PRISMA de espaitec

UNA VISIÓN 360º
DE TECNOLOGÍA
E INNOVACIÓN

DICIEMBRE
2025

Materiales semiconductores

Materiales híbridos

Materiales inteligentes

UNIVERSITAT JAUME I
Fundació General · FUGEN

espaitec
Parc Científic i Tecnològic

Development /
iale TECNOLOGÍA

Materiales SEMICONDUCTORES
Materiales HÍBRIDOS
Materiales INTELIGENTES

Contenidos

NOTICIAS

EMPRESAS Y MERCADOS

PATENTES

INFORMES SECTORIALES

PUBLICACIONES CIENTÍFICAS

22 A comprehensive review of stimulus-based smart self-healing coatings for substrate protection

22 Evidence for unexpectedly low quasiparticle generation rates across Josephson junctions of driven superconducting qubits

23 AtomBench: A Benchmark for Generative Atomic Structure Models using GPT, Diffusion, and Flow Architectures

23 KAN-Enhanced Contrastive Learning Accelerating Crystal Structure Identification from XRD Patterns

23 Electronic fibres via the thermal drawing of liquid-metal-embedded elastomers

24 Development of hybrid fiber-reinforced vinyl ester composites for civil and automotive applications

24 A Color-Separable Vertical Pinned Photodiode for Scaled CMOS Image Sensor Pixels

24 CrystalGym: A New Benchmark for Materials Discovery Using Reinforcement Learning

25 PMSE Centennial: Celebration of Success and New Frontiers in Polymer Materials Science and Engineering

25 A zero-dimensional (C 6 H 9 N 2) 3 [BiCl 6] hybrid material: synthesis and structural, optical, and electrical conductivity

25 Recent advances in polymer 4D printing: 3D printing techniques, smart material design, and healthcare applications

26 S1-MatAgent: A planner driven multi-agent system for material discovery

26 The Meissner effect in superconductors: emergence versus reductionism

26 Exploring 4D printing of smart materials for regenerative medicine applications

27 Thermal Post-Cross-Linking of Siloxane/Silsesquioxane Hybrids with Polycyclic Aromatic Units for Tailored Softening Behavior in High-Temperature Applications

27 Multifunctional, Biocompatible Hybrid Surface Coatings Combining Antibacterial, Hydrophobic and Fluorescent Applications

27 Novel Features Related to Polymers and the Environment

DICIEMBRE
2025

Noticias

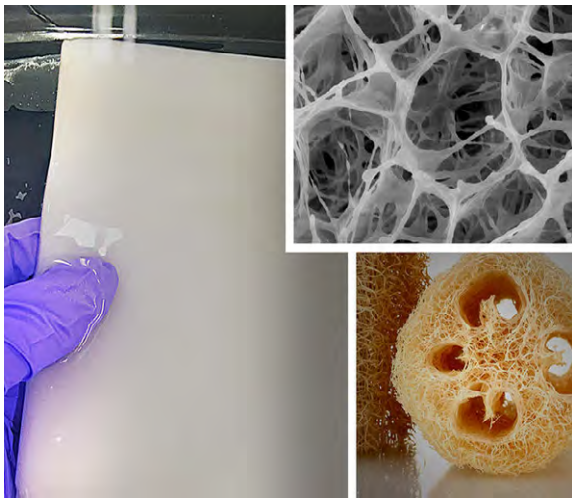
Solar-powered gel delivers freshwater and recovers boron from seawater

Fuente: Solardaily.com / **Fecha:** 03/12/2025

Materiales híbridos

A study published in Science Bulletin describes a solar-driven system that produces freshwater while capturing boron from seawater and brine using a composite gel identified as (MXene-MgO)@ sodium alginate (MMS). The work targets the interlinked pressures on water, food, and energy supplies in regions such as Yemen, Pakistan, and Haiti, where demand is rising and water scarcity and hunger are severe. Conventional desalination can supply drinking water, but standard processes often fail to meet World Health O ...(+)

Ver más...



El CSIC prueba por primera vez sus sensores para detectar la radiación indeseada en radioterapia

Fuente: Heraldodeleon.es / **Fecha:** 19/11/2025

Materiales semiconductores

Una investigación liderada por el Instituto de Microelectrónica de Barcelona del CSIC (IMB-CNM-CSIC) ha evaluado con éxito el uso de detectores basados en carburo de silicio (SiC) para cuantificar la radiación indeseada en los tratamientos con radioterapia. Este avance, publicado en la revista Scientific Reports, facilita medir el flujo de neutrones térmicos secundarios en radioterapia convencional, una tarea clave para garantizar la seguridad radiológica, ...(+)

Ver más...

Alta temperatura, alta abrasión y fuerte corrosión: las propiedades irremplazables del polvo de carburo de titanio

Fuente: Rboschco.com **/ Fecha:** 25/11/2025

Materiales híbridos

En el implacable escenario de la fabricación comercial, donde los extremos de calor, desgaste y ataque químico debilitan implacablemente los materiales ordinarios, una cerámica singular e innovadora se erige como un bastión de resiliencia. Polvo de carburo de titanio (TiC) No es solo un material; es una solución excepcional para uno de los obstáculos operativos más complejos. Para ingenieros, desarrolladores de productos y especialistas en compras ...(+)

Ver más...

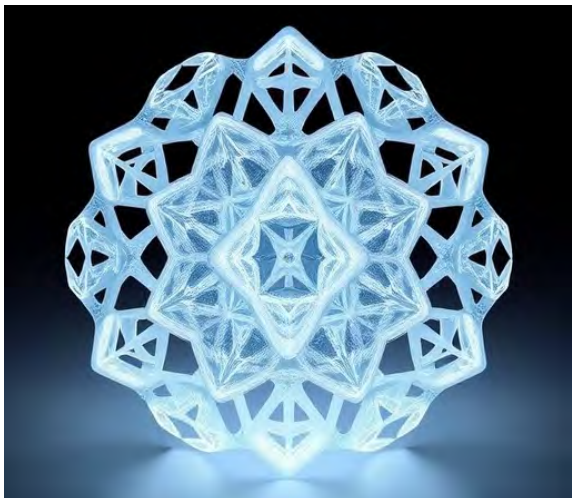
AI-Driven Design Boosts Auxetic Bioinspired Composites

Fuente: Bioengineer.org **/ Fecha:** 24/11/2025

Materiales híbridos

In a groundbreaking advancement at the intersection of materials science and artificial intelligence, researchers have unveiled a pioneering method that leverages machine learning to revolutionize the design of bioinspired layered composite structures exhibiting extraordinary mechanical behavior. This new approach focuses on achieving maximum auxetic performance—an unusual property where materials become thicker perpendicular to an applied force, exhibiting a negative Poisson's ratio. Such behavior defies con...(+)

Ver más...



Recyclage de matériaux composites : Fairmat enchaîne les levées de fonds et vise le recyclage circulaire

Fuente: Usinenouvelle.com **/ Fecha:** 07/11/2025

Materiales híbridos

Après une levée de fonds de 51,5 millions d'euros en avril – la troisième en 5 ans, Fairmat a finalement reçu 10 millions d'euros supplémentaires le 4 novembre dernier. Grâce à ces fonds et au développement d'une nouvelle technologie, la deeptech française spécialiste du recyclage mécanique de matériaux composites rêve désormais de recyclage quasi-infini des fibres de carbone. Depuis 2020, Fairmat récupère les déchets de matériaux composites...(+)

Ver más...

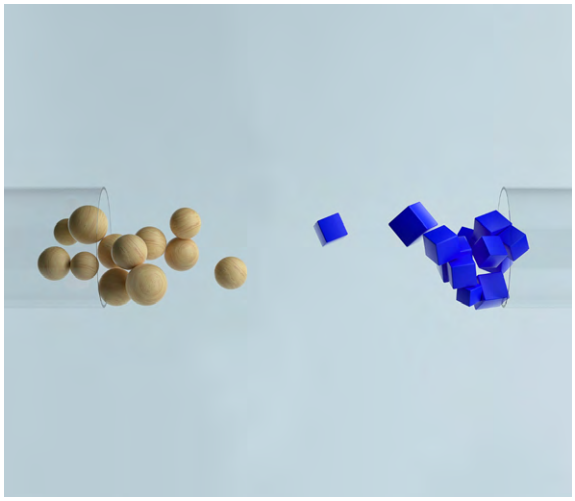
ITC UJI - Cuando los materiales se diseñan con datos: la inteligencia artificial en acción

Fuente: Itc.uji.es **/ Fecha:** 15/10/2025

Materiales inteligentes

Hasta hace muy poco, descubrir un nuevo material era casi una cuestión de suerte. Los científicos probaban, mezclaban y analizaban cientos de combinaciones hasta dar con una que ofreciera las propiedades deseadas. Hoy, la inteligencia artificial (IA) está cambiando esa dinámica por completo: ya no se trata de buscar una aguja en un pajar, sino de dejar que un sistema inteligente nos diga dónde buscar. La IA se ha convertido en una herramienta esencial para acelerar el descubrimiento y el diseño de materiales, a...(+)

Ver más...



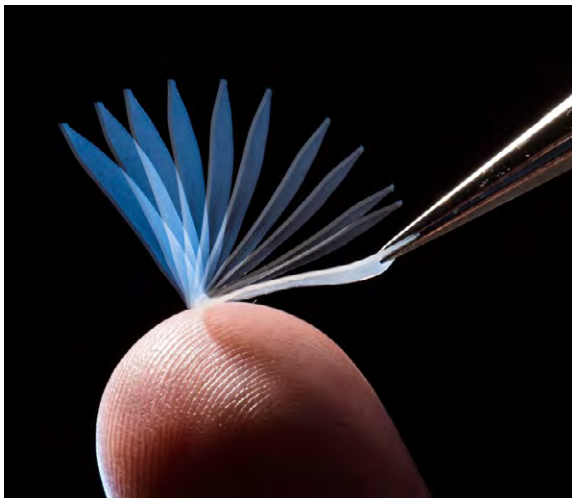
Scientists see shape memory activation in “smart” plastic

Fuente: Phys.org **/ Fecha:** 01/10/2025

Materiales inteligentes

Researchers from the Skoltech Engineering Center’s Hierarchically Structured Materials Laboratory, in collaboration with colleagues from MISIS University and the Joint Institute for Nuclear Research, have for the first time observed nanoscale transformations in ultra-high molecular weight polyethylene—a material possessing a shape memory effect—in real time. The scientists demonstrated that the key structural changes occur at a temperature of around 80°C, which is precisely the trigger for the material’s shape recovery ...(+)

Ver más...



Imec technology lights the path to utility scale for Diraq’s quantum chips

Fuente: Imec-int.com **/ Fecha:** 24/09/2025

Materiales semiconductores

Silicon qubits made using advanced industrial manufacturing methods have met key performance criteria, paving the way to mass production of functional quantum computers. Imec, a world-leading research and innovation hub in nanoelectronics and digital technologies, and Diraq, a pioneer of silicon-based quantum computing, have demonstrated that industrially made silicon quantum dot qubits consistently show error rates that surpass the values needed for quantum error correction. The results, reported in Nature, s...(+)

Ver más...

ICN2 - ¿Cómo se puede regenerar la piel de forma efectiva en heridas complejas?

Fuente: LaVanguardia.com / **Fecha:** 15/09/2025

Materiales inteligentes

Las heridas severas de la piel, como quemaduras y úlceras, son muy susceptibles a infecciones, que no solo frenan el proceso de curación, sino que pueden agravar la condición del paciente. Salvio Suárez, investigador del Institut Català de Nanociència i Nanotecnologia (ICN2), lidera un equipo que trabaja en un nuevo biomaterial que combina propiedades antimicrobianas con la capacidad de promover la regeneración para abordar estos dos problemas simultáneamente. “Permite un entorno de curación óptimo, libr ...(+)

Ver más...

Scientists Create a Material Stronger Than Steel Yet Lighter Than Aluminum

Fuente: Sciencenewstoday.org / **Fecha:** 12/08/2025

Materiales inteligentes

Imagine a car bumper that pops back into shape after a collision, or an airplane wing that can repair tiny cracks mid-flight. This is not the stuff of science fiction—it’s the promise of a remarkable material called Aromatic Thermosetting Copolyester, or ATSP.Science history books Aerospace engineering and materials science researchers at Texas A&M University, in collaboration with The University of Tulsa, have uncovered new and surprising abilities in this ultra-durable, recyclable “smart plastic.” Their findings, published in Macromolec ...(+)

Ver más...

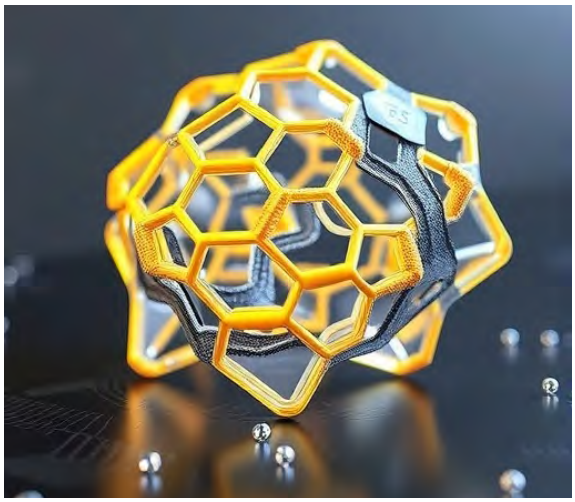
Breakthrough Smart Plastic: Self-Healing, Shape-Shifting and Stronger Than Steel

Fuente: Stories.tamu.edu / **Fecha:** 11/08/2025

Materiales inteligentes

A carbon-fiber plastic composite that heals itself like skin and reshapes under heat is set to revolutionize the aerospace, defense and commercial industries. Aerospace engineering and materials science researchers at Texas A&M University have uncovered new properties of an ultra-durable, recyclable, smart plastic — paving the way for transformative applications in the defense, aerospace and automotive industries. The breakthrough — funded by the U.S. Department of Defense and published in Macromolecules and...(+)

Ver más...



DICIEMBRE
2025

Empresas y mercados

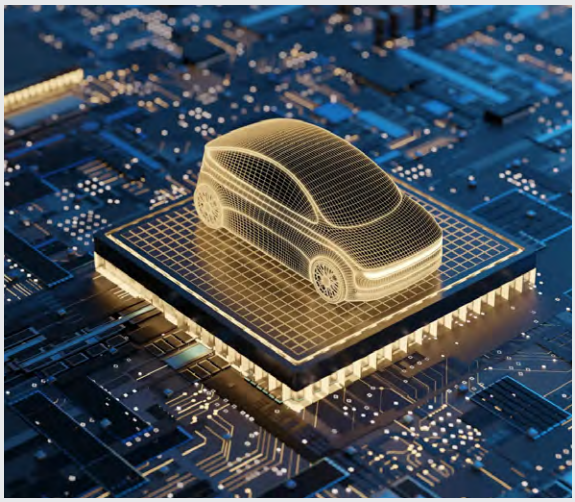
Semiconductor solutions for software-defined vehicles: Accelerating the design of SDVready E/E architectures

Fuente: Infineon.com / **Fecha:** 10/12/2025

Materiales semiconductores

The automotive industry is on the cusp of a revolution, driven by the emergence of software-defined vehicles (SDVs). By consolidating software and decoupling it from hardware, SDVs will offer an ever-improving user experience while enabling OEMs to manage the increasing complexity of software. Imagine a future where vehicles get new functions delivered via seamless over-the-air updates while field data is collected to streamline the development of...(+)

Ver más...



Navitas 3300V and 2300V SiC in Die, Discrete, and Module

Fuente: Powerelectronicsnews.com / **Fecha:** 03/12/2025

Materiales semiconductores

Navitas announced the release of their 2300V and 3300V ultra-high-voltage (UHV) silicon carbide (SiC) products in power module, discretes, and known good die (KGD) formats. The Discrete SiC MOSFETs are available in TO-247 and TO-263-7 packages. These SiC MOSFETs are built on Navitas' own GeneSiC platform, which uses trench-assisted planar (TAP) technology. Trench Gate Structures and TAP. Many first-generation SiC MOSFETs were fabricated with a planar topology, in a 2D flat structure in which the gate is set above...(+)

Ver más...

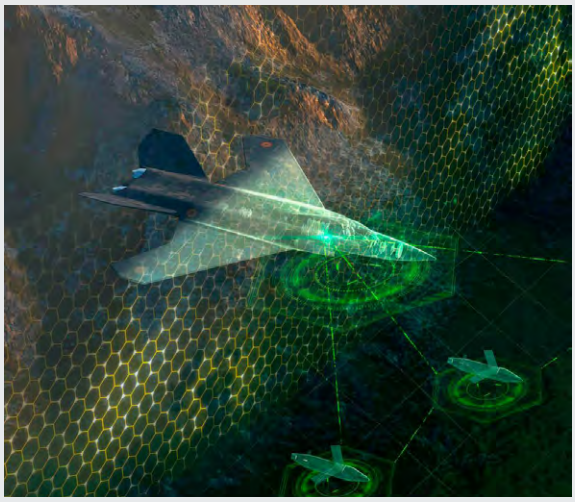
El chip de Indra que multiplica la potencia de los sistemas de defensa

Fuente: LaRazon.es / **Fecha:** 30/11/2025

Materiales semiconductores

La compañía apuesta por el nitruro de galio (GaN) para liderar a la autonomía tecnológica europea. En un escenario de combate moderno, la supervivencia de una aeronave depende, en gran medida, de su capacidad para percibir lo que ocurre en su entorno, lo que se conoce en argot militar como consciencia situacional. Un caza que vuela a baja altura sobre territorio hostil puede enfrentarse simultáneamente a misiles tierra-aire, aeronaves enemigas y drones. Detectar y seguir múltiples amenazas en tiempo real requ...(+)

Ver más...



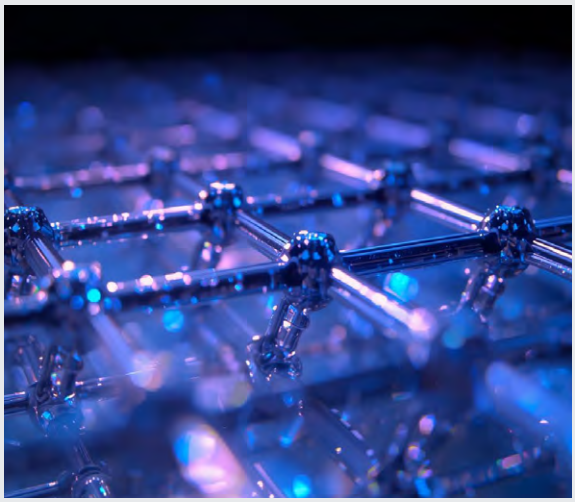
GlobalFoundries and Navitas collaborate to scale U.S. GaN for next-gen power Applications

Fuente: Renewableenergyworld.com / **Fecha:** 20/11/2025

Materiales semiconductores

GlobalFoundries and Navitas Semiconductor today announced a long-term strategic partnership to strengthen and accelerate U.S.-based gallium nitride (GaN) technology, design and manufacturing. Together, the companies will collaborate, develop and deliver advanced solutions for critical applications in high power markets that demand the highest efficiency and power density, including AI datacenters, performance computing, energy and grid infrastructure and industrial electrification. Navitas Semiconductor, a pionee...(+)

Ver más...



SiC Power Module Reliability: Wolfspeed's Power Cycling and Lifetime Modeling Approach

Fuente: Wolfspeed.com / **Fecha:** 14/11/2025

Materiales semiconductores

The rapid adoption of Silicon Carbide (SiC) power devices across automotive, renewable energy, industrial e-mobility, and aerospace markets has redefined system requirements. Traditional qualifications are no longer sufficient. Customers now demand durability, ensuring that systems can operate continuously in harsh environments for decades with minimal downtime. The electrification of transportation, renewable energy integration, and industrial automation place unprecedented demands on power semicondu...(+)

Ver más...

Kelyniam Global Secures Exclusive U.S. License for Evonik's VESTAKEEP® Fusion Biomaterial in Cranial Implants

Fuente: Globenewswire.com / **Fecha:** 13/11/2025

Materiales híbridos

Kelyniam Global, Inc. (OTC: KLYG), a leader in custom cranial and craniofacial implants, today announced it has secured an exclusive U.S. license from Evonik Industries AG to market VESTAKEEP® Fusion, a bi-calcium phosphate-infused PEEK material, for cranial, craniofacial, and maxillofacial implants. This agreement grants Kelyniam two years of exclusivity with the option for renewal upon mutual agreement. The license enhances Kelyniam's regenerative ...(+)

Ver más...

Cambridge scale-up PACT raises £16m to industrialise collagen material Oval

Fuente: Startupmag.co.uk / **Fecha:** 30/10/2025

Materiales inteligentes

This article covers PACT, a Cambridge-based materials company, which has raised more than £16m ($20m) in a Series A round co-led by life-science investor Forbion and growth investor HV Capital. The funding will scale production of Oval and commission a pilot production line to supply luxury fashion houses and other manufacturers with a natural alternative to plastic-coated textiles. PACT, a Cambridge-based materials company, has raised more than £16m ($20m) in a Series A round co-led by life-science investor For ...(+)

Ver más...

Copernic Catalysts Announces Achievement of Ammonia Catalyst Milestone in Research Collaboration with Schrödinger

Fuente: Finance.yahoo.com / **Fecha:** 30/10/2025

Materiales híbridos

Copernic Catalysts, Inc. (Copernic) today announced that, in collaboration with Schrödinger, Inc. (Nasdaq: SDGR), the companies have surpassed the final technical milestone for their jointly-developed ammonia synthesis catalyst, branded NeptuneTM. The Neptune catalyst demonstrated an ammonia yield that was over two times higher than that of competing catalysts under real-world reactor environments, achieving the success criteria outlined in the c...(+)

Ver más...

Periodic Labs Top OpenAI, Google Brain researchers set off a $300M VC frenzy for their startup Periodic Labs

Fuente: Techcrunch.com / **Fecha:** 20/10/2025

Materiales inteligentes

Periodic Labs, a new startup by one of OpenAI's most respected researchers, Liam Fedus, and his former Google Brain colleague, Ekin Dogus Cubuk, came out of stealth last month with an enormous $300 million seed round. It was led by Andreessen Horowitz, with Felicis cutting the first check in, and included a who's who of angels and other top VCs. The startup began when Fedus had a conversation with Cubuk (whose friends call him Dogus) about seven mor...(+)

Ver más...

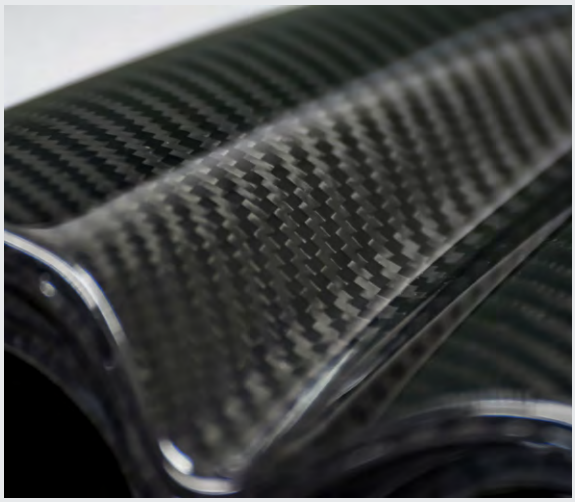
Bristol-based High Temperature Material Systems secures €1.5 million to develop advanced heat-resistant materials

Fuente: Eu-startups.com / **Fecha:** 08/10/2025

Materiales inteligentes

High Temperature Material Systems (HTMS), a Bristol-based startup developing advanced heat-resistant materials, has raised €1.5 million to make 'supermaterials' more accessible for mass-market applications. Founded by engineers Dr Danilo Di Salvo and Dr Richard Grainger, the company aims to take high-performance materials typically used in aerospace and apply them to everyday industries such as automotive manufacturing and electric vehicle bat...(+)

Ver más...



NobleAI Selected by Vickers Oils to Accelerate Innovation in Industrial Lubricants

Fuente: Noble.ai / **Fecha:** 16/09/2025

Materiales híbridos

NobleAI, a leader in science-based artificial intelligence (SBAI) today announced it has been selected by Vickers Oils to speed the company's discovery and development of innovative industrial greases and lubricants. Vickers Oils will deploy NobleAI's Visualizations, Insights & Predictions (VIP) Platform and Model Builder For Formulations application to perform AI-driven experimentation in software. These powerful tools will enable Vickers Oils to rapidly identify high-potential formulations and eliminate unviable options immedia...(+)

Ver más...

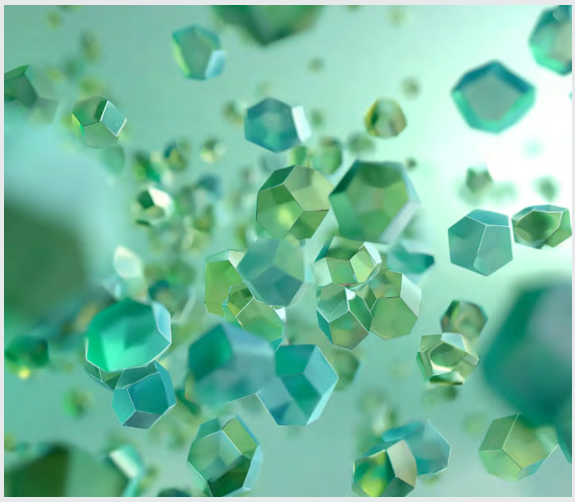
British startup CuspAI Secures €85 million+ to transform materials discovery with AI

Fuente: Eu-startups.com / **Fecha:** 10/09/2025

Materiales inteligentes

Cambridge-based CuspAI, the frontier AI company reimagining how the world discovers and develops new materials, today announced the close of its €85+ million Series A funding round. The round was co-led by US fund New Enterprise Associates (NEA) and Temasek, with participation from NVentures (NVIDIA's venture capital arm), Samsung Ventures, Hyundai Motor Group, and returning investors. Other firms participating include Basis Set Ventures, FJ Labs, Giant Ventures, LocalGlobe, Northzone, Prosus Ventures, Tiferes Vent ...(+)

Ver más...



British startup Solena Materials raises €5.9 million to create next-generation textiles powered by synthetic biology

Fuente: Eu-startups.com / **Fecha:** 05/05/2025

Materiales híbridos

London-based Solena Materials, a startup developing a new generation of sustainable, high-performance textiles using a new class of fibres, has raised €5.9 million in Seed funding, following a €3.6 million pre-Seed funding round in 2022, that it will use to produce protein fibres at scale. The funding round was raised with participation Sir David Harding, alongside SynBioVen and Insempra. Solena's Co-founder and CEO, Dr James MacDonald, developed the tec...(+)

Ver más...

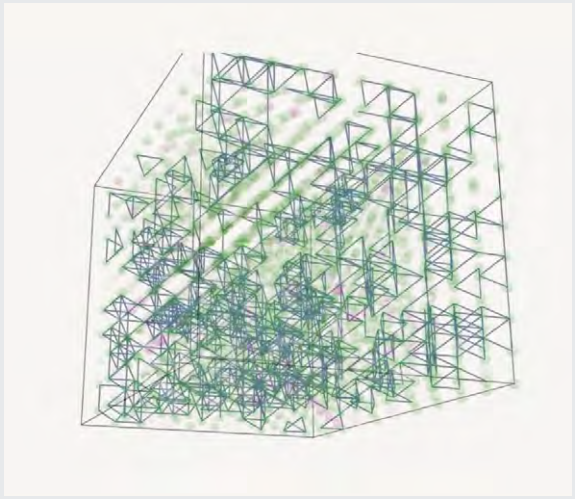
PhaseTree raises €3 million to accelerate discovery of sustainable materials

Fuente: Eu-startups.com / **Fecha:** 07/03/2025

Materiales inteligentes

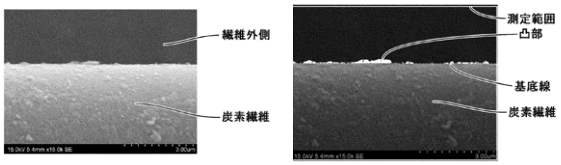
Copenhagen-based PhaseTree raises €3 million from Heartcore Capital to transform material discovery for industries worldwide using a unique physics-first, AI-on-top approach. "Our technology gives companies a smarter way to develop sustainable materials without years of trial and error. By combining AI with fundamental science and automation, we help industries find the right materials faster, reducing costs and making green innovation more accessible," says Amit Luthra, CEO of PhaseTree. Initially founded in 2021 as a sta...(+)

Ver más...



DICIEMBRE
2025

Patentes



Fluororesin molded body and production method therefor

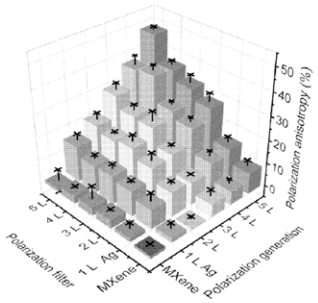
Publicación: Espacenet / **Fecha:** 30/11/2025

Materiales híbridos

Solicitante: STARLITE IND [JP]

Provided is a fluororesin molded body comprising a fluororesin composition that contains an inorganic filler, wherein: the fluororesin composition has, as a matrix, a fluororesin having a melt viscosity of not less than 1010 Pa·sec; the inorganic filler includes pitch-based carbon fibers and a particulate inorg...(+)

Ver más...



Optically active nano-achiral composite materials and methods for making the same

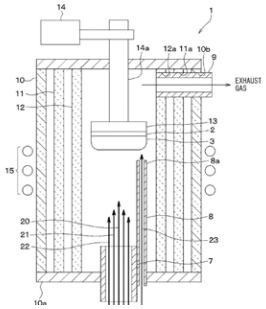
Publicación: Espacenet / **Fecha:** 29/11/2025

Materiales híbridos

Solicitante: UNIV MICHIGAN REGENTS [US]

An optically active nanocomposite material is provided that may have a textured substrate and a multilayer optic stack with a plurality of layers comprising nanoplatelets. The nanoplatelets may be achiral and formed of a material such as transition metal chalcogenides, M...(+)

Ver más...



Method and apparatus for manufacturing silicon carbide single crystal

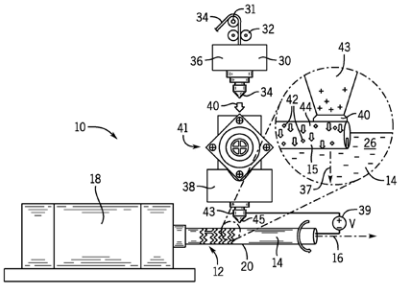
Publicación: Espacenet / **Fecha:** 20/11/2025

Materiales semiconductores

Solicitante: DENSO CORP [JP]

Aaaaaaaaaaaa In a method and an apparatus for manufacturing a silicon carbide single crystal by a gas supply technique, a raw material gas of silicon carbide is introduced into a heating vessel through a first gas inlet disposed below a seed crystal placed on a pedestal, and the silicon carbide single cryst...(+)

Ver más...



Piezoelectric Stents with Self-Powered Anti-Restenosis Properties

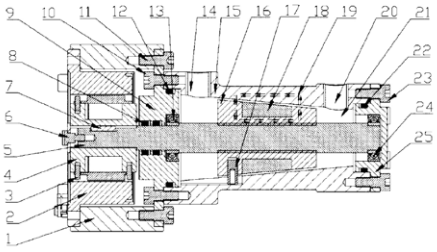
Publicación: Espacenet / **Fecha:** 13/11/2025

Materiales inteligentes

Solicitante: WISCONSIN ALUMNI RES FOUND [US]

An electric field-assisted 3D printing system that allows for fast printing of complex and spontaneously polarized ferroelectric structures with high fidelity and superb piezoelectric performance. The system provides the basis for development of a piezoelectric vascular structure that can serve as a stent, providing self-po...(+)

Ver más...



Joint driver based on adjustable magnetorheological fluid valve

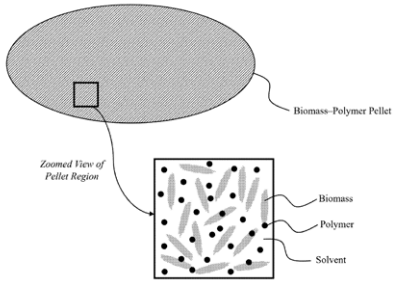
Publicación: Espacenet / **Fecha:** 06/11/2025

Materiales inteligentes

Solicitante: SHENZHEN INST OF ADV TECH CAS [CN]

Disclosed in the present invention is a joint driver based on an adjustable magnetorheological fluid valve. The joint driver comprises a first joint fixing rod, a second joint fixing rod, a hydraulic cylinder, an adjustable magnetorheological hydraulic valve, and a return spring, wherein a hydraulic cylinder hou...(+)

Ver más...



Densified biomass-polymer composites, and methods of making and using the same

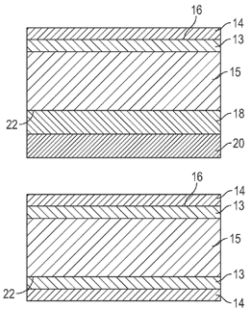
Publicación: Espacenet / **Fecha:** 06/11/2025

Materiales híbridos

Solicitante: BURCELL TECH INC [US]

The invention includes densified solid biomass-polymer composites and methods for producing the composites by introduction of a polymer, dissolved in a solvent, to a biomass material prior to densification. Some variations provide a densified solid biomass-polymer c...(+)

Ver más...



Articles comprising hardcoat composition comprising alkoxy silane and silica nanoparticles, and methods

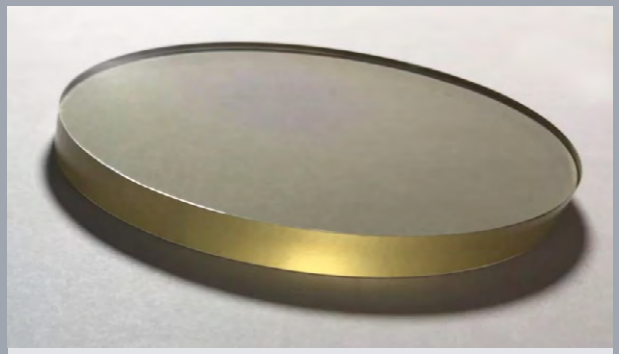
Publicación: Espacenet / **Fecha:** 06/11/2025

Materiales híbridos

Solicitante: 3M INNOVATIVE PROPERTIES COMPANY [US]

An article is described comprising A) a substrate; B) a hardcoat layer disposed on the substrate wherein the hardcoat layer comprises the hydrolyzed and condensed reaction product of a composition c...(+)

Ver más...



Silicon carbide part for producing silicon carbide single crystals

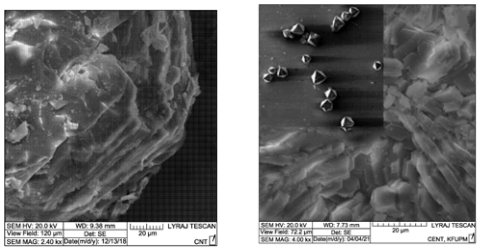
Publicación: Espacenet / **Fecha:** 06/11/2025

Materiales semiconductores

Solicitante: NANOMAKERS [FR]

The invention relates to a polycrystalline silicon carbide part having improved properties of porosity and homogeneity, to the use thereof as a source of silicon carbide for growing silicon carbide single crystals, to the method for producing same, and to a PVT growth method using such a silicon carbide part.

Ver más...



Metal-organic framework as a matrix for polyethylene glycol in thermal energy storage and preparations thereof

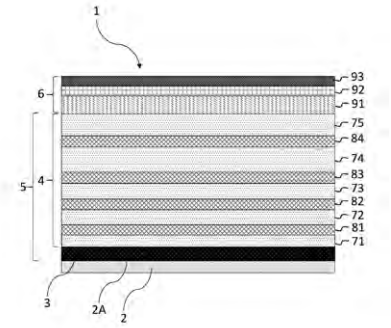
Publicación: Espacenet / **Fecha:** 30/10/2025

Materiales inteligentes

Solicitante: UNIV KING FAHD PET & MINERALS [SA]

The present disclosure is directed to a phase-change material (PCM) including a metal selected from cobalt and nickel and reacted units of 1,3,5-benzenetricarboxylic acid (BTC) for thermal energy storage and method of preparation thereof. The metal ...(+)

Ver más...



SIC epitaxial wafer, method for evaluating sic epitaxial wafer, and method for manufacturing sic device

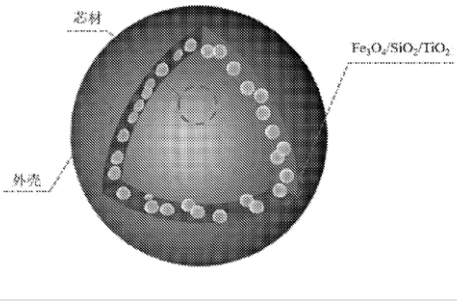
Publicación: Espacenet / **Fecha:** 30/10/2025

Materiales semiconductores

Solicitante: RESONAC CORP [JP]

The present invention relates to a semiconductor structure, and a method for producing such structure. The structure comprises: a substrate being a silicon substrate; a bottom layer, being a layer of AlN arranged on the substrate; a first stack of layers arranged above...(+)

Ver más...



Magnetic nanoparticle composite microcapsule, and preparation method therefor and use thereof

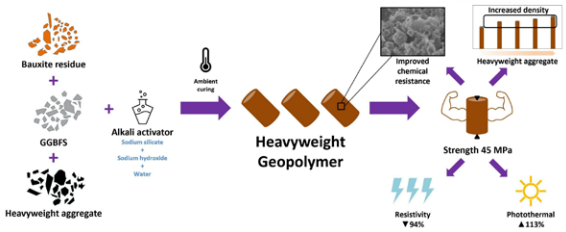
Publicación: Espacenet / **Fecha:** 30/10/2025

Materiales híbridos

Solicitante: GUIZHOU POWER GRID CO LTD [CN]

A magnetic nanoparticle composite microcapsule, and a preparation method therefor and the use thereof. The preparation method comprises: diluting concentrated ammonia water with absolute ethanol in which nano-Fe3O4 is dispersed, stirring same ...(+)

Ver más...



Curable compositions comprising at least one silane-modified polymer and bauxite residue

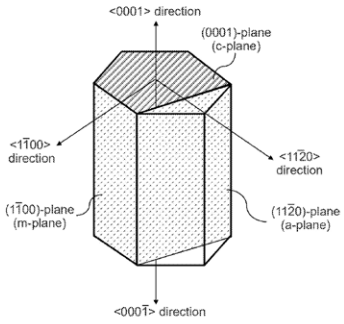
Publicación: Espacenet / **Fecha:** 30/10/2025

Materiales híbridos

Solicitante: HENKEL AG & CO KGAA [DE]

The invention relates to a curable composition comprising. I. at least one silane-modified polymer; II. at least one bauxite residue; III. at least one aminosilane or aminosilane oligomer; IV. optionally, surface treated calcium carbonate; V. optionally, surface treated si...(+)

Ver más...



Hybrid seed structure for crystal growth system

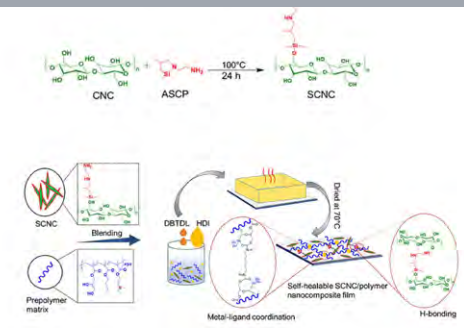
Publicación: Espacenet / **Fecha:** 28/10/2025

Materiales semiconductores

Solicitante: WOLFSPEED INC [US]

An example seed structure, systems, and methods for conducting crystal growth processes are provided. In one example, the present disclosure provides an example seed structure for a silicon carbide crystal growth system. The seed structure includes a carrier layer. The carrier layer is silicon carbide. ...(+)

Ver más...



Filler compounds added to polymer compounds and self-healing polymer nano complex with cross-linked bonds

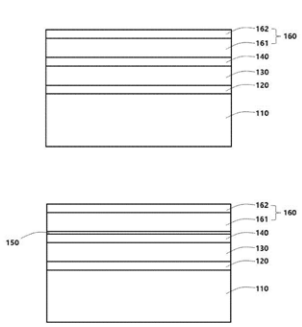
Publicación: Espacenet / **Fecha:** 21/10/2025

Materiales inteligentes

Solicitante: KYUNGPOOK NAT UNIV IND ACADEMIC COOP FOUND [KR]

The filler compound added to the polymer compound of the present invention is a filler compound including cellulose modified with an azasilane compound containing an amine group, and can modify cellulose thro...(+)

Ver más...



Gan hemt epitaxial wafer based on aln thick film and manufacturing method of the same

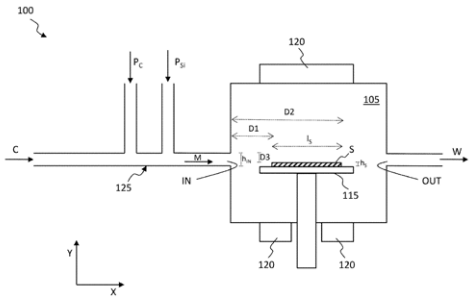
Publicación: Espacenet / **Fecha:** 16/10/2025

Materiales semiconductores

Solicitante: WAVELORD CO LTD [KR]

Embodiments according to the present invention are an AlN thick film-based GaN HEMT epitaxy wafer comprises a growth substrate made of a semi-insulating material or a conductive material, an AlN nucleation region grown on the growth substrate...(+)

Ver más...



Method and system for obtaining high-quality cubic silicon carbide

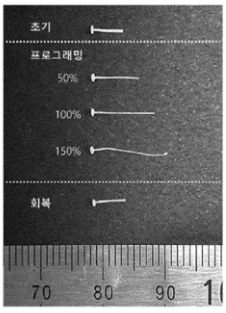
Publicación: Espacenet / **Fecha:** 09/10/2025

Materiales semiconductores

Solicitante: LPE S PA [IT]

A method is disclosed comprising providing a carbonaceous substrate; performing a chemical vapor deposition process on the carbonaceous substrate using a mixture of precursor gasses comprising a silicon precursor gas comprising trichlorosilane, and a carbon precursor gas selected from carbon-carbon do...(+)

Ver más...



Punctal plug comprising shape memory polymer and manufacturing method thereof

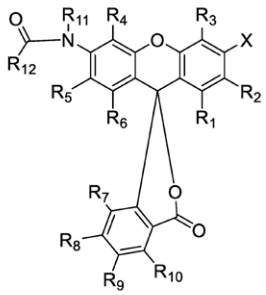
Publicación: Espacenet / **Fecha:** 09/10/2025

Materiales inteligentes

Solicitante: TMD LAB CO LTD [KR]

The present invention relates to: a punctal plug comprising a shape memory polymer; and a manufacturing method thereof. More specifically, the present invention relates to: a punctal plug made of a shape memory polymer, which includes a copolyme...(+)

Ver más...



Amide-substituted fluoran compounds as yellow thermochromic dyes and their use in imaging systems

Publicación: Espacenet / **Fecha:** 25/09/2025

Materiales inteligentes

Solicitante: SONY SEMICONDUCTOR SOLUTIONS CORP [JP]

Disclosed is an amide-substituted fluoran compound represented by formula (Ia) wherein R1 to R6 can be the same or different, and are each independently selected from the group consisting of hydrogen, halogen, lir...(+)

Ver más...

DICIEMBRE
2025

Informes sectoriales

Hybrid composites market report

Fuente: Thebusinessresearchcompany.com **/**
Fecha: 01/12/2025

Materiales híbridos

Hybrid Composites market size has reached to $3.8 billion in 2024. Expected to grow to $5.39 billion in 2029 at a compound annual growth rate (CAGR) of 7%. Growth Driver: Surging Automotive Sector Fuels Growth in the Hybrid Composites Market. Market trend: Leading Companies Drive Profitability in the Hybrid Composites Market Though Advanced Hybrid Friction Material Development. What is Covered Under Hybrid Composites Market? Hybrid composites refer to materials or st...(+)

Descargar

Hybrid Materials Market Report 2025 (Global Edition)

Fuente: Cognitivemarketresearch.com **/** **Fecha:** 15/10/2025

Materiales híbridos

Global Hybrid Materials Market Report 2025 Market Size Split by Type (Organic Materials, Inorganic Materials), by Application (Construction Materials, Automotive Components, Aerospace Components, Elec... “Global Hybrid Materials market size 2021 was recorded $8909.8 Million whereas by the end of 2025 it will reach $12439 Million. According to the author, by 2033 Hybrid Materials market size will become $24245. Hybrid Materials market will be growing at a CAGR of 8.7% during 2...(+)

Descargar

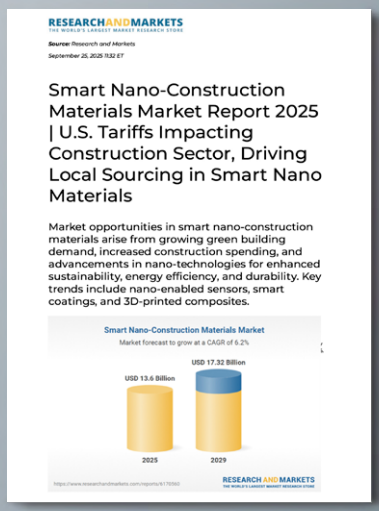
Smart Nano-Construction Materials Market Report 2025 / Impacting Construction Sector, Driving Local Sourcing in Smart Nano Materials

Fuente: Globenewswire.com / **Fecha:** 25/09/2025

Materiales inteligentes

Market opportunities in smart nano-construction materials arise from growing green building demand, increased construction spending, and advancements in nano-technologies for enhanced sustainability, energy efficiency, and durability. Key trends include nano-enabled sensors, smart coatings, and 3D-printed composites. The “Smart Nano-Construction Mate...(+)

Descargar



Your practical guide to ASICs

Fuente: Imeciclink.com / **Fecha:** 18/09/2025

Materiales semiconductores

With this white paper, we offer you a practical guide to application-specific integrated circuits (ASICs) for product innovation. Whether you’re designing a next-gen wearable or building infrastructure-grade hardware, this guide will show you how ASICs can transform your product’s capabilities. Who should read this? Product managers seeking to future-proof their roadmaps. Engineers looking to optimize performance and energy efficiency. CTOs and technical decision-makers exploring differentiation through custom silicon. Collaborating on cus...(+)

Descargar

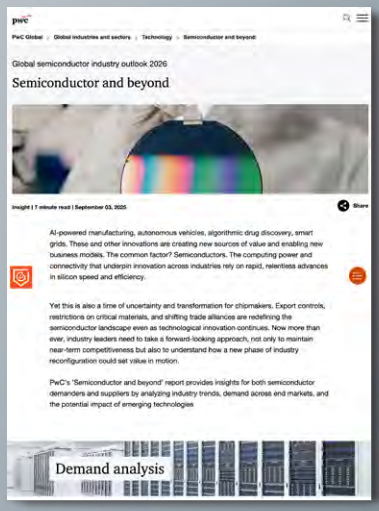
Global semiconductor industry outlook 2026 Semiconductor and beyond

Fuente: Pwc.com / **Fecha:** 03/09/2025

Materiales semiconductores

AI-powered manufacturing, autonomous vehicles, algorithmic drug discovery, smart grids. These and other innovations are creating new sources of value and enabling new business models. The common factor? Semiconductors. The computing power and connectivity that underpin innovation across industries rely on rapid, relentless advances in silicon speed and efficiency. Yet this is also a time of uncertainty and transformation for chipmakers. Export controls, restrictions on...(+)

Descargar



Future of the semiconductor industry: Key trends, tech, and strategies

Fuente: Capgemini.com / **Fecha:** 18/06/2025

Materiales semiconductores

Capgemini explores semiconductor industry trends, the future of the industry, and supply chain management challenges and innovations. The global semiconductor industry is facing a new set of challenges that have impacted the industry and propelled it towards innovation. According to global Capgemini research on semiconductor market trends, companies expect demand for semiconductors to increase by 15 percent by 2026. Downstream organizations – companies that rely or...(+)

Descargar

Global Semiconductor Industry Outlook for 2025

Fuente: Kpmg.com / **Fecha:** 2025

Materiales semiconductores

Insights from the 20th annual survey, conducted by KPMG LLP (KPMG) and the Global Semiconductor Alliance (GSA). Semiconductor leaders looking forward to a strong 2025, powered by AI. Optimism tempered by geopolitical apprehension and talent issues. KPMG and the Global Semiconductor Alliance conducted the milestone 20th annual global semiconductor industry survey in the fourth quarter of 2024. The survey captured insights from 156 semiconductor executives about t...(+)

Descargar

Semiconductor industry outlook

Fuente: Infosys.com / **Fecha:** 03/05/2025

Materiales semiconductores

The semiconductor industry is set for solid growth in 2025. Key drivers include rising demand for AI, advanced technologies, and significant capital investment, despite challenges in individual market segments and supply chains. Insights. The semiconductor industry is projected to reach approximately $697 billion in 2025, marking an 11% year-over-year increase, driven by strong demand in data centers and AI technologies. Semiconductor companies are expected to allocate around $185 billion to capital expenditures in 2025 to expand manufa...(+)

Descargar

DICIEMBRE
2025

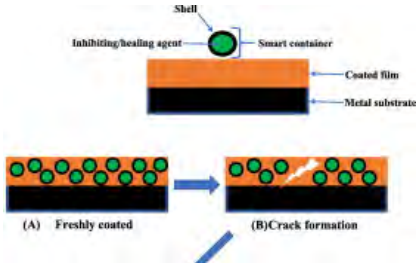
Publicaciones científicas

A comprehensive review of stimulus-based smart self-healing coatings for substrate protection

Fuente: Sciencedirect.com
Fecha: 01/01/2026

Materiales inteligentes

Smart self-healing coatings represent a transformative advancement in corrosion protection, offering dynamic responses to environmental stimuli like pH fluctuations, temperature changes, and mechanical damage. This review outlines the evolution of corrosion protection strategies, highlighting the limitations of traditional coatings and the emergence of intelligent systems that autonomously and non-autonomously detect and repair damage. It sets the record straight on the discrepancies between autonomous, non-autonomous, intrinsic, and extrinsic self-healing coatings and their combinations for v...(+)



Ver más...

Evidence for unexpectedly low quasiparticle generation rates across Josephson junctions of driven superconducting qubits

Fuente: Arxiv.org
Fecha: 28/11/2025

Materiales semiconductores

Microwave drives applied to superconducting qubits (SCQs) are central to high-fidelity control and fast readout. However, recent studies find that even drives far below the superconducting gap frequency may cause drive-induced quasiparticle generation (QPG) across Josephson junctions (JJs), posing a serious concern for fault-tolerant superconducting quantum computing. Here, we find experimental evidence that the actual QPG rates in strongly driven SCQs are remarkably lower than expected. We apply intense drive fields through readout resonators, reaching effective qubit drive amplitu...(+)

Ver más...

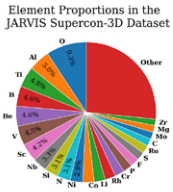
AtomBench: A Benchmark for Generative Atomic Structure Models using GPT, Diffusion, and Flow Architectures

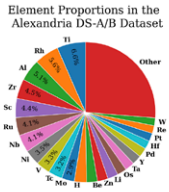
Fuente: Arxiv.org
Fecha: 17/11/2025

Materiales inteligentes

JOHNS HOPKINS UNIVERSITY

Generative models have become significant assets in the exploration and identification of new materials, enabling the rapid proposal of candidate crystal structures that satisfy target properties. Despite the increasing adoption of diverse architectures, a rigorous comparative evaluation of their performance on materials datasets is lacking. In this work, we present a systematic benchmark of three representative generative models- AtomGPT (a transformer-based model), Crystal Diffusion Variational Autoencoder (CDVAE), and FlowMM (a Riemannian flow matching model). These models were trained to recons ...(+)





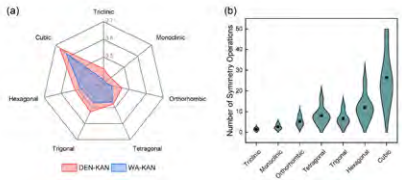
Ver más...

KAN-Enhanced Contrastive Learning Accelerating Crystal Structure Identification from XRD Patterns

Fuente: Arxiv.org
Fecha: 06/11/2025

Materiales semiconductores

Accurate determination of crystal structures is central to materials science, underpinning the understanding of composition-structure-property relationships and the discovery of new materials. Powder X-ray diffraction is a key technique in this pursuit due to its versatility and reliability. However, current analysis pipelines still rely heavily on expert knowledge and slow iterative fitting, limiting their scalability in high-throughput and autonomous settings. Here, we introduce a physics-guided contrastive learning framework termed as XCCP. It aligns powder diffraction patterns with candidate crystal structures in a ...(+)



Ver más...

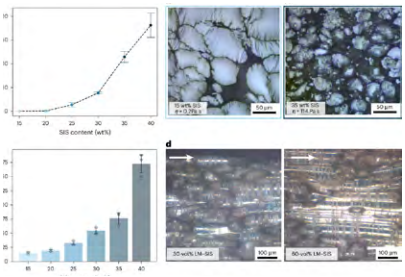
Electronic fibres via the thermal drawing of liquid-metal-embedded elastomers

Fuente: Nature.com
Fecha: 28/10/2025

Materiales híbridos

EPFL

Soft electronic fibres are potential building blocks for a variety of emerging technologies including smart textiles and wearable health monitors. However, it remains a challenge to fabricate fibres that combine conductive and dielectric domains in complex architectures in a simple and scalable way. Here we show that a thermal drawing approach can be used to fabricate stretchable fibre-based sensors from liquid-metal-embedded elastomers. The material formulation and processing parameters can be controlled to create high aspect-ratio stretchable fibres that integrate high-conductivity (aro...(+)



Ver más...

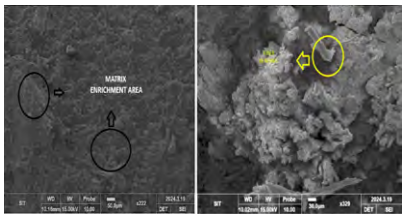
Development of hybrid fiber-reinforced vinyl ester composites for civil and automotive applications

Fuente: Nature.com
Fecha: 23/10/2025

Materiales híbridos

SAVEETHA UNIVERSITY
Declared U/S 3 of UGC Act 1956

Building and automotive sectors are accelerating the development of biodegradable hybrid natural fiber composites due to their potential for lightweight structural applications and their significant environmental benefits. This study focused on improving the mechanical properties of vinyl ester polymer composites through the hybridisation of natural fiber mats made from sisal, Indian mallow, roselle and banana fibers. Tensile, flexural, impact and hardness properties, as well as the thermal behaviour, of the hybrid biocomposites were investigated by producing five different combinations o ...(+)



Ver más...

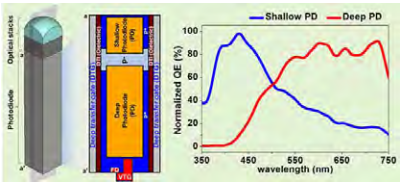
A Color-Separable Vertical Pinned Photodiode for Scaled CMOS Image Sensor Pixels

Fuente: Ieeexplore.ieee.org
Fecha: 01/10/2025

Materiales semiconductores

imec

In the complementary metal-oxide-semiconductor (CMOS) image sensor CMOS image sensor (CIS), a Bayer pattern color filter array (CFA) is used to extract color information. However, this approach reduces spatial resolution and optical efficiency due to signal loss from CFA. In the Bayer CFA, the color signal loss is approximately 50% for the green and 75% for both red and blue. This article proposes a color-separable pinned photodiode (PPD) structure to enhance optical efficiency while maintaining spatial resolution. In the proposed PPD, two photodiodes (PDs)—a shallow and a deep PD—are integr ...(+)



Ver más...

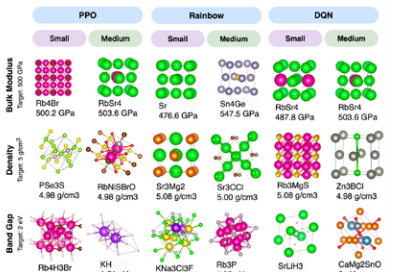
CrystalGym: A New Benchmark for Materials Discovery Using Reinforcement Learning

Fuente: Arxiv.org
Fecha: 27/09/2025

Materiales inteligentes

Université de Montréal

In silico design and optimization of new materials primarily relies on high-accuracy atomic simulators that perform density functional theory (DFT) calculations. While recent works showcase the strong potential of machine learning to accelerate the material design process, they mostly consist of generative approaches that do not use direct DFT signals as feedback to improve training and generation mainly due to DFT's high computational cost. To aid the adoption of direct DFT signals in the materials design loop through online reinforcement learning (RL), we propose CrystalGym, an open-source RL environn...(+)



Ver más...

PMSE Centennial: Celebration of Success and New Frontiers in Polymer Materials Science and Engineering

Fuente: Pubs.acs.org
Fecha: 26/09/2025

Materiales semiconductores

TEXAS A&M UNIVERSITY

In 2024, the American Chemical Society (ACS), Division of Polymeric Materials: Science and Engineering (PMSE), celebrated its centennial. This historic occasion was marked at the 2024 Spring ACS Meeting in New Orleans with a Centennial Symposium entitled "PMSE Centennial: Celebration of Success and New Frontiers in Polymeric Materials Science and Engineering". The symposium reflected on past scientific breakthroughs, technological advancements, and new frontiers in the field of polymeric materials science and engineering. Eight thematic areas comprised the symposium: Advanced Manufactu ...(+)

Ver más...

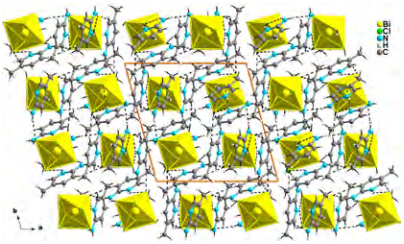
A zero-dimensional $(C_6 H_9 N_2)_3 [BiCl_6]$ hybrid material: synthesis and structural, optical, and electrical conductivity

Fuente: Sciencedirect.com
Fecha: 22/09/2025

Materiales híbridos

University of Sfax

The organic–inorganic hybrid compounds have attracted considerable attention due to their exceptional properties and diverse applications. This study successfully synthesized the hybrid compound $(C_6H_9N_2)_3[BiCl_6]$ via a slow evaporation technique at room temperature. Structural analysis confirmed a triclinic crystal system within the P1 space group, while thermal investigations revealed a phase transition at 420 K. Optical characterization through UV-visible absorption spectroscopy highlighted its semiconducting nature. Electrical and dielectric measurements performed using complex in...(+)



Ver más...

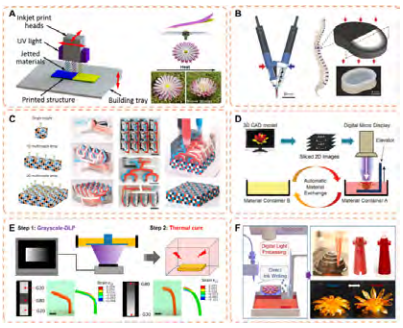
Recent advances in polymer 4D printing: 3D printing techniques, smart material design, and healthcare applications

Fuente: Sciencedirect.com
Fecha: 20/09/2025

Materiales inteligentes

WISCONSIN UNIVERSITY OF WISCONSIN–MADISON

Fourth-dimensional (4D) printing has progressed tremendously since its first conceptualization in 2013. 4D printing is an emerging branch of three-dimensional (3D) printing that allows printed parts to change their shapes and properties as a function of time under external stimuli. It has revolutionized the fabrication of smart polymer composites with customized geometry and programmed dynamic functions for expanding engineering and healthcare applications. This review provides a comprehensive overview of recent advances in the 4D printing of polymer composites. Fourth-dimensional (4D) |...(+)



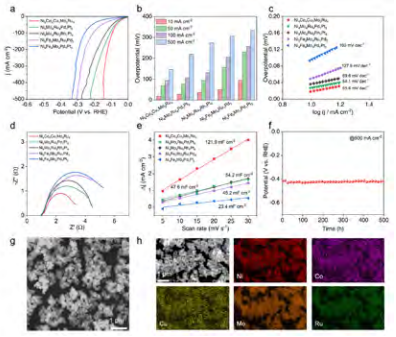
Ver más...

S1-MatAgent: A planner driven multi-agent system for material discovery

Fuente: Arxiv.org
Fecha: 18/09/2025

Materiales inteligentes

The discovery of high-performance materials is crucial for technological advancement. Inverse design using multi-agent systems (MAS) shows great potential for new material discovery. However, current MAS for materials research rely on predefined configurations and tools, limiting their adaptability and scalability. To address these limitations, we developed a planner driven multi-agent system (S1-MatAgent) which adopts a Planner-Executor architecture. Planner automatically decomposes complex materials design tasks, dynamically configures various tools to generate dedicated Executor ag ...(+)



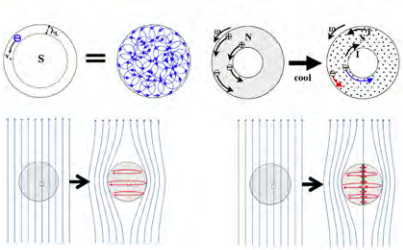
Ver más...

The Meissner effect in superconductors: emergence versus reductionism

Fuente: Arxiv.org
Fecha: 14/09/2025

Materiales semiconductores

The Meissner effect, the expulsion of magnetic field from the interior of a metal entering the superconducting state, is arguably the most fundamental property of superconductors, discovered in 1933. The conventional theory of superconductivity developed in 1957 is generally believed to fully explain the Meissner effect. We will review the arguments that support this consensus, rooted in the concept of emergence. However, recent work has shown that there are questions related to momentum conservation in the process of magnetic field expulsion that have not been addressed within the conventi ...(+)



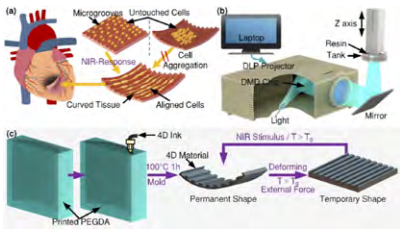
Ver más...

Exploring 4D printing of smart materials for regenerative medicine applications

Fuente: Pubs.rsc.org
Fecha: 05/09/2025

Materiales inteligentes

The field of biomaterials has evolved rapidly with the introduction of time as a transformative factor, giving rise to four-dimensional (4D) materials that can dynamically change their structure or function in response to external stimuli. This review presents a comprehensive comparison between traditional three-dimensional (3D) and emerging 4D biomaterials, highlighting the key distinctions in design, adaptability, and functionality. We explore the development of smart biomaterials at the core of 4D systems, including stimuli-responsive polymers, shape-memory materials, and programmable hydro ...(+)



Ver más...

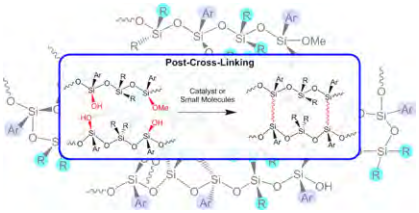
Thermal Post-Cross-Linking of Siloxane/Silsesquioxane Hybrids with Polycyclic Aromatic Units for Tailored Softening Behavior in High-Temperature Applications

Fuente: Mdpi.com
Fecha: 29/08/2025

Materiales híbridos

SAARLAND UNIVERSITY

Hybrid siloxane/silsesquioxane materials containing sterically demanding aromatic groups synthesized by hydrolysis and condensation suffer from incomplete cross-linking after thermal consolidation, limiting their thermal and mechanical performance. In this study, we systematically investigated a post-cross-linking strategy using various additives to enhance structural integrity and thermal stability. These include dimethyldimethoxysilane (DMDMS), diphenyldimethoxysilane (DPDMS) and phenyltrimethoxysilane (PTMS), as well as the organotin condensation catalyst di-n-butyltin diacetate (DBTA). Notably ...(+)



Ver más...

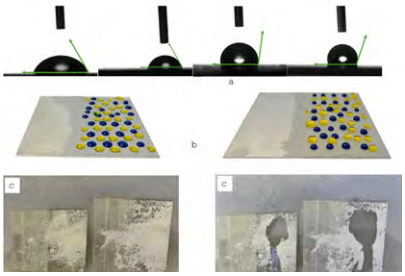
Multifunctional, Biocompatible Hybrid Surface Coatings Combining Antibacterial, Hydrophobic and Fluorescent Applications

Fuente: Mdpi.com
Fecha: 05/08/2025

Materiales híbridos

Istanbul Zaim Üniversitesi

The hybrid inorganic–organic material concept plays a bold role in multifunctional materials, combining different features on one platform. Once varying properties coexist without cancelling each other on one matrix, a new type of supermaterial can be formed. This concept showed that silver nanoparticles can be embedded together with inorganic and organic surface coatings and silicon quantum dots for symbiotic antibacterial character and UV-excited visible light fluorescent features. Additionally, fluorosilane material can be coupled with this prepolymeric structure to add the hydrophobic feature, sho ...(+)



Ver más...

Novel Features Related to Polymers and the Environment

Fuente: Mdpi.com
Fecha: 20/06/2025

Materiales híbridos

CSIC
Consejo Superior de Investigaciones Científicas

In the early 1980s, the first global environmental crisis took place, focusing on the role of plastics in the substantial solid waste streams of major cities. It was evident then (and now) that the best environmental management practices required solid scientific and technical knowledge, often based on technical standards. Once at the end of their useful life, these plastics become involved in their materials (polymers and additives) in a circular economy strategy amidst the non-steady scenarios of the other key sectors of the economy, industry, society, and policy. Thus, forty years later, a twofold perspective (ap ...(+)

Ver más...

UNIVERSITAT JAUME I
Fundació General · FUGEN

espaitec
Parc Científic i Tecnològic

(+34) 964 387 390
espaitec@espaitec.uji.es
www.espaitec.uji.es

iale
TECNOLOGIA

(+34) 934 189 796
contacto@ialetecnologia.com
www.ialetecnologia.com

GENERALITAT VALENCIANA
Conselleria de Innovación,
Industria, Comercio y Turismo