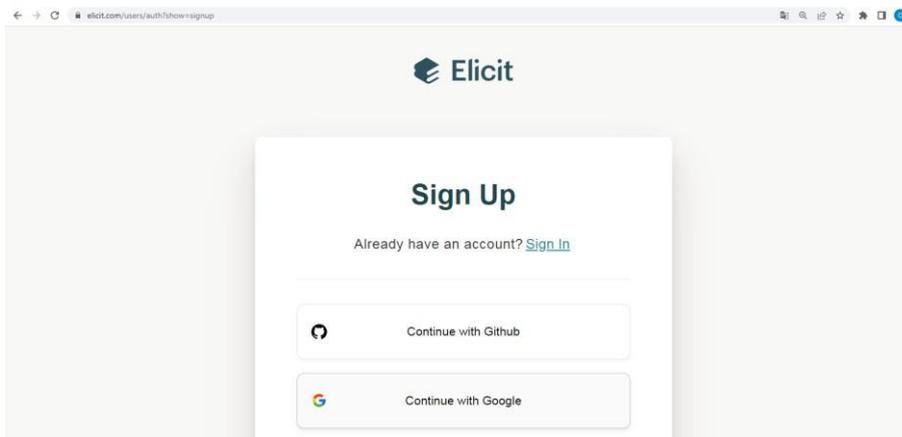
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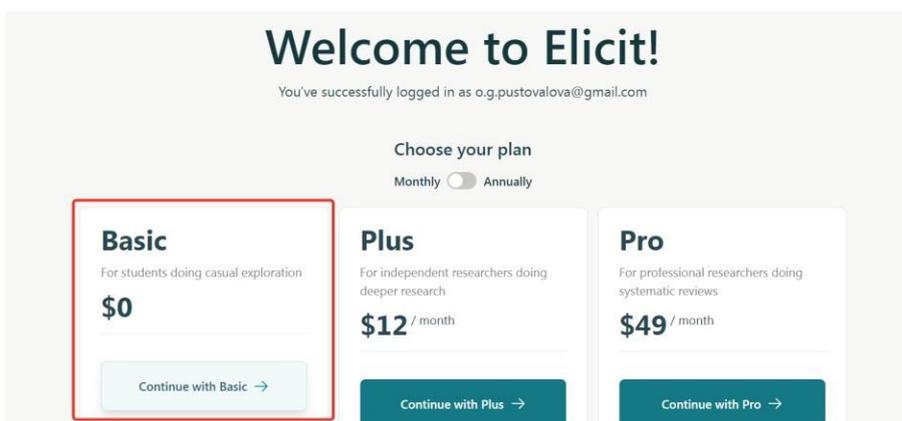
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Exploring Negative Poisson's Ratio Materials

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materials with a negative Poisson's ratio

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Materials with negative Poisson's ratio, also known as auxetic materials, exhibit the unusual property of expanding laterally when stretched and contracting when compressed (Carneiro et al., 2013; Evans & Alderson, 2000). These materials have attracted significant attention due to their unique mechanical properties and potential applications in aerospace, defense, and other fields (Huang & Chen, 2016). The negative Poisson's ratio is closely related to the material's internal structure and can occur in various forms, including bulk materials and nanoscale structures (Huang & Chen, 2016). Auxetic materials have been shown to exhibit unique mechanical properties compared to

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Сортировка и фильтры

Sort: Most relevant Filters Export as UPGRADE

Paper	Abstract summary
<input type="checkbox"/> Negative Poisson's Ratio in Modern Functional Materials Chuanwei Huang +1 Advances in Materials 2016 - 257 citations DOI	Materials with a negative Poisson's ratio exhibit unusual physical properties and promising applications.
<input type="checkbox"/> Auxetic Materials: An Annotated Bibliography of Materials With Negative Poisson's Ratio P. Dubbelday 1993 - 3 citations	This paper provides an annotated bibliography of materials with a negative Poisson's ratio, also known as auxetic materials.

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Paper	Abstract summary
<input type="checkbox"/> Negative Poisson's Ratio in Modern Functional Materials Chuanwei Huang +1 Advances in Materials 2016 - 257 citations DOI	Materials with a negative Poisson's ratio exhibit unusual physical properties and promising applications.
<input type="checkbox"/> Auxetic Materials: An Annotated Bibliography of Materials With Negative Poisson's Ratio P. Dubbelday 1993 - 3 citations	This paper provides an annotated bibliography of materials with a negative Poisson's ratio, also known as auxetic materials.

Самые цитируемые:

The screenshot shows a search results interface. At the top, there is a navigation bar with a dropdown menu set to 'Sort: Most cited', a 'Filters' button, an 'Export as' dropdown, and an 'UPGRADE' button. Below this is a table with two columns: 'Paper' and 'Abstract summary'. The first row contains a checkbox, the title '3D Soft Metamaterials with Negative Poisson's Ratio', the author 'Sahab Babaee +5', the journal 'Advances in Materials', the year '2013', '664 citations', and a 'DOI' link. The 'Abstract summary' column contains the text: 'The paper describes the design of 3D so with a negative Poisson's ratio.'

Виды фильтров

Доступность PDF файла

Год публикации

Квартиль журнала (отражает уровень цитируемости, Q1 - самый высокий)

The screenshot shows a filter panel with two buttons: 'Cancel' and 'Apply'. Below the buttons are three filter sections: 1. 'Has PDF' with a toggle switch that is currently turned off. 2. 'Publication year' with a range slider from 'Any year' to '2024'. 3. 'Journal quality' with a range slider from 'Q1' to 'All'.

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Review – обзорная статья

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(тип научного эксперимента или исследования вмешательства, целью которого является уменьшение определенных источников предвзятости при тестировании эффективности новых методов лечения; это достигается путем случайного распределения испытуемых в две или более групп, лечения их по-разному, а затем сравнения их по отношению к измеренному ответу).

Meta-Analysis – мета-анализ

(понятие научной методологии; означает объединение результатов нескольких исследований методами статистики для проверки одной или нескольких взаимосвязанных научных гипотез).

Study Type

- Review
- Meta-Analysis
- Systematic Review
- RCT
- Longitudinal

Применим фильтр – регулярное продолжительное исследование:

Study Type

- Review
- Meta-Analysis
- Systematic Review
- RCT
- Longitudinal

Наличие или отсутствие ключевых слов в тезисах

Abstract Keywords

✓ Abstract contains

⊖ Abstract does not contain

Скопировать DOI

The screenshot shows a search results interface with the following elements:

- Sort: Most relevant
- Filters
- Export as
- UPGRADE
- Table with columns: Paper, Abstract summary
- Row 1: Negative Poisson's Ratio in Modern Functional Materials
- Row 1: Chuanwei Huang +1
- Row 1: Advances in ...
- Row 1: 2016 · 257 citations
- Row 1: DOI
- Row 1: Materials with a negative Poisson's ratio physical properties and promising applic

The 'Copy DOI' button is highlighted with a red box.

Краткое изложение тезисов

Sort: Most relevant Filters Export as UPGRADE

Abstract summary

isson's Ratio in Modern Functional

ei Huang +1
as in Materials

itions DOI

Materials with a negative Poisson's ratio have intriguing physical properties and promising applications.

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Paper	Abstract summary	Manage Columns
<input checked="" type="checkbox"/> 3D Soft Metamaterials with Negative Poisson's Ratio Sahab Babaei +5 Advances in Materials 2013 · 664 citations DOI	The paper describes the design of 3D so with a negative Poisson's ratio.	Search or create a column Describe what kind of data you want to extract e.g. Limitations, Survival time ADD COLUMNS + Summary + Main findings + Methodology + Intervention + Outcome measured
<input checked="" type="checkbox"/> Microporous materials with negative Poisson's ratios. I. Microstructure and mechanical properties B. D. Caddock +1 1989 · 426 citations DOI	Expanded polytetrafluoroethylene is a m with a large negative Poisson's ratio.	

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3D Soft Metamaterials with Negative Poisson's Ratio

Sahab Babaei, Jongmin Shim, J. Weaver, E. R. Chen, N. Patel, K...

Advances in Materials

2013 · 664 citations Semantic Scholar DOI

Buckling is exploited to design a new class of three-dimensional metamaterials with negative Poisson's ratio. A library of auxetic building blocks is identified and procedures are defined to guide their selection and assembly. The auxetic properties of these materials are demonstrated both through experiments and finite element simulations and exhibit excellent qualitative and quantitative agreement.

Следующие шаги

3 selected + Show more like these Delete Sort: Most relevant Filters 1 Export as UPGRADE

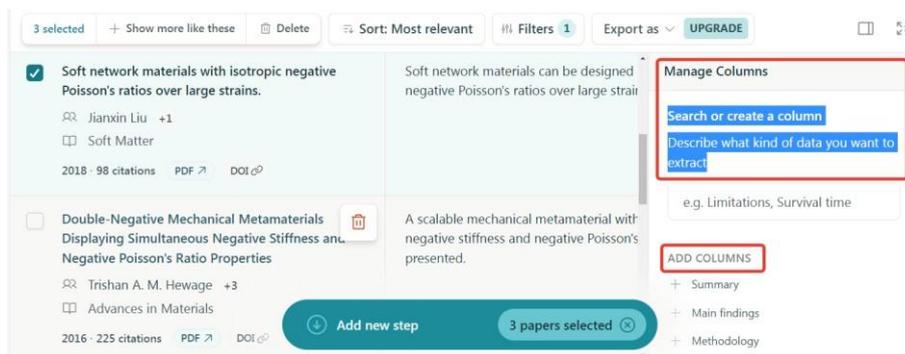
<input checked="" type="checkbox"/> Soft network materials with isotropic negative Poisson's ratios over large strains. Jianxin Liu +1 Soft Matter 2018 · 98 citations PDF DOI	Soft network materials can be designed negative Poisson's ratios over large strain	Manage Columns Search or create a column Describe what kind of data you want to extract e.g. Limitations, Survival time
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Double-Negative Mechanical Metamaterials

Add new step 3 papers selected

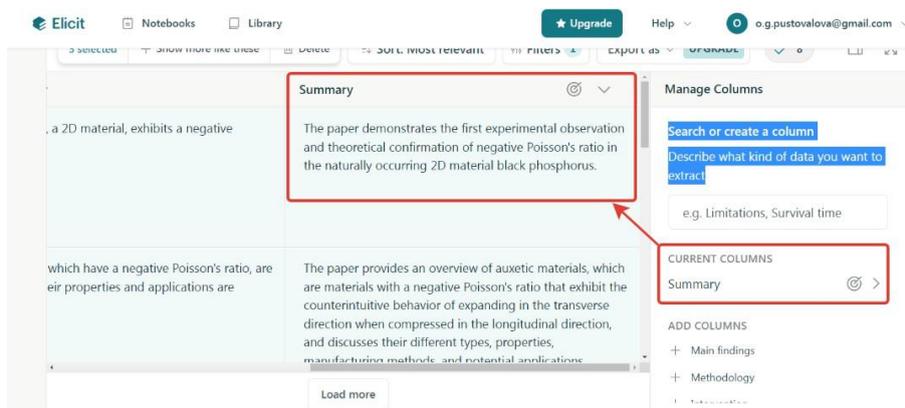
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Добавление столбца Summary

Summary: В статье демонстрируется первое экспериментальное наблюдение и теоретическое подтверждение отрицательного коэффициента Пуассона в природном двумерном материале черном фосфоре.

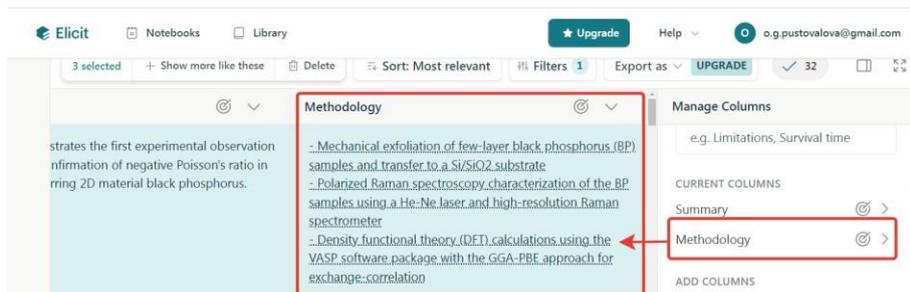


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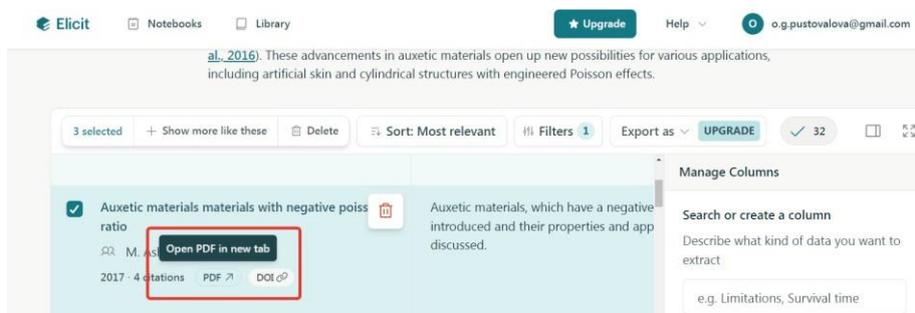
- Механическое отслаивание образцов черного фосфора (ЧФ) и перенос их на подложку из Si/SiO₂
- Определение характеристик образцов ЧФ методом поляризованной рамановской спектроскопии с использованием He-Ne лазера и рамановского спектрометра высокого разрешения

- Расчеты по теории функционала плотности (DFT) с использованием программного пакета VASP с использованием подхода GGA-PBE для корреляции обмена.



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Auxetic materials materials with negative poisson's ratio

Abstract

Auxetic materials and structures are a novel class of materials which have negative Poisson's ratio. They have improved mechanical properties such as fracture toughness, indentation resistance, etc. They have several potential applications in medical, sports, automobile, defense, etc. Design and modeling of auxetic materials is still in progress. In this article we briefly introduce these materials and their different features and properties.

Keywords: auxetic materials, poisson's ratio, mechanical properties

Volume 1 Issue 2 - 2017

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Introduction

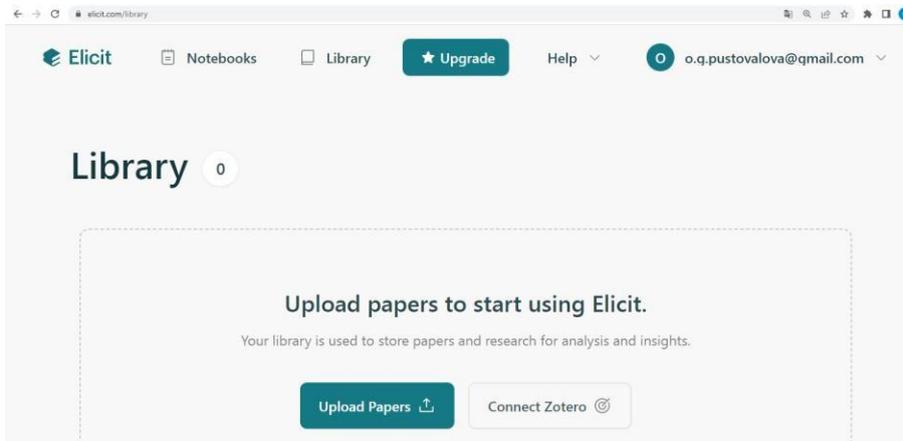
Auxetic materials are those which show counter-intuitive reaction to the applied force meaning, in contrast to the materials which thin transversely under axial tensile force, these materials thicken. Poisson's ratio is a measure of the transverse strain relative to longitudinal strain Fung et al.¹ Claimed that the Poisson's ratio is bounded between -1 and 0.5 for a linear elastic isotropic material. Cork is the material with zero Poisson's ratio. It was shown in the work of Ting² that for anisotropic materials, Poisson's ratio can be positive and negative on the condition that the strain energy density function is positive and definite. Then the negative Poisson's ratio can be achieved in the man-made materials. Unlike the conventional materials Auxetic materials get shorter in transverse direction when they compressed in the longitude direction and vice versa. Auxetic materials have different potential applications in different fields such

Different types of auxetic structures and models

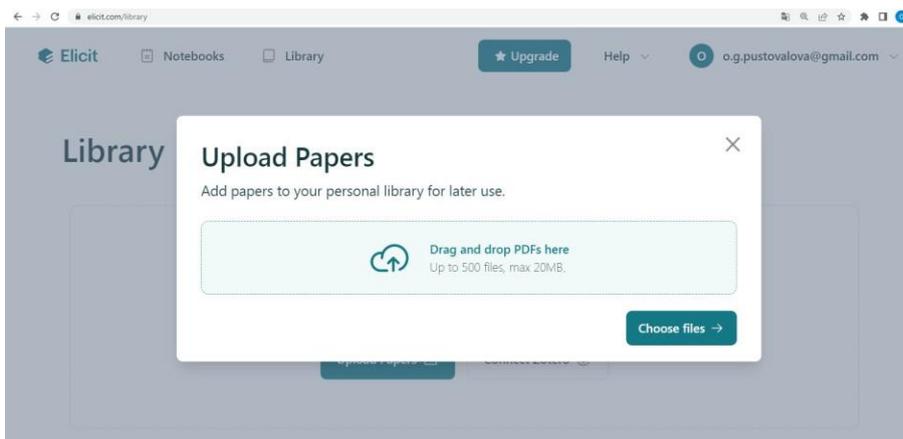
Here in this part we present first Eigen modes of 2D structures with periodic boundary conditions. Taking into account the periodic boundary conditions, Figure 2 shows the first Eigen modes of the hexagonal, quadratic as well as triangular 2D basic cell. There is a direct relationship between the number of nodes and number modes. The number of modes increases with the number of nodes in the basic element. In particular, the number of nodes for the triangular, quadratic and hexagonal basic elements is 3, 4 and 6 respectively which explains the dependence of the number of modes on the unit cell types noted in the Figure 2. For each lattice cell, these Eigen modes were assembled to form a periodic lattice structure. Numerical testing performed by applying a negative strain in the x-y direction.³

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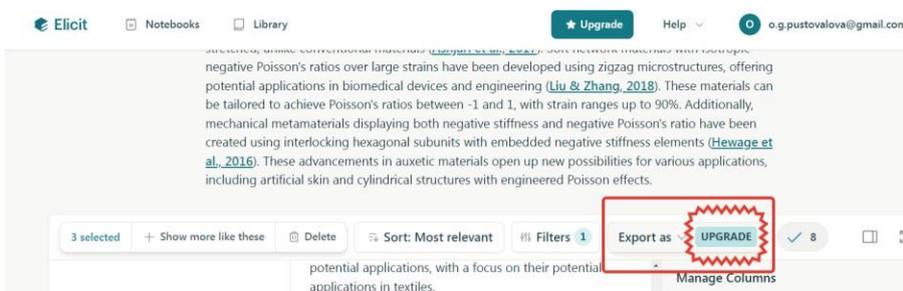
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Результаты. Summary

В ходе недавних исследований были изучены материалы с отрицательным коэффициентом Пуассона, известные как ауксетические материалы. Черный фосфор, двумерный материал, обладает отрицательным коэффициентом Пуассона из-за своей сморщенной структуры и шарнирного соединения (Du et al., 2016).

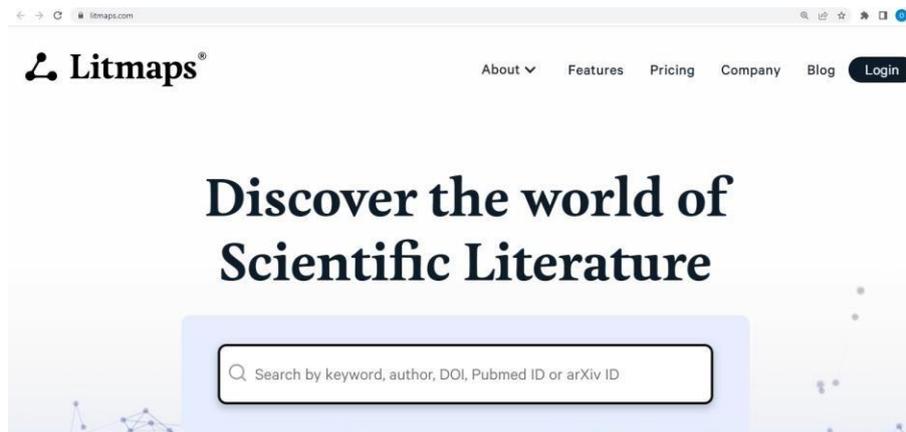
Ауксетические материалы сжимаются в поперечном направлении при сжатии и расширяются при растяжении, в отличие от обычных материалов (Ashjari et al., 2017). Мягкие сетчатые материалы с изотропными отрицательными коэффициентами Пуассона при больших деформациях были разработаны с использованием зигзагообразных микроструктур, что потенциально может найти применение в биомедицинских устройствах и инженерии (Liu & Zhang, 2018).

Эти материалы могут быть подобраны таким образом, чтобы достичь коэффициента Пуассона от -1 до 1 при диапазоне деформаций до 90%. Кроме того, механические метаматериалы, обладающие как отрицательной жесткостью, так и отрицательным коэффициентом Пуассона, были созданы с использованием взаимосвязанных гексагональных субъединиц со встроенными элементами отрицательной жесткости (Hewage et al., 2016).

Эти достижения в области ауксетических материалов открывают новые возможности для различных применений, включая искусственную кожу и цилиндрические конструкции с искусственным эффектом Пуассона.

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Chuanwei Huang, Ling Chen
DOI: 10.1002/ADMA.201803363

Materials with negative Poisson's ratio attract considerable attention due to their underlying intriguing physical properties and numerous promising applications, particularly in stringent environments such as aerospace and defense areas, because of their unconventional mechanical enhancements. Recent progress in materials with a negative Poisson's ratio are reviewed here, with the current state of research regarding both theory and experiment. The inter-relationship between the underlying structure and a negative Poisson's ratio is discussed in functional materials, including macroscopic bulk, low-dimensional nanoscale particles, films, sheets, or tubes. The coexistence and correlations with other negative indexes (such as negative compressibility and negative thermal expansion) are also addressed. Finally, open questions and future research opportunities are proposed for functional materials with negative Poisson's ratios.

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  author = {Huang, Chuanwei and Chen, Lang},  
  journal = {Advances in Materials},  
  year = {2016},  
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Search results for 'materials with a negative Poisson's ratio'. The main article is 'Negative Poisson's Ratio in Modern Functional Materials' by Huang, 2016, published in 'Advances in Materials'. It has 251 references and 319 citations. Below the article title, there is a section for 'Explore Related Articles' and a 'Tag' section. The article abstract is partially visible.

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