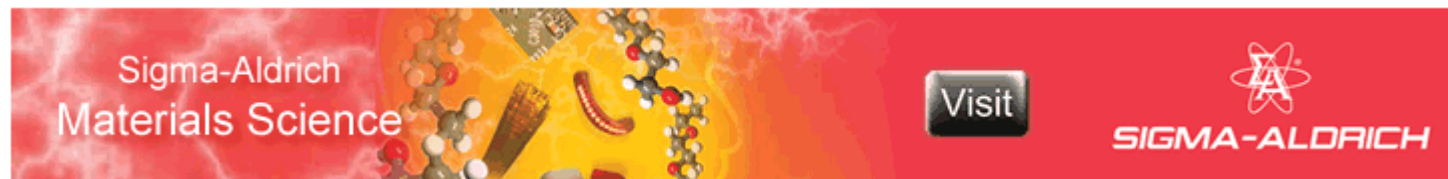


ADVERTISE HERE



Sigma-Aldrich
Materials Science

Visit

SIGMA-ALDRICH

FIBRETECH

**Stainless Steel
Fibres, Mats,
Tubes &
Components**



**Zetasizer
Nano Series**



Featured Courses
Advanced Materials
Masters Course

Microsystems and
Nanotechnology
Masters

Materials Masters
Programmes at The
University of
Nottingham

Introduction to
Composite Materials

ADVERTISE HERE

• [Fermilab Scientists Discover Exotic Relatives of Protons and Neutrons](#)

• [Formula to Measure the Seismic Resistance of Reinforced Concrete Buildings](#)

• [Clean Fusion Energy: HiPER](#)

• [Innovative Jet Engine Display](#)

• [EraSME: The First Transnational Project is Starting Now](#)

• [Plastic Components from the Microwave](#)

• [Extremely Hard and Precisely Shaped Ceramic Manufacturing Tools from Fraunhofer](#)

• [RFID Tags Deliver Letters Safely to Destination](#)

• [Recycling Plastics Recovered from Electrical Waste](#)

• [Heat Insulation by Vacuum](#)

• [World is Not Running Out of Oil](#)

• [Scientists Create Working Invisibility Cloak](#)

• [Solvay Advanced Polymers Unveils KetaSpire PEEK](#)

• [Carnegie Mellon Scientists Use 'Green' Approach To Transform Plastics Manufacturing Process](#)

• [VIU Introduces New Print Technology](#)

• [Majority of U.S. Adults Support Government Incentives for Biofuels](#)

• [Owens Corning Announces Breakthrough Reinforcement Technology for High-Performance Thermoplastics](#)

• [Chicago White Metal Signs Alliance Agreement with Advanced Magnesium](#)

• [UK Centre to "Fast Track" Regulatory Response](#)

• [Breakthrough Primer Technology for Coating Aluminum](#)

• [Cellulose Used to Strengthen Plastic](#)

• [MIT Looks at Non-Newtonian Fluids](#)

• [Researchers Strep Towards Extreme Ultraviolet Light - Potential for Computer Chips](#)

• [Atomic Clock Errors Patched!](#)

• [New Standard for the Chemical Composition of Thin-Film Semiconductor Alloys](#)

• [New Method for Determining Behavior of Electrons in Atoms and Molecules](#)

News

Formula to Measure the Seismic Resistance of Reinforced Concrete Buildings

Reinforced concrete is one of the most used materials in Spanish constructions. Foreseeing the behaviour of this kind of structures in case of earthquake became vital when they are placed in seismic areas such as Granada. Recently, it has been suggested a new formula, confirmed with numerical simulations, which is going to make the prediction of the seismic resistance of reinforced concrete structures easier, based on its capacity to take up and disperse energy.

The director of this work, which has been recently published in the international journal Engineering Structures, is Professor Amadeo Benavent Climent, of the Department of Continuous Means and Theory of Structures of the [University of Granada](#). They intend to predict "in case of earthquake, the maximum amount of seismic energy this kind of structures could take up and disperse without risk of collapse", Benavent Climent explains.

The higher this energy is, the higher the building's resistance capacity will be. Such energy depends fundamentally on ductility, this is, on the ability of the structure to become twisted without breaking.

The new formula allows to assess the seismoresistance of the structures and, comparing it with the seismicity of the area where the construction is located, to draw conclusions about if reconditioning them is necessary or not, whether by means of conventional techniques or by advanced methods like that of energy dispersers. This technique consists of installing special elements in the structure that avoid that pillars and beams suffer important damage in case of earthquake. The next extension of the Architects' Association of Granada will be the first Spanish building with these special energy dispersers.

One of the present goals for seismic engineering is to control damage (reducing or removing it) in structures subjected to earthquakes. According to current rules of most countries, like Spain, conventional buildings are designed to, in case of earthquake, experience important plastic deformations but without collapsing, to avoid the loss of human lives. However, allowing such plastic deformations means to admit structural damages, which can make the demolition of the building after the earthquake advisable.

<http://www.ugr.es>

Posted 24th October 2006

[Click here for materials/engineering news archive](#)

◀ back

[Add to Google](#)

[Email to a friend](#)

Ads by Google

[Stable Conductive Polymer Highly Stable Additives Conductive Textiles/Fabrics](#)
www.eeonyx.com

[Chemical Industry News](#)
Global news that impacts markets
For a free ICIS news trial visit
www.icis.com

[Polymer Resin](#)
We've Found the Top 4 Sites For
Polymer Resin
Resin.Best4sites.net

[Plastic Materials](#)
Plastic Materials Information
All you need to know and more.
Plastic.AboutConstruction.org

[plastic materials Online](#)
Alastian, no-frills quality PP & PE
Real-time prices. Register Now!
www.alastian.com

[Buy SOFC materials here](#)
LSM, YSZ/NiO, YSZ, GDC & more,
plasma spray & other applications
www.advancedmaterials.us

[PEEK Plastic](#)
We produce bearing grade 450FC30 & carbon fiber reinforced PEEK 450CA.
drakeresearch.com

[Teflon Medical Tubing](#)
Zeus Teflon tubing offers chemical resistance, biocompatibility, more.
www.zeusinc.com

UniS
University of Surrey
Guildford

**Advanced Materials
Msc**
[Click for details](#)

Feldco Intl



COORS TEK
Amazing Solutions™

**High-Purity
ALUMINAS**

GRANTA

Get more from your
Materials

We help you to get more from materials data and the materials that it describes

[Click here ▶](#)

X-MET

**OXFORD
INSTRUMENTS**

**Handheld X-ray
Fluorescence**



ADVERTISE HERE

▲
top

◀ back

- [New Living Radical Polymerization Method](#)
- [Discovery of Molecule that Induces the Dispersion of Biofilms](#)
- [Scientists Polarize Particles into Intricate Shapes and Unique Structures](#)
- [Self-Cleaning Coating Based on the Lotus Plant](#)
- [Photon Fusion Could Lead to More Efficient Solar Cells](#)
- [Discovery of Superheavy Element 118](#)
- [Consumers Need to be Educated About Hazards of Tire Aging](#)
- [Engel Open Service Centre in Prague](#)
- [Flexible Circuits to Contribute to Smaller Medical Devices](#)
- [GE Delivers Prototype Solid Oxide Fuel Cell \(SOFC\) to US Department of Energy](#)
- [Hydromer Develops Biopolymer with Superb Lubricity](#)
- [Computer Driven Textile Printing Centre Opens at University of Manchester](#)
- [Timken to Exit European Seamless Tube Manufacturing Operation in England](#)
- [Gallium Nitride Quantum Well Produced Using Hydride Vapor Phase Epitaxy](#)
- [Tongaat-Hulett Aluminium to Increase Capacity](#)
- [Varioptic and Dupont to Combine Electrowetting Expertise for Liquid Lenses](#)
- [Hydro Showcase Future Aluminium Engine and Chassis Technology](#)
- [University of Kent Professor Wins Mass Spectrometry Award](#)
- [DuPont Partnership to Produce and Distribute Bio-Based Polymer Throughout Asia](#)
- [VTT Launches Gasification Equipment Designed for Development of Biofuels](#)
- [Biofriendly Liquid Fuel Catalyst Enhances Fuel Efficiency of Marine Engine with No Side Effects](#)
- [Samuel Manu-Tech Acquire Assets, Plastic Strapping and Distribution Business of Gerrard-Ovalstrapping](#)
- [Eastman to Sell Polyethylene Business to Westlake for \\$255m](#)
- [Malvern Instruments' Shows Off Chemical Imaging Solutions for the First Time at AAPS](#)
- [US Space Program produces Fast and Accurate Moisture Analyzer](#)
- [Jadoo Partners to Provide Portable Fuel Cell Power Solution for Police Applications](#)
- [Bespak Chosen to Design, Develop and Manufacture Needle-Free Solid Dose Injector](#)
- [New Product Promises to](#)

[Allow Flat Panel Makers to Economically Tune The Performance of Their Products](#)

- [Kyma Technologies Receive US Army Grant to Develop Non-Polar Gallium Nitride Substrates](#)

- [American Superconductor Receive Follow-on Order from Windtec](#)

- [Hydro Granted Permission to Continue Operating Ardal Aluminium Line Temporarily](#)

- [Environmentally Safe Compounds Used to Make Industrial Polymers](#)

- [Holographic Data Storage Medium with Ultimate Security on Show at Security 2006](#)

- [Ti-Modified Mesoporous Silica for Removal of Chromium from Wastewater](#)

- [Fenner Acquire Fluoroplastics Manufacturer EGC](#)

- [ExxonMobil's Flexicoking Technology Chosen for Greek Refinery Upgrade](#)

- [RUSAL, SUAL, Glencore Merger Will Result in the World's Largest Aluminium and Alumina Producer](#)

- [BASF Creates More Flexible Melamine Resin Foam](#)

- [Composite Engineering Software Producer Opens USA Office](#)

- [Borouge to Launch Feasibility Study into Base Chemicals](#)

- [ExxonMobil Commercialize Technology for The Removal of Olefins from Aromatic Streams](#)

- [Whitehouse Scientific Adds Basalt Microspheres to Its Product Range](#)

- [Amphenol Industrial Launches Miniature Explosion-Proof Connectors](#)

- [Yokohama Rubber to Set Up Indian Subsidiary](#)

- [Rohm and Haas About to Start Work on Plastics Additives Plant in Turkey](#)

- [Outokumpu Order Stub Graphite Coating System from Stimir](#)

- [United Steelworkers to Strike at Goodyear Plants in North America](#)

- [General Dynamics Awarded \\$189m Contract to Build Light Armored Vehicles for US Marines](#)

- [Sandia to Become National Laboratory Center for Solid-State Lighting Research and Development](#)

- [ORNL High Flux Isotope Reactor Continues Its March on The Way to Becoming World's Leading Producer of Cold Neutrons](#)

- [Mittal Steel Idle Two American Blast Furnaces](#)

- [American Fiber optics to Stock Navsea Qualified Fiber Optic Connectors](#)

- [Gilbarco Veeder-Root Launch Leak Prevention System](#)

- [Nucor to Build Special Bar Quality Products Plant in Memphis Tennessee](#)

- [Australian Ceramic Society Abolishes Membership Fees](#)
- [Upper Composite of ESA's Vega Rocket Passes Vibration Tests](#)
- [Xstrata Zinc Complete First Stage of Mt Isa Zinc Concentrator Upgrade](#)
- [Ryerson Acquire Lancaster Steel Service Company](#)
- [Project Aims to Produce Activated Coal from Polymeric Waste as Raw Materials](#)
- [Magnetic Islands Found to be The Source of Mysterious High Speed Electrons](#)
- [US Military Still Interested in Wooden Propellers](#)
- [Damage in Advanced Composites Detected Using Carbon Nanotube Networks](#)
- [British Plastics Federation and Inenco Team Up to Improve Energy Procurement for UK Plastics Businesses](#)
- [GE Granted Exclusive Rights to Develop and Commercialize Laser-Based Uranium Enrichment Technology](#)
- [Polymer Group Open Spunmelt Medical Fabrics Plant in China](#)
- [ExxonMobil and Yokohama Jointly Developed Tire Technology for Harsh Winter Conditions Achieves Milestone](#)
- [Smart Battery Wins mPhase Technologies Frost and Sullivan Award](#)
- [Clariant to Acquire Masterbatches Business from Ciba Specialty Chemicals](#)
- [Timken Expands Aerospace Capabilities](#)
- [Microsemi Wins \\$1.8m to Develop Silicon Carbide Semiconductors for Military Avionics Applications](#)
- [Alcan Secure Contract to Supply Bombardier Aerospace](#)
- [3M Acquires Sponge Provider](#)
- [Tokyo Electron release 300mm Metal CVD System for Titanium and Titanium Nitride Films](#)
- [Fiber Cement Siding Provides Superior Alternative to Wood Imitations](#)
- [Customers Praise CERAM's Testing Services](#)
- [Rohm and Haas Sells Automotive Coatings Business to Nippon Paint](#)
- [Phase Diagram of Water Revised by Sandia](#)
- [ThyssenKrupp to Invest Heavily in Growth in the Medium Term](#)
- [LED Maker Epistar to Merge with Highlink](#)
- [High Tech Biodegradable Material from Renewable Sources](#)
- [Researcher Wins Prize for Work on Producing Ethanol from Wood](#)
- [Paraffin as a Waterproofing Element for](#)

[Chipboard](#)

- [Hydro Consider Producing Aluminium in Angola](#)

- [Alcan to Spend \\$180m on New Spent Pot Lining Recycling Plant](#)

- [Antibacterial Additive Makes Polypropylene Fabrics Comfortable and Hygienic](#)

- [Mechanical Shock to Composite Fairing Delays Launch of MetOp Spacecraft](#)

- [Intertape Polymer Explore Various Financial and Strategic Options](#)

- [Dow to Expand Manufacturing Capabilities in Portugal](#)

- [Albemarle Completes Acquisition of Fine Chemicals Business from DSM](#)

- [World's First Non-Tarnish Silver on Display at Jewellery Fair](#)

- [Beckman Coulter Acquire Novel Detection Chemistries Business](#)

- [General Dynamics Awarded \\$9.3million Contract to Manufacture Ammunition for the US Army](#)

- [Owens Illinois to Build a New Glass Container Manufacturing Facility in Peru](#)

- [The Future of Fibre Optics Assessed](#)

- [American Superconductor Receives High Temperature Superconductor Order from the Korea Electrotechnology Research Institute](#)

- [Sandvik Completes Acquisition of Chilean Implementos Mineros](#)

- [CERAM Website Has a New Solutions Focus](#)

- [Malvern to Focus on Process Line Particle Size Analyzers at easyFAIRS Solids 2006](#)

- [Weizmann Institute of Science Launches Ambitious Initiative into Alternative, Sustainable Energy Resources](#)

- [Researchers Take Natural Gas Out of Ethanol Production](#)

- [University of New Hampshire to Build Sensor for Next-Generation Weather Satellites](#)

- [Creation of a Polariton Bose-Einstein Condensate in the Solid State](#)

- [Giant Fiber Lasers for Secure Communication](#)

- [Australia and South Africa Short-Listed for Square Kilometre Array Radio Telescope](#)

- [New Wood-Plastic Composites](#)

- [Engineers Use New Mathematics and Micro Mirrors in 'Multiplexed Camera'](#)

Other AZoNetwork Sites | [AZoNano.com](#) | [AZoBuild.com](#) | [AZoMed.com](#) | **Partners** - [Eng-Tips.com](#)

AZoM™ - The A to Z of Materials and AZojomo - The "AZo Journal of Materials Online"...AZoM™.com Pty.Ltd Copyright © 2000-2006

[HOME >](#)

[TERMS >](#)

[MATERIALS >](#)

[APPLICATIONS >](#)

[INDUSTRIES >](#)

[NEWS >](#)

[CLASSIFIEDS >](#)

[COURSES >](#)

[EVENTS >](#)

[BOOKS >](#)

[ABOUT >](#) [HELPS/FAQS >](#)

[JOBS >](#) | [JOURNAL >](#) | [NEWSLETTER >](#) | [ASSOCIATES >](#)