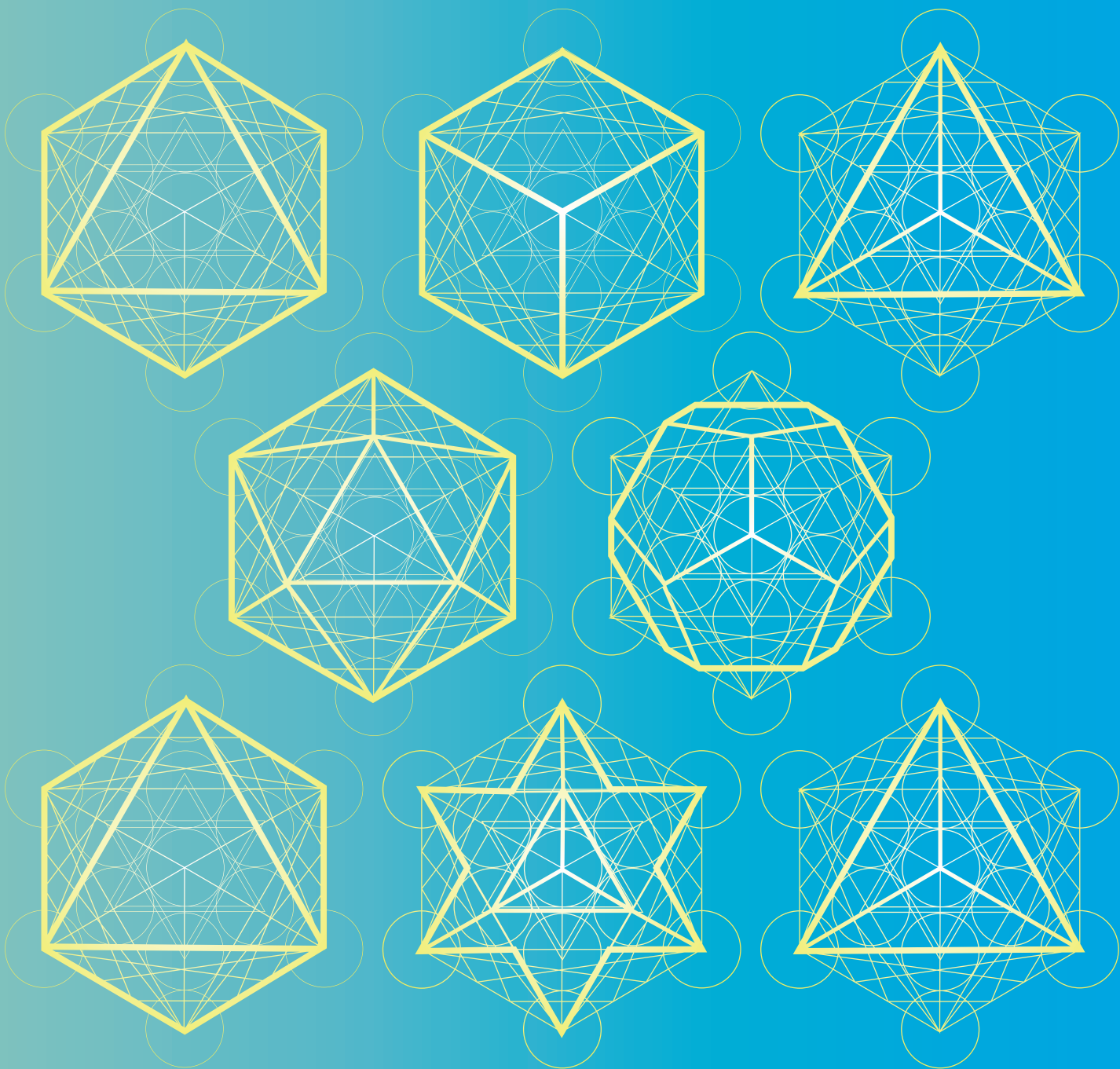


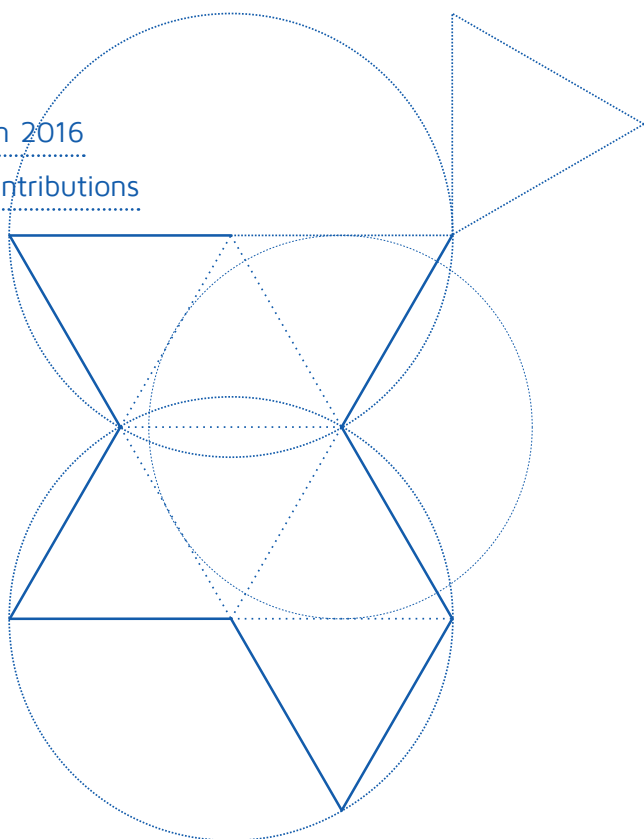
B²MATERIALS

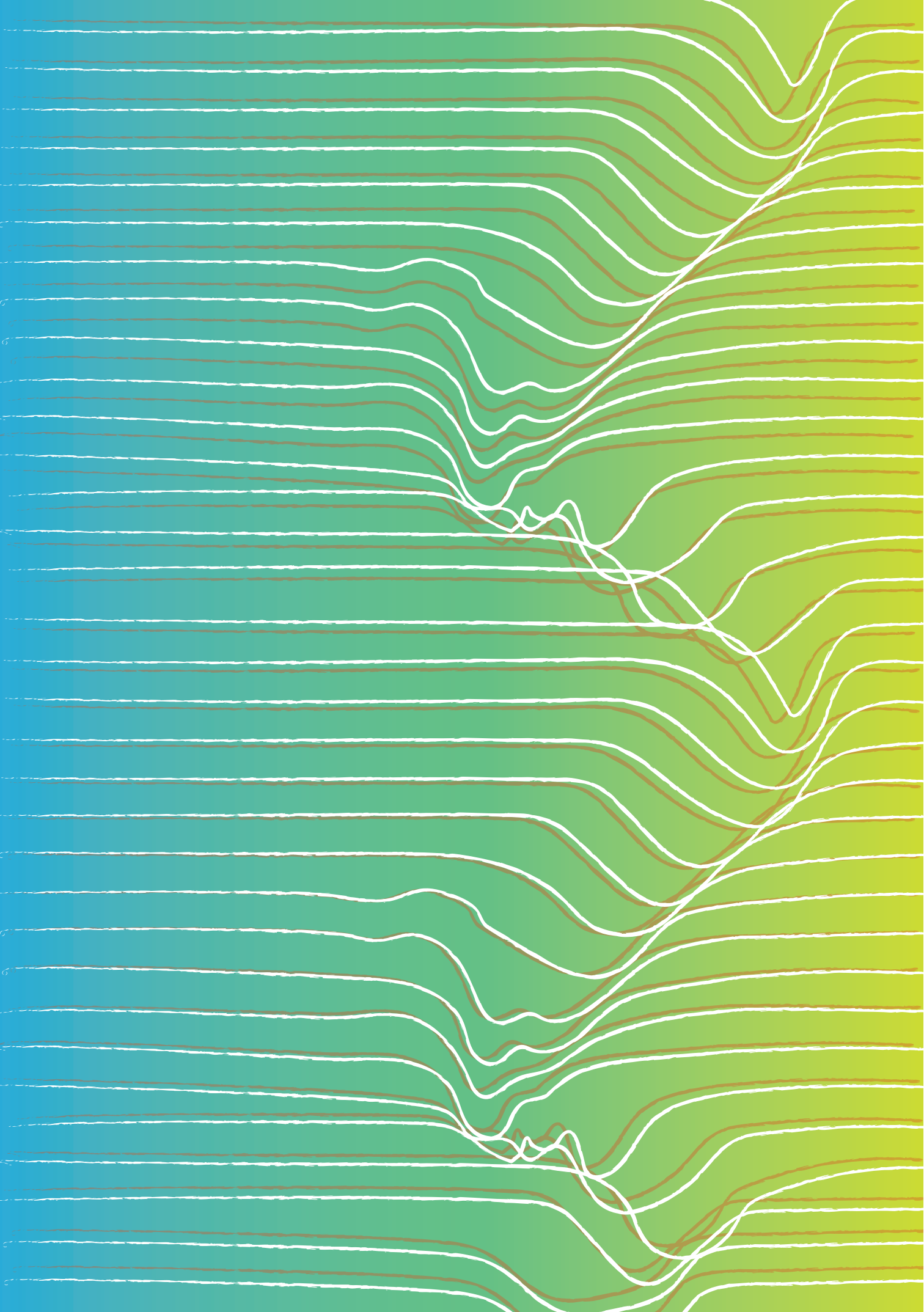
BASQUE CENTER FOR MATERIALS, APPLICATIONS & NANOSTRUCTURES



Activity Report 2016

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Once again we have the pleasure to present the annual report of the activity developed by BCMATERIALS during the past year, now corresponding to 2016. As a result of the continuous effort and efficient work of our researchers, the quantity and quality of the scientific production are at the expected figures for a steady operation of the centre.

During this year, and thanks to the excellent work of our general manager, Naiara Elejalde, the first three European projects of the centre have started. Our activity is now well recognized all around the world and new researchers are approaching us to establish new collaborations and to be incorporated in our team. During 2016 we welcomed a new Ikerbasque professor, Senentxu Lanceros Mendez, and a Marie Curie fellow, Dr. Catarina Lopes, as well as other qualified postdoctoral researchers. The scientific production has reached the milestone of 100 papers per year, supporting the large productivity we are committed to since the very beginning of the center, in 2012.

At the same time, we are intensively undertaking the technological transfer of our research, mainly via a number of collaborative projects under the Basque Government funder ELKARTEK programme. This integration of BCMATERIALS in the productive system of the Basque country fulfils one of the objectives of the creation of BCMATERIALS and we are certain it will produce new benefits for the society, as stated in our motto, that describes the aim to develop “NEW MATERIALS FOR A BETTER LIFE”.

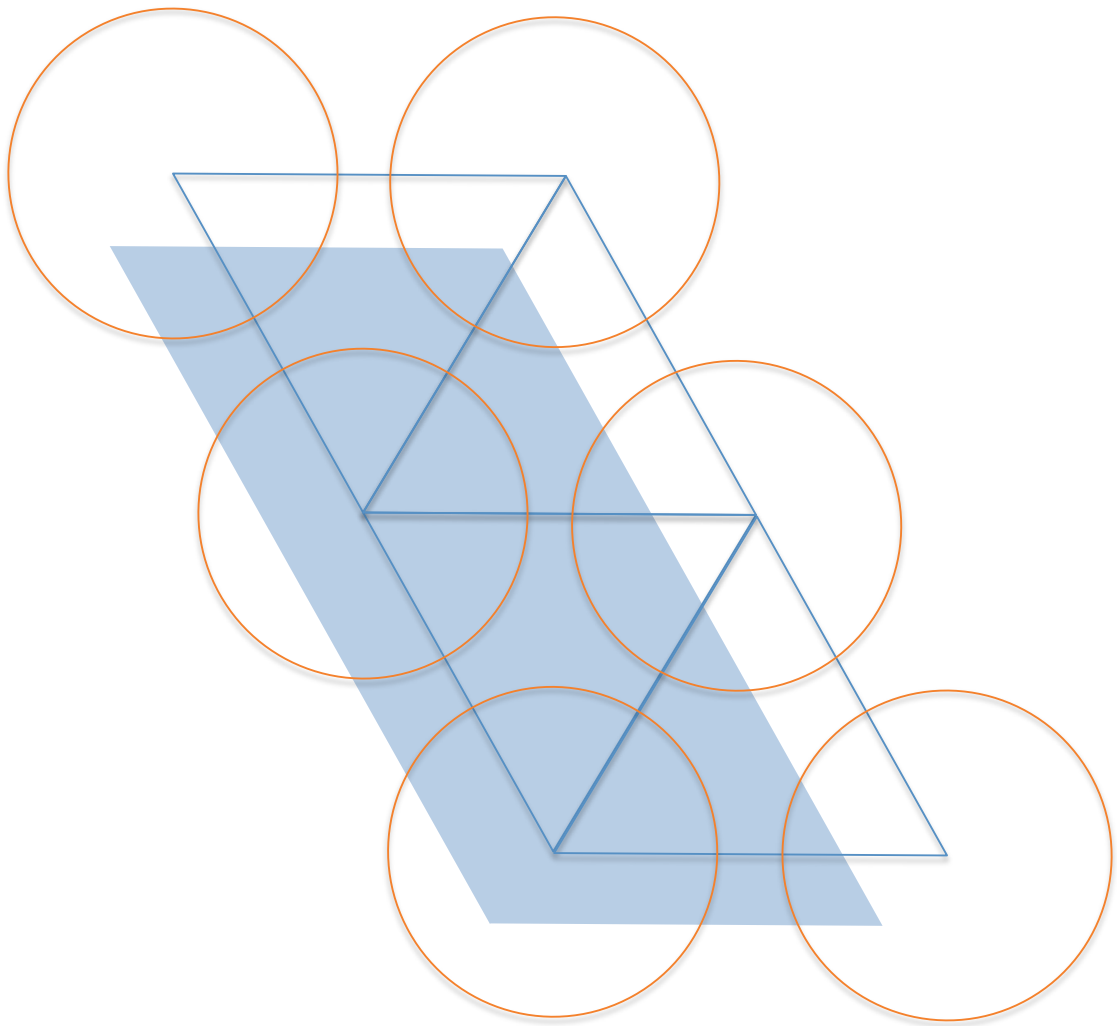
With this in mind, we offer you this 2016 report, where you can find more details of our recent activity. I hope you will enjoy it, as we did when producing the results summarized herein.

With my best regards,

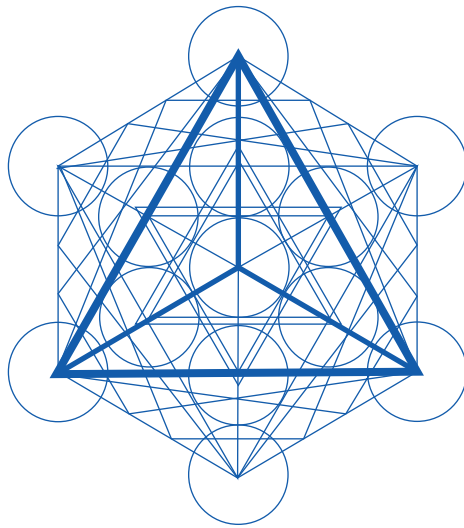


Manu Barandiaran
Scientific Director
Derio, January 27th, 2017





Organization & Management



INTRODUCTION

Fundación BCMATERIALS - BASQUE CENTER FOR MATERIALS, APPLICATIONS AND NANOSTRUCTURES - is a strategic initiative of the Basque science system, whose key drivers are Ikerbasque, the Basque Foundation for Science, and the University of the Basque Country, UPV/EHU.

BCMATERIALS was created with the objective of establishing a center for cutting-edge research under international quality standards in the area of materials science, which is one of the key priorities of European, Spanish and Basque strategic research programs.

BCMATERIALS made sense based on existing groups of excellence in materials science at the University of the Basque Country. The Center provides a number of advantages that improves the visibility, quality and productivity of these groups and boosts the scientific research in materials science in Biscay, providing an instrument for knowledge transfer of materials research to the Basque society.

The key elements of the strategy of BCMATERIALS are defined in its mission, vision and values, below:

MISSION, VISION, VALUES

Mission: Our mission is to develop high-quality interdisciplinary research in functional and active Materials with advanced Mechanical, Thermal, Electric, Magnetic and Optical properties, from basic aspects to applications, in close

collaboration with research groups in Materials Science at the University of the Basque Country (UPV/EHU) in Biscay, while high-level post-graduate training in new materials.

Vision: BCMATERIALS is committed to be an international reference center for research in the area of functional & active materials and nanomaterials.

Values: Reference values assumed by BCMATERIALS are:

1. *Commitment to the Principles of Excellence.*
2. *Transparency, effectiveness and efficiency in resource management.*
3. *Compliance with the “European Charter for Researchers”.*
4. *Quest for maximum return to the society and contribution to sustainability.*

BOARD OF TRUSTEES

The Board of Trustees of BCMATERIALS Foundation is composed by representatives of the Basque Government (BG), Ikerbasque (the Basque Foundation for Science) and the University of the Basque Country (UPV/EHU).

During 2016 the members were:

- 📦 President: Adolfo Morais (*Vice Minister of Universities and Research, BG*).
- 📦 Secretary: Jose Luis Martín (*General Secretary of the UPV/EHU*).
- 📦 Member: Amaia Esquisabel (*Director of Scientific Policy, BG*).
- 📦 Member: Fernando Plazaola (*Vice Rector of Research, UPV/EHU*).
- 📦 Member: Amaia Maseda (*Vice Rector of Promotion and Development, UPV/EHU*).
- 📦 Member: Fernando Cossío (*Director of Ikerbasque*).

ORGANIZATION BREAKDOWN STRUCTURE

The organization of BCMATERIALS for the everyday operation is described by the following OBS (see *Figure 1 on page 9*), where the Scientific Advisory Committee is composed by:

- 📦 *Maria Vallet (Universidad Complutense, Madrid).*
- 📦 *Antonio Hernando (Universidad Complutense and Instituto de Magnetismo Aplicado, Madrid).*

- 📦 *Quentin Pankhurst (University College, London).*
- 📦 *Caroline Ross (Massachusetts Institute of Technology, Cambridge, MA).*
- 📦 *Alexander Granovsky (State University of Moscow).*

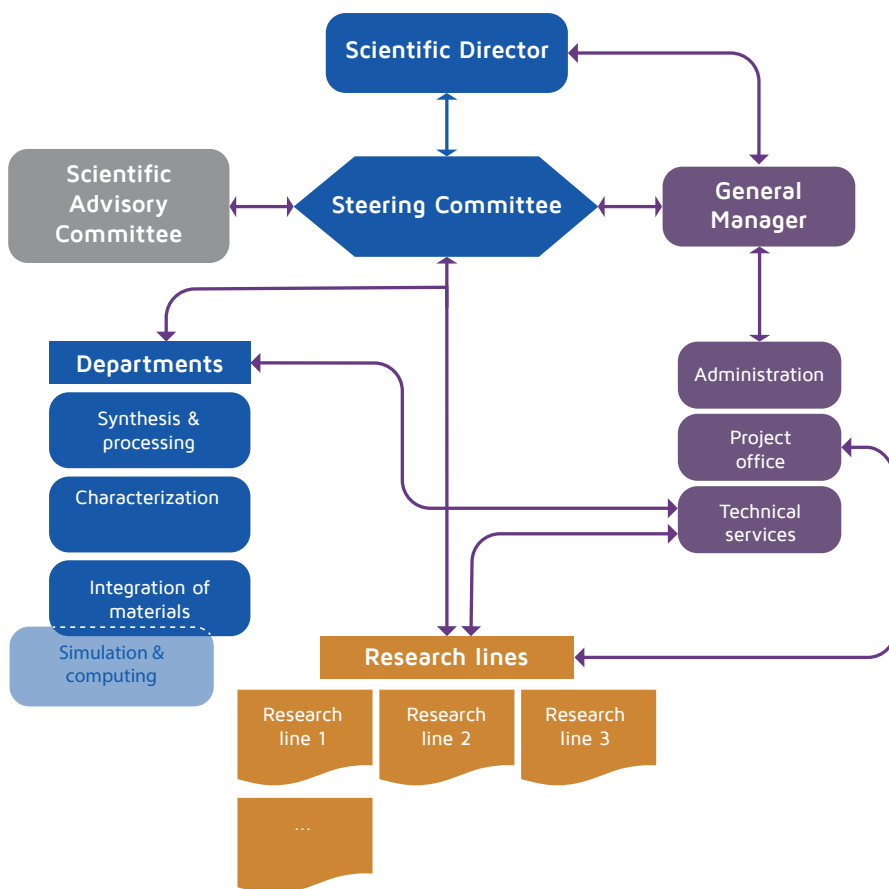
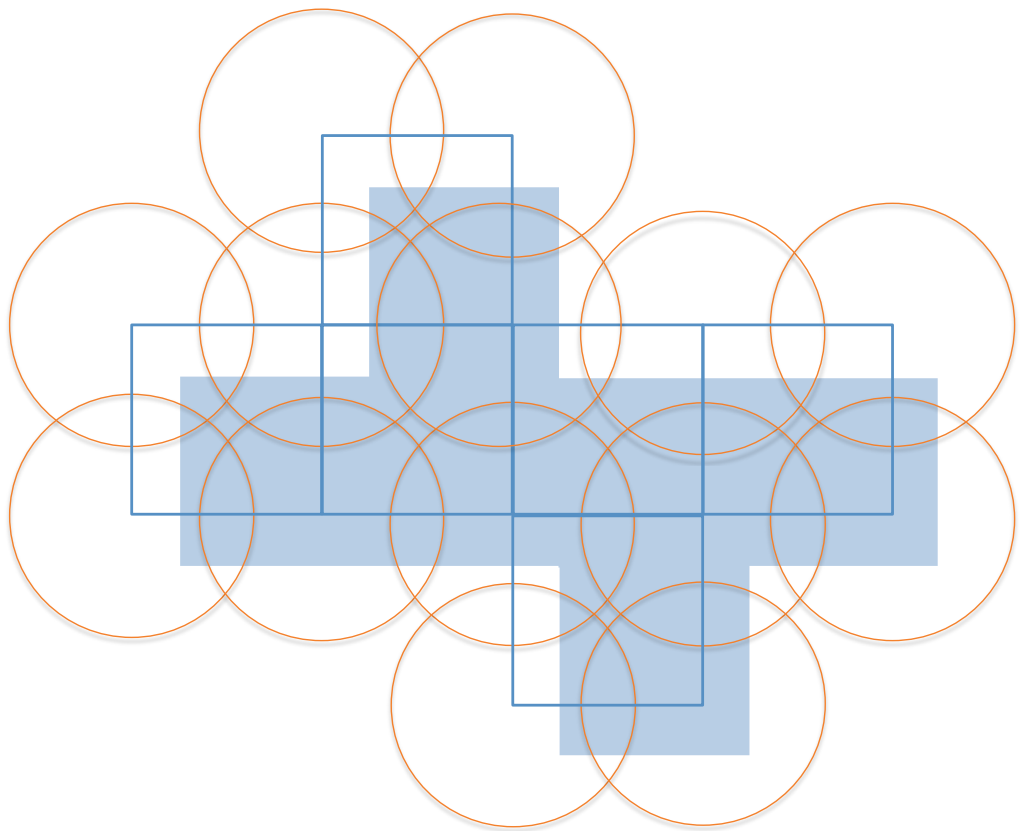


Figure 1 BCMATERIALS ORGANIZATION BREAKDOWN STRUCTURE (OBS) DIAGRAM

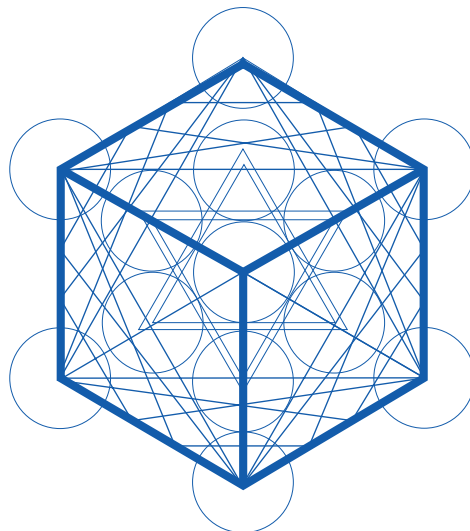
MANAGEMENT

BCMATERIALS is consolidating the Advanced Management Model (Euskalit) and continually improving and systematizing the use of scorecard indicators.

Aiming to “Succeed Through People”, BCMATERIALS follows the The Euraxess’ “HR Strategy for Researchers”. During 2016, we performed, for the first time, a gap analysis towards our excellency in HR management, which is the first step towards defining the action plans to improve and achieve the HR Logo.



People



Personnel during 2016

- 🔺 SCIENTIFIC DIRECTOR: José Manuel Barandiaran.
- 🔺 GENERAL MANAGER: Naiara Elejalde.
- 🔺 ADMINISTRATIVE STAFF: Iñaki Serna (Administration and Accounting Manager).
- 🔺 ADMINISTRATIVE STAFF: David Serrano (Management Asistant).
- 🔺 TECHNICAL STAFF: Juan Ignacio Tel (IT Manager).

Senior Researchers (Ikerbasque) (3)

- 🔺 Prof. Volodimir Chernenko.
- 🔺 Prof. Rafael Morales.
- 🔺 Pro. Senentxu Lanceros.

Academic Members (22)

- | | |
|--|-------------------------------|
| 🔺 Prof. Maribel Arriortua. | 🔺 Prof. Luis Lezama. |
| 🔺 Prof. María Luisa Fernández-Gubieda. | 🔺 Dr. Alicia Muela. |
| 🔺 Prof. José Ángel García. | 🔺 Dr. Begoña Bazán. |
| 🔺 Prof. Juan Manuel Gutiérrez. | 🔺 Dr. Alfredo García Arribas. |
| 🔺 Prof. Luis Manuel León. | 🔺 Dr. Ana García Prieto. |
| 🔺 Prof. Fernando López-Arbeloa. | 🔺 Dr. Izakun Gil del Muro. |



JOSÉ MANUEL BARANDIARÁN



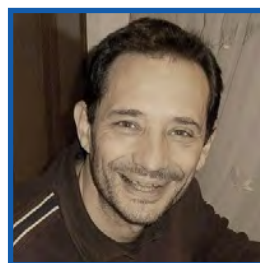
MARÍA LUISA FERNÁNDEZ-GUBIEDA



LUIS MANUEL LEÓN



MARÍA ISABEL ARRIORTUA



SENENTXU LANCEROS



VOLODIMIR CHERNENKO



MAITE INSAUSTI



JUAN MANUEL GUTIÉRREZ-ZORRILLA



ALICIA MUELA



LUIS LEZAMA



JON GUTIERREZ



ALFREDO GARCÍA-ARRIBAS



JOSÉ LUIS VILAS



BEGOÑA BAZAN



RAFAEL MORALES



AINTZANE GOÑI



JOSE ÁNGEL GARCÍA



IZASKUN GIL DE MURO



LEIRE PÉREZ



FERNANDO LÓPEZ ARBELOA



GOTZONE BARANDIKA



JAVIER ALONSO



ANA GARCÍA-PRieto



DANIEL SALAZAR



CATARINA LOPES



EDUARDO FERNÁNDEZ



ROBERTO FERNÁNDEZ



OIHANE KISTIÑE ARRIORTUA



CRISTINA ECHEVARRIA BONET



ALBERTO MACEIRAS MARTÍNEZ

(Follows from previous list)

- ⬠ Dr. Aintzane Goñi.
- ⬠ Dr. Jon Gutiérrez.
- ⬠ Dr. José S. Garitaonandia.
- ⬠ Dr. José Luis Vilas.
- ⬠ Dr. Maite Insausti.
- ⬠ Dr. Galina Kurlyandskaya.
- ⬠ Dr. Leyre Perez.
- ⬠ Dr. Alazne Peña.
- ⬠ Dr. Esperanza Diaz.
- ⬠ Dr. Gotzone Barandika.

Post docs from BCMaterials (15)

- ⬠ Dr. Javier Alonso.
- ⬠ Dr. Roberto Fernández.
- ⬠ Dr. Eduardo Fernández.
- ⬠ Dr. Daniel Salazar.
- ⬠ Dr. Maria San Sebastian.
- ⬠ Dr. Catarina Lopes.
- ⬠ Dr. Cristina Echevarria.
- ⬠ Dr. Rajasekhar Madugundo.
- ⬠ Dr. Ikerne Etxebarria.
- ⬠ Dr. Alberto Maceiras.
- ⬠ Dr. Oihane Kistiñe Arriortua.
- ⬠ Dr. Beñat Artetxe.
- ⬠ Dr. Santiago Reinoso.
- ⬠ Dr. Iván Rodríguez Aseguinolaza.
- ⬠ Dr. Pedro Costa.

Other post docs (5)

- ⬠ Dr. Ana Abad.
- ⬠ Dr. Pablo Alonso.
- ⬠ Dr. Jorge Feuchwanger.
- ⬠ Dr. José Manuel Laza.
- ⬠ Dr. Verónica Palomares.

Pre docs from BCMaterials (9)

- ⬠ MSc. Nuria Garcia.
- ⬠ MSc. Maite Goiriena.
- ⬠ MSc. Xabier Lasheras.
- ⬠ MSc. Jagoba Martin.
- ⬠ MSc. Ariane Sagasti.
- ⬠ MSc. Anabel Pérez-Checa.
- ⬠ MSc. Andrés Martín-Cid.
- ⬠ MSc. Irati Rodrigo.
- ⬠ MSc. Ana Maria Schönhöbel.

Other pre docs (5)

- ⬠ MSc. Iraultza Unzueta.
- ⬠ MSc. Laura Bravo.
- ⬠ MSc. Andoni Lasheras.
- ⬠ MSc. Nastasia Soriano.
- ⬠ MSc. Beatriz Mora.



IKERNE ETXEBARRIA ZUBIZARRETA



RAJASEKHAR MADUGUNDO



JAGOBA MARTIN-CABALLERO



XABIER LASHERAS



ARIANE SAGASTI



IRAULTZA UNZUETA



MAITE GOIRIENA-GOIKOETXEA



ANABEL PÉREZ-CHECA



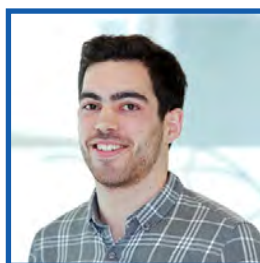
ANDRÉS MARTÍN CID



IRATI RODRIGO ARRIZABALAGA



ANA MARIA SCHÖNHÖBEL



ANTTON IBARBIA



NAROA IGLESIAS FERNÁNDEZ



MÓNICA GÓMEZ



JON OSTOLAZA



NAIARA ELEJALDE



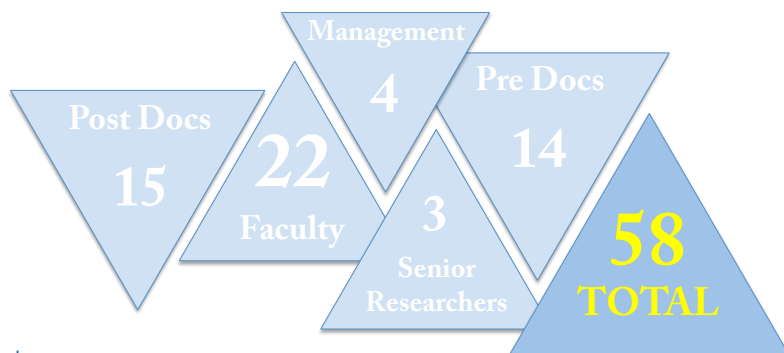
IÑAKI SERNA



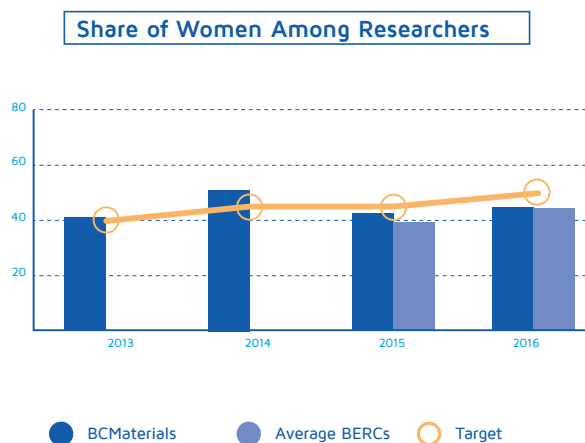
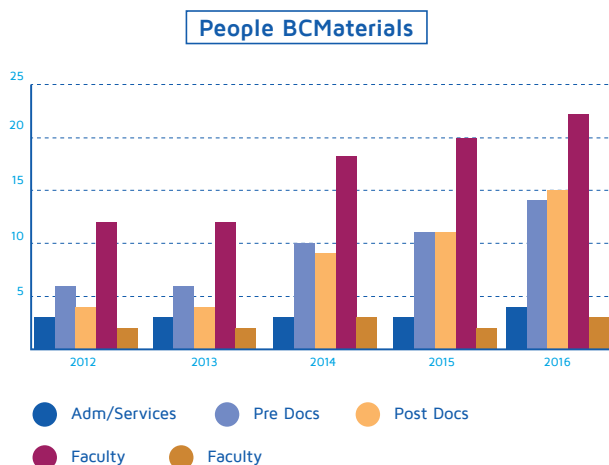
JUAN IGNACIO TEL



DAVID SERRANO

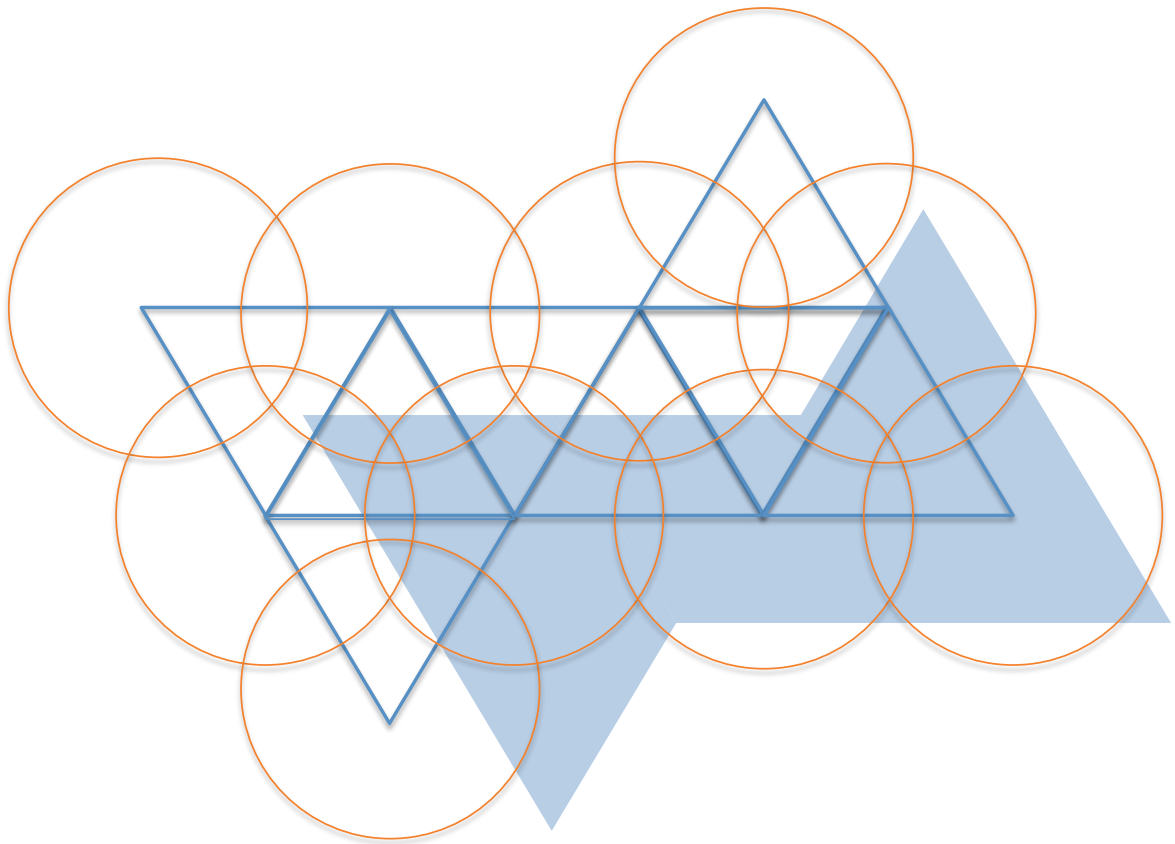


Personnel at
31st December 2016

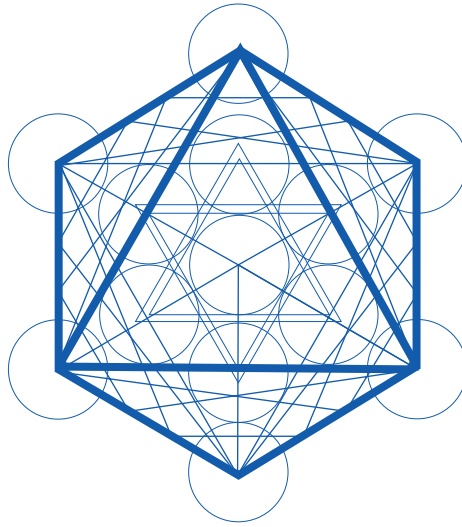


Self Funded & Visitors (7)

- 📦 Prof. George Hadjipanayis, (*University of Delaware, USA*).
- 📦 Prof. V.A. Lvov, (*Institute of Magnetism, Kiev, Ukraine*), 1 month, July 2016.
- 📦 Prof. Hariharan Srikanth, (*University of South Florida (USA)*).
- 📦 MSc. Netzahualpille Hernández, (*PhD Student, (Universidad Autónoma de Nuevo León, México)*).
- 📦 MSc. Christian Omar Aguilar, (*PhD Student, (Instituto Potosino de Investigación, México)*).
- 📦 Eugen Seif, (*Master Student, (Erasmus+, Technical University of Dortmund)*).
- 📦 José Henrique Fernandes Pimentel, (*Master Student (Erasmus+, University of Beira Interior)*).
- 📦 João António Mesquita Barbosa, (*Master Student (Erasmus+, Universidad do Minho)*).
- 📦 Luca Copparo, (*Erasmus+ Student, Università degli Studio di Roma "Tor Vergata"*).
- 📦 Simone Eizagirre Barker, (*Summer Internship, (Erasmus+, Edinburgh University)*).



Research



NEW EQUIPMENT

The following equipment has been acquired during 2016 (see *Figure 2*):

- ❖ *DIMATRIX DMVP-2831 2D ink printer for the line of Materials for sensors.*
- ❖ *SPEX SamplePrep 8000D Dual Mixer/Mill for mechanical alloying and nanomilling.*
- ❖ *ONA prima E250, second hand spark cutter, for cutting and shaping metals and alloys.*



Figure 2 New equipment acquired during 2016: DIMATRIX DMVP-2831 2D ink printer for line of Materials for sensors (top left); SPEX SamplePrep 8000D Dual Mixer/Mill for mechanical alloying and nanomilling (top right); ONA prima E250, second hand spark cutter, for cutting and shaping metals and alloys (down).



RESEARCH LINES

ACTIVE (SMART) MATERIALS

Magnetic Shape Memory Alloys (MSMA)

Magnetocaloric/elasticocaloric effects have been studied in $\text{Ni}_{50-x}\text{Fe}_x\text{Mn}_{40}\text{Sn}_{10}$ ($x = 0, 2, 4, 6, 8$ at.%) and $\text{Ni}_{55}\text{Fe}_{16}\text{Ga}_{29}$ and $\text{Ni}_{50}\text{Mn}_{40}\text{Sn}_{10}$ melt-spun ribbons. Inverse elastocaloric effect was observed for the first time in these alloys (SCRIPTA MAT.)

Volume magnetostrain near MT has been determined in $\text{Ni}_{42}\text{Co}_8\text{Mn}_{39}\text{Sn}_{11}$ displaying a non-linear phase diagram ‘transformation temperature versus field’. A transformation volume effect of about 0.45% has been estimated at MT (ACTAMAT.)

The influence of magnetic field on the superelastic curves in bulk $\text{Mn}_{49}\text{Ni}_{42}\text{Sn}_9$ (at.%) and $\text{Mn}_{49}\text{Ni}_{39}\text{Sn}_9\text{Fe}_3$ (at.%) are obtained for the first time. (J.PHYS.:D.)

Tensile stress-temperature phase diagram for Ni-MN-GA (see Figure 3 on page 19) alloy has been determined for the first time. (APPL.PHYS. LETT.)

Epitaxial thin films of MSMA have been produced and studied to get low hysteresis in the martensitic transformation (unpublished). A method of combinatorial synthesis has been developed to explore large composition ranges in a single sputtering deposition. The Magnetic structure of the “non magnetic” martensite has been studied by Ferromagnetic Resonance (FMR), and an antiferromagnetic coupling between variants has been proposed to explain the experiments (PHYS REV B 2017.)

Nanopillars sculpted into a single crystal of NiMNGA were investigated for disclosing the appearance of Shape Memory in submicron structures. Positive results have been obtained (see Figure 4 on page 19.)

Selected Results

Appl. Phys. Lett. 108, 071903 (2016). *J. Phys. D: Appl. Phys.* 49 (2016) 205002,
Phys Rev B 95, 024422 (2017).

Smart Polymers

Shape memory polymers (SMP): Different systems have been developed based on a commercial polycyclooctene, a semicrystalline polymer which presents thermally-induced shape memory effect when it is crosslinked. Once the effectiveness of this polymer crosslinked with dicumyl peroxide has been demonstrated, gamma radiation crosslinking has been tested as an alternative,

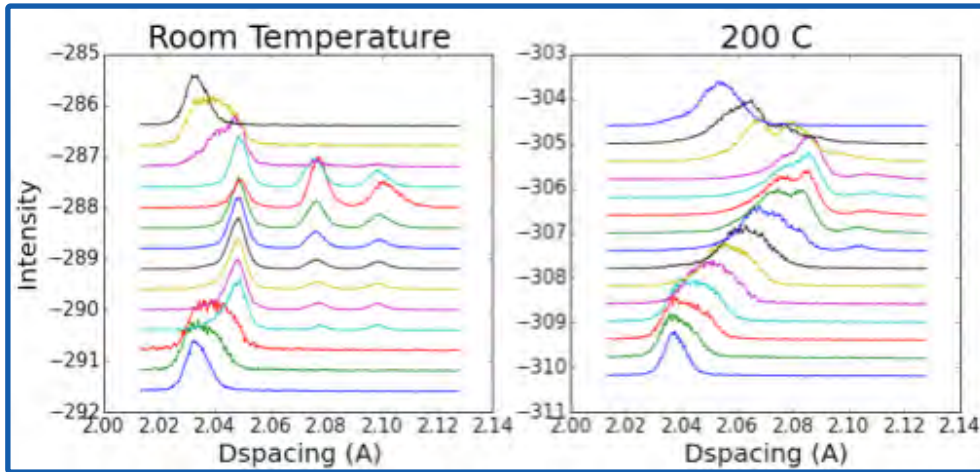


Figure 3 Neutron diffraction patterns of Ni₅₀Fe₁₉Co₄Ga₂₇ single crystal under compression along the <001> axis. The stresses were 14 - 270 - 15 MPa (left) and 15 - 800 - 270 MPa (right). At RT the Austenite-Martensite transformation is clear, while at 200°C the austenite continuously deforms into the postcritical state without hysteresis.

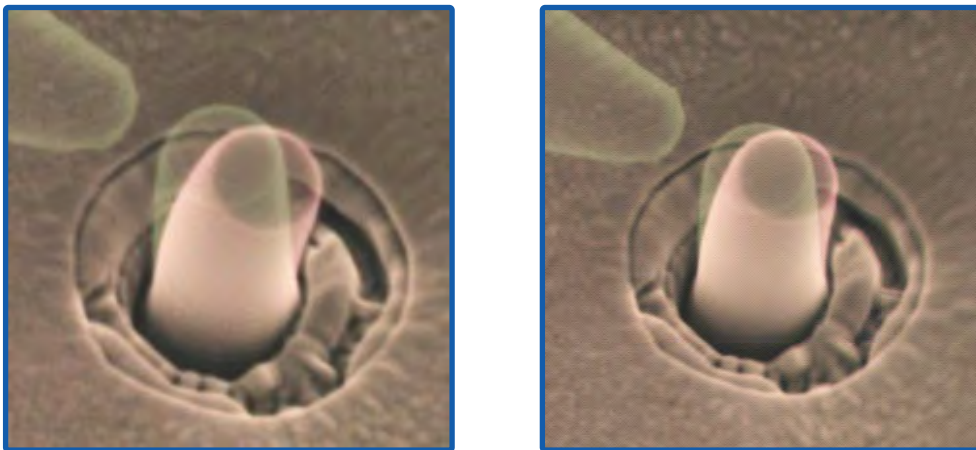


Figure 4 Strain recovery on heating (Shape Memory Effect) in NiMnGa nanopillars. Left, deformation at 10°C. Right, recovery at 50°C (Collaboration with Nanogune).

obtaining non-cytotoxic materials. In this way, after characterizing the thermo-mechanical properties, the shape memory behaviour has been analysed, as well as its relationship with the free volume. Additionally, polymeric blends with ionomers (Surlyn) have been prepared, trying to obtain materials that retain the shape memory effect but with also self-healing capacity, thus to extend the useful life of the materials (see *Figure 5 on page 21.*)

Active polyelectrolyte multilayers: Polyelectrolyte multilayers (PEMs) with enhanced antibacterial properties have been built up onto chemically modified commercial polymers, based on the layer by layer (LbL) deposition of carbohydrates. The LbL assembly has been successfully monitored by TEM microscopy, surface zeta-potential, contact angle measurements, absorption spectroscopy and confocal fluorescent microscopy. Beside, multilayer assembly has shown that remains stable during the decisive period for bacterial proliferation. Successfully antibacterial activity has been obtained against *E. coli* reducing the bacteria colony to practically zero, making these materials potential candidates for clinical applications.

Selected Results

Polymer 109 (2017) 66-70; *Carbohydrate Polymers*, 143 (2016) 35-43; *Polymer International*, 65 (2016), 915-920

NANOSTRUCTURED MATERIALS

Magnetic Nanoparticles for biomedical applications

Ferrite Nanoparticles: In order to present an adequate response for controlled drug delivery, magnetic resonance imaging, magnetic fluid hyperthermia, etc., magnetic nanoparticles (MNP) must present homogenous structure, low polydispersity and high surface area for adsorption of diagnostic agents (see *Figure 6 on page 21*). In collaboration with Dr. J. Echevarría (Galdakao Hospital, Spain), Dr. Jesus Martinez de la Fuente (INA, Spain), Dr. Martin J. D Cliff (University of Swansea, Wales and Institute of Fribourg, Switzerland), Fernando Martínez (IKERLAN, Spain), Garbiñe Olabarria (GAIKER, Spain), Unai Eletxigerra and Santos Merino (TEKNIKER, Spain) we carried out an optimization of the synthesis methods to obtain Fe_3O_4 and $\text{M}_x\text{Fe}_{3-x}\text{O}_4$ ($\text{M} = \text{Mn, Ni}$) nanoparticles stabilized by organic ligands and polymers (chitosan, fibroin, etc.) and functionalized with RGD peptides, in the following steps:

1. *Chemical synthesis of MNP (thermal decomposition, sol-gel, etc.)*
2. *Physico-chemical, structural and magnetic characterization of MNPs.*
3. *Study of biocompatibility of the nanoparticles.*
4. *Hyperthermia therapy studies for liver metastasis of colon-rectum cancer.*

Selected Results

Inorganica Chimica Acta, 452 (2016) 258-267. *Beilstein Journal of Nanotechnology*, 7 (2016) 1532-1542. *Journal of Nanoscience and Nanotechnology* 16(4) (2016) 4071-4079. *Journal of Physical Chemistry C* 120 (2016) 3492-3500.

Magnetosomes: Biomedical applications of magnetic nanoparticles, as cancer treatment, depend a great deal on the properties of the magnetic particles, a proper functionalization, and standardization (see *Figure 7 on page 21*). In collaboration with Prof. L. Fernández Barquín (University of Cantabria, Spain); D. Alba (ISIS, UK); D. Faivre (Max Planck Institute of Colloids and Interfaces, Germany); Davide Peddis (Istituto di Struttura della Materia – CNR, Italy); D. Gil (CIC Biogune), we have been working with magnetosomes (nanoparticles biosynthesized by magnetotactic bacteria), in:

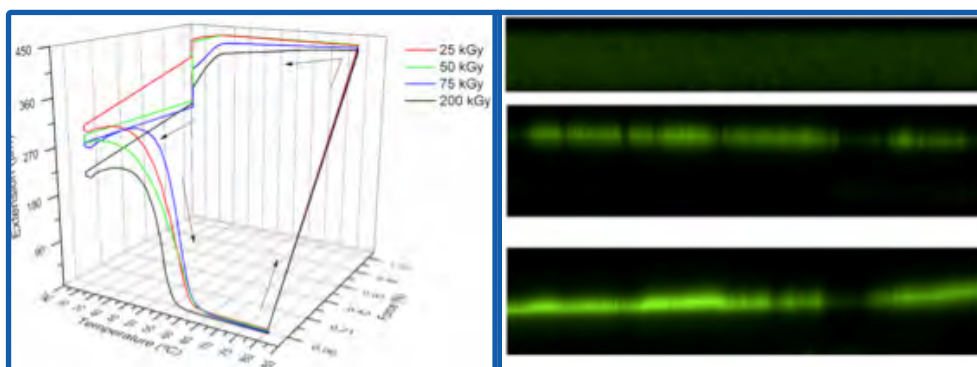


Figure 5 Left: Shape memory of PCO cross-linked by γ radiation. Right: Carbohydrates embedded into commercial polymers.

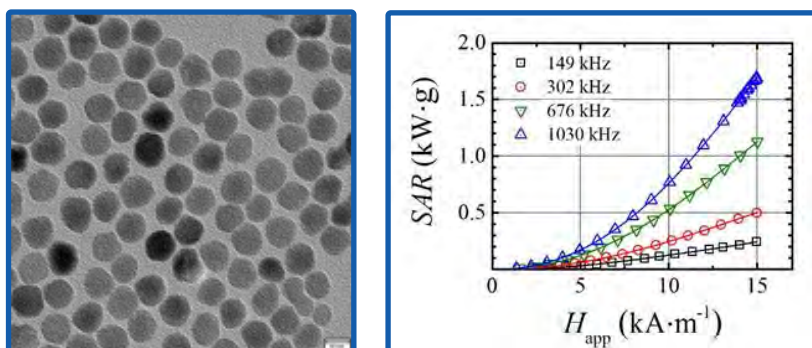


Figure 6 TEM micrograph of 12 nm Ni ferrites nanoparticles (left), and SAR values at different field frequencies for the 19 nm Fe₃O₄@PMAO_RGD water dispersed nanoparticles (right).

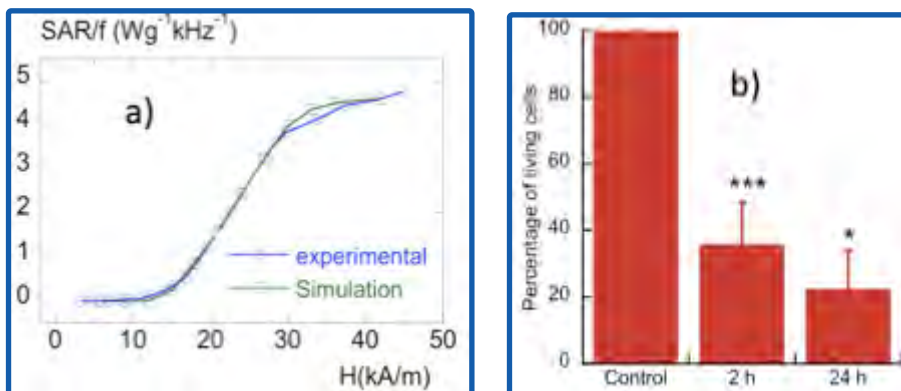


Figure 7 a) Experimental and theoretical Specific Absorption Rate normalized by the frequency, SAR/f, for magnetosomes dispersed on agarose gel b) Effect of hyperthermia treatment on macrophages ($H = 24$ kA/m, $f = 149$ kHz, time = 30 min).

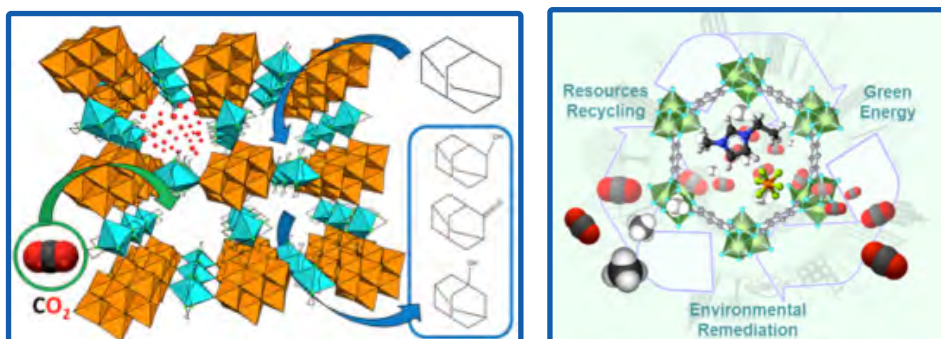


Figure 8 left: The first decavanadate-based nanoporous hybrid, [Cu(cyclam)u(cyclam)]₂(V₁₀O₂₈)·10H₂O. Right: Nanoencapsulation of ionic liquids in porous MOF.

1. *The role of the ferritin protein in the biomineralization process of magnetosomes.*
2. *Determination of the morphology and assembly of the magnetosomes.*
3. *Determination of the Optimal Parameters for Hyperthermia treatment of magnetosomes: Theoretical and Experimental Approach*

Selected Results

Nanoscale 8 (2016) 1088 ; J. Phys. Chem. C 120 (2016) 24437-24448; Faraday Discussion 2016, 191, 177-188; Applied Physics Letters 108, 063109 (2016.)

Nanoporous materials

POM: The grafting of transition metal complexes of macrocyclic polyamines to polyoxometalate (POM) clusters have resulted in 3D open hybrid frameworks with interesting functionalities such as selective adsorption of gases and remarkable activity as heterogeneous catalyst (see Figure 8 on page 21.) These compounds have also shown the ability to respond to external stimuli, in such a way that they can undergo thermally triggered single-crystal-to-single-crystal structural transformations promoted by reversible dehydration processes. Taking a step forward, smart polymer/polyoxometalate hybrid composites were prepared by drop casting of POM solutions into different polystyrene-poly(acrylic acid) surfaces, which were fully characterized by Low Energy Ion Scattering (LIES) and Time-of-Flight Secondary Ion Mass Spectrometry (ToF-SIMS) advanced surface analysis techniques.

MOF: The design and/or functionalization of porous coordination polymers is the base stone of the SENMOF research line. Nanoencapsulation of ionic liquids in porous metal organic frameworks represents a new research strategy of BCMaterials that will influence the development of new medium temperature protonic conductors, specific molecular sieves for gas separations, and advanced filter for pollutant capture.

Selected Results

Chem. Eur. J. 2016, 22, 4616; Inorg. Chem. 2016, 55, 4970; Inorganics, 2016, 96, 94.



Figure 9 (Right) Cover of Nanotechnology J, volume 27, (17), 29 April 2016, showing the Permalloy nanodiscs.

Figure 10 (Left) Cover page of the September 2016 edition of "Journal of Polymer Science, Polymer Physics", "From Superhydrophobic- to Superhydrophilic-Patterned Poly(vinylidene fluoride-co-chlorotrifluoroethylene) Architectures as a Novel Platform for Biotechnological Applications" by Senentxu Lanceros et al.

Nanostructured thin films and multilayers

The fabrication of nanostructures in the shape of discs for biomedical applications, which is the theme of the PhD Thesis of Maite Goirienea, has achieved two important milestones: first, we have been able to develop a simple procedure for releasing the nanostructures from the silicon substrate where they are fabricated. This has allowed starting experimenting with cell-intake of the discs. Second, in collaboration with K. Guslienko a new theory of the magnetic vortex behavior in the nanoscale has been developed, which nicely fits with the experimental results. Additionally, firsts evaluations of the magneto-mechanical actuation of the nanodiscs in solution have begun.

Selected Results

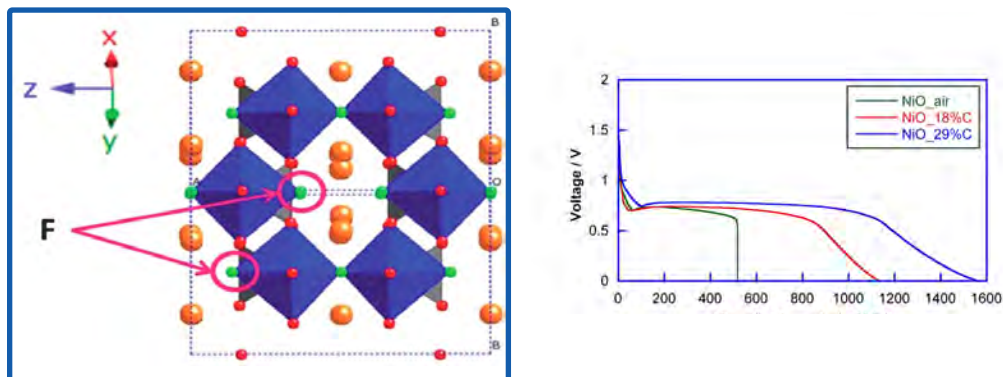
Nanotechnology 27 (2016) 175302, (see the cover of the issue, Figure 9 on page 23.)

ADVANCED FUNCTIONAL MATERIALS

For Energy

Batteries: Batteries are one of the most promising systems to obtain a steady energy flux coming from renewable energy sources. For this purpose, one of the main technologies under development is Na-ion batteries, but it is crucial to research into new materials as electrodes and electrolytes in order to make these devices commercially viable. Among the materials examined as possible cathodes, sodium vanadium fluorophosphate family shows high voltage, high capacity and long cycle-life. We have developed a new technique to obtain these compounds at low temperature using microwave-assisted hydrothermal synthesis. Compared to conventional solvothermal methods faster reaction times have been employed for the synthesis of the same products and better electrochemical results have been obtained.

Figure 11 Left: Structure of $\text{Na}_3(\text{VO})_2(\text{PO}_4)_2\text{F}$. Right: First discharge curves for NiO/C composites.



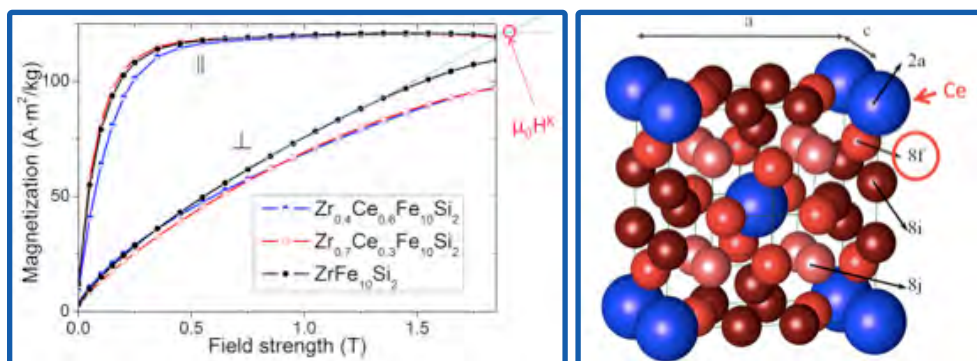
Regarding the anodes, even if graphite meets low cost, high abundance and outstanding electrochemical performance, denser and higher capacity materials are needed to fulfil the requirements for large-scale applications. With this aim, NiO/C composites have been prepared by a freeze-drying method. The reduction of particle size with increasing of carbon amount gives rise to materials with high specific capacity and coulombic efficiency (see Figure 11 on page 24.)

Selected Results

Journal of Materials Chemistry A (2017) in press. ChemElectroChem (2017) in press.

Permanent Magnets are essential components of clean energy devices, as motors for electric vehicles or generators for wind mills. Our efforts in Permanent Magnets (PM) materials have focused in developing large coercivity in Nd lean $\text{Nd}_2\text{Fe}_{14}\text{B}$ compounds by infiltrating nanostructured alloys with a eutectic PR-CU alloy. We get up to 2.44 Tesla coercivity in $\text{Nd}_{10}\text{Fe}_{84}\text{B}_6$. We also work in developing new Rare Earth lean compounds with ThMn_{12} tetragonal structure and high magnetic anisotropy. In $(\text{Zr}_{1-x}\text{Ce}_x)\text{Fe}_{10}\text{Si}_2$ compounds, for instance, Ce substitution causes an increase of the lattice parameters and gives rise to an increment of the quadrupole splitting of the neighbor 8f Fe atoms, which increases the anisotropy field (up to 2.5 Tesla for $x=0.6$), (see Figure 12 on page 24.)

Figure 12 Left: Magnetization of field-oriented powders of $(\text{Zr}_{1-x}\text{Ce}_x)\text{Fe}_{10}\text{Si}_2$ to obtain the anisotropy field (HK). Right: Structure of the compounds showing the Ce substitution site (2a) and the deformed Fe site (8j).



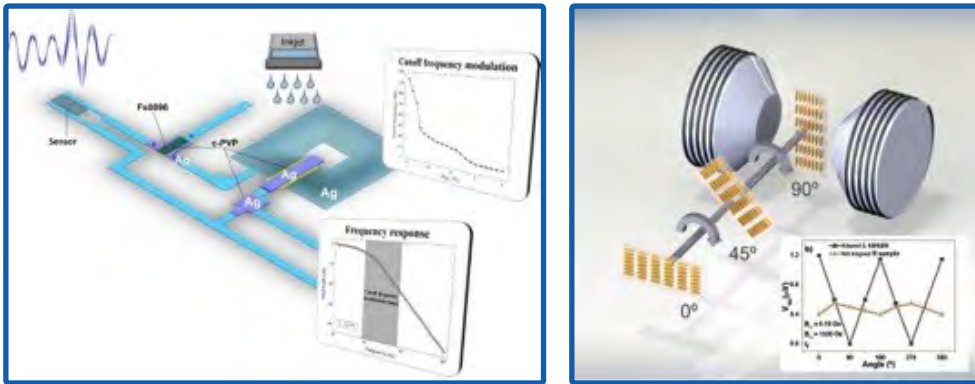


Figure 13 Left: Printed sensor. Right: Magnetolectric sensor performance.

Selected Results:

Journal of Power Sources, 334 (2016) 65-77. *Journal of Physics D: Applied Physics*, 50 (2016) 015305.

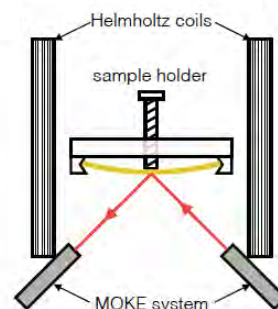
For Sensors

Piezoresistive, piezoelectric and magnetolectric: Smart and functional materials, including piezoresistive, piezoelectric and magnetolectric materials, among others, have been developed and optimized. Both the figures of merit and the processability of the materials have been improved through the investigation of their physico-chemical properties. Finally, the materials have been implemented into functional applications in the areas of sensors and actuators, but also for biomedical and energy storage applications.

Regarding magnetolectric laminates, we study Metallic glass/PVDF/Metallic glass composites and we have analyzed the dependence of the induced ME signal with the size, that decreases as the length of the laminate decreases. It has been concluded that the decrease in the magnetolectric response arises mainly from that demagnetizing effect, and an intrinsic ME coefficient has been defined to deal with this effect (see Figure 13 on page 25.)

Magnetoimpedance sensors: Permalloy thin-film structures were deposited onto flexible substrates as deformation sensors. An specially designed sample holder has been designed for a simultaneous measurement of the hysteresis loop and the magnetoimpedance curve, while putting the sample through controllable stresses. Such structures present an excellent stress-impedance behavior as promising strain gages with enhanced sensitivity (gage factor of 60 = thirty times large than conventional resistive strain gages). Additionally, we found that the position of the maxima of the MI curves allows accurately determining the magnetostriction coefficient of the sample (see Figure 14 on page 26.)

Figure 14 Experimental set-up for the simultaneous measurement of magneto-impedance, stress-impedance and MOKE hysteresis loop: Left: View of the actual sample-holder. Right: Scheme of the operation.



Selected Results

Organic Electronics, 38 (2016) 205-212. *ACS Applied Materials and Interfaces* 8 (6) (2016) 4199-4207. *Applied Physics Letters*, 108 (2016) 222903, *IEEE Transactions on Mag.* (2017) in press.

AGREEMENTS WITH SPANISH AND FOREIGN RESEARCH INSTITUTIONS

Some important agreements during 2016 were:

- ❏ *Material Physics Laboratory, Lappeenranta University of Technology, Finland.*
- ❏ *Isfahan University of Technology, Iran.*

Figure 15 NOVAMAG/INAPEM kickoff meeting, Leioa, March 2016



NEW PROJECTS STARTED DURING 2016

NOVAMAG

- 📦 Call: H2020-NMBP23-2015-two stage.
 - 📦 Topic: NMP 23 – 2015: Novel materials by design for substituting critical materials.
 - 📦 Type of action: RIA.
 - 📦 BCMATERIALS
 - 📦 Partners: UPP (SE), DUK (AT), ICCRAM-UBU (ES), TU (JP), TUDA (DE), UD (USA), NCRSD (GR), IWKS (DE), CEA-LETI (FR), TECHNION (IL), MBN (IT), ARELEC (FR), Fiat (IT), VAC (DE).
-

INAPEM

- 📦 Call: H2020-MSCA-RISE-2015.
 - 📦 Topic: MSCA-RISE-2015.
 - 📦 Type of action: RIA.
 - 📦 Proposal acronym: INAPEM.
 - 📦 Partners: NCRSD (GR), TUDA (DE), UPV/EHU (ES), AMEN (GR), UD (USA), UV (CO).
-

Magnetic biosensors based on smart surfaces

- 📦 Call: H2020-MSCA-IF-2015.
 - 📦 Topic: MSCA-IF-2015-EF.
 - 📦 Type of Action: MSCA-IF-EF-ST.
 - 📦 Proposal Acronym: MABIOSS.
-

A new generation of electroactive materials and bioreactors for muscle tissue engineering muscle

- 📦 Call: MINECO RETOS.
 - 📦 Reference: MAT2016-76039-C4-3-R.
 - 📦 Proposal Acronym: ELECTROKICKING.
-

Materiales para el flujo circular de la energía redes cristalográficas basadas en nodos metálicos

- ❏ *Call: MINECO RETOS.*
- ❏ *Reference: MAT2016-76739-R.*
- ❏ *Proposal Acronym: MATENCRIS.*

Microtecnologías como motor de desarrollo de sistemas ciberfísicos avanzados involucrados en la fábrica inteligente

- ❏ *Call: ELKARTEK.*
- ❏ *Reference: KK-2016/00030.*
- ❏ *Proposal Acronym: MICRO4FAB.*

Nuevos materiales para la estrategia de especialización inteligente en Fabricación Avanzada

- ❏ *Call: ELKARTEK.*
- ❏ *Reference: KK-2016/00097.*
- ❏ *Proposal Acronym: ACTIMAT2016.*

Soluciones basadas en líquidos iónicos para diversificar las oportunidades de la industria vasca

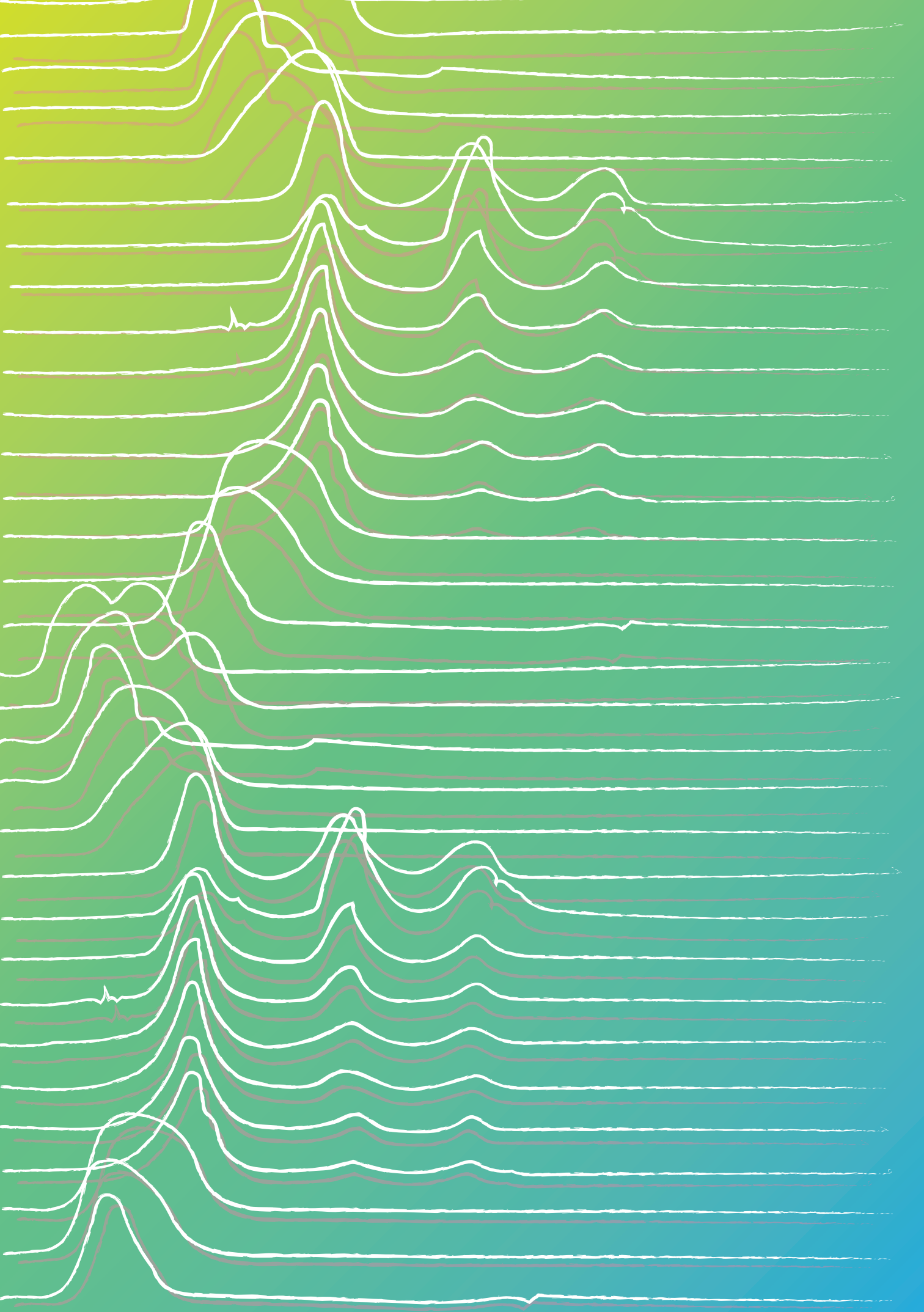
- ❏ *Call: ELKARTEK.*
- ❏ *Reference: KK-2016/00095.*
- ❏ *Proposal Acronym: LISOL.*

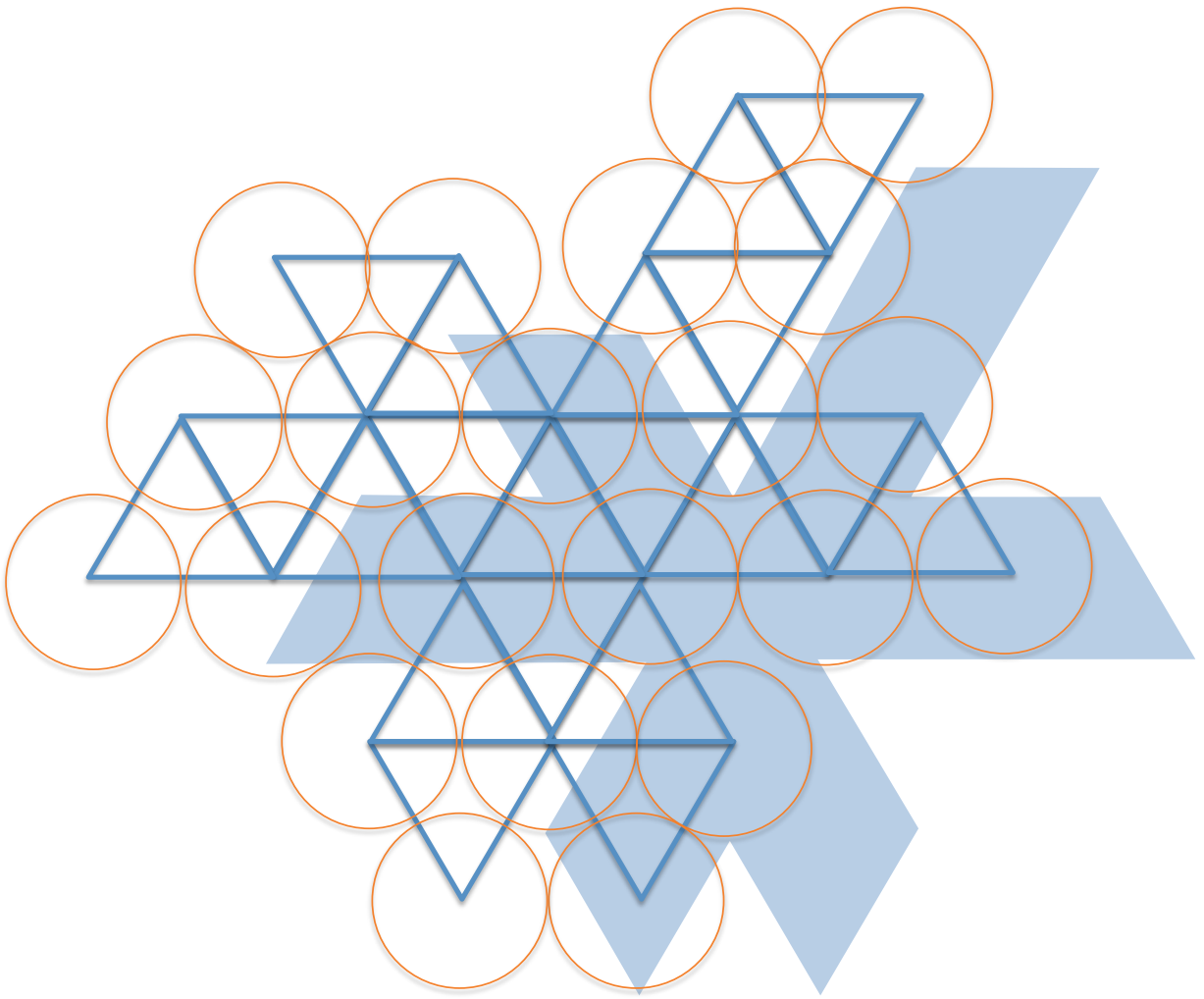
Desarrollo de aleaciones ferromagnéticas con memoria de forma a alta temperatura con base Ni-Mn-Ga

- ❏ *Call: PRE-DOC G.V.*
- ❏ *Proposal Acronym: HighTs.*

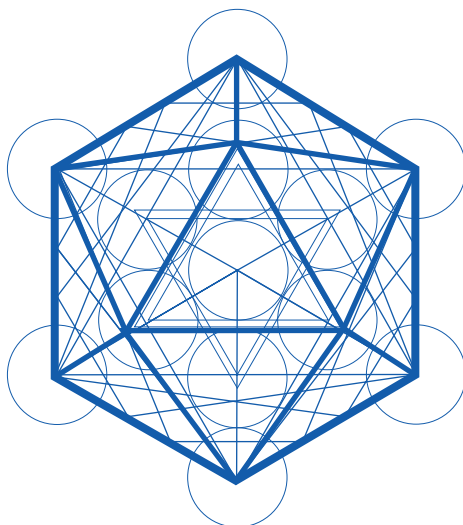
Estudio de la viabilidad en la industrialización de la integración de un sensor piezorresistivo en una tuerca de husillo

- ❏ *Project with KORTA (private company).*





Dissemination of Results



ORGANISATION OF CONFERENCES

NEW MATERIALS FOR A BETTER LIFE!

The 5th edition of the Workshop on “NEW MATERIALS FOR A BETTER LIFE!” took place on November 18th, 2016 at the “Paraninfo” of the Faculty of Science & Technology, UPV/EHU, Leioa (see *Figure 16 on page 35.*) This year it was organized by Prof. Senentxu Lanceros-Mendez and was devoted to “Smart and Functional Polymer Based Materials for a Better life”. The program covered a large range of applications, which were presented by first order speakers from all around the world, including a final round table.

Program of New Materials for a Better Life!

Opening:

- José Manuel Barandiaran (Director, BCMATERIALS).
- Arantxa Tapia (Minister of Economic Development and Competitiveness, Basque Government).
- Amaia Esquisabel (Director of Science Policy, Basque Government).
- Esther Domínguez (Dean of the Faculty of Science and Technology, UPV/EHU).
- Adolfo Morais (Vice-Minister of Universities and Research, Basque Government).

Lectures:

- Senentxu Lanceros-Mendez (BCMaterials): “Smart and Functional Polymer Based Materials for a Better life!”.
- Enrico Sowade (TUChemitz, Germany): “Printing of functional materials for smart applications”.
- Nieves Murillo Hernandez (Tecnalia): “Nanofibras luminiscentes: Uso y aplicaciones en biosensores nanofónicos para amenazas NBQ”.
- Vanessa Cardoso (UMinho, Portugal): “Microfluidic systems for biomedical applications”.
- José Luís Gómez Ribelles (UPValencia): “Polymeric Biomaterials in Tissue Engineering”.
- Sohini Kar-Narayan (University Cambridge, UK): “Polymer-based piezoelectric nanomaterials for energy harvesting”.
- José Luís Vilas (UPV/BCM): “Shape memory and self-healing polymers”.
- Anna Llordés (EnergiGune): “Combining ceramic and polymer electrolytes for better and safer Li-ion batteries”.
- David Mecerreyes (Polymat): “Sustainable poly(ionic liquid)s for environmental applications”.

Round table with speakers and conclusions.

Symposium “Magnetic shape memory, magnetoelastic and multifunctional materials” at the 8th Joint European Magnetic Symposia (JEMS2016), Glasgow, UK, August 21-26, 2016. Organizer and chair: VA Chernenko.

“International Conference on Ferromagnetic shape memory alloys” (ICFSMA 2016), Sendai, Japan.

Program Committee Member: V.A. Chernenko.

“CIMTEC 2016”, Perugia, Italy

Program Committee Member: V.A. Chernenko.

“20th International Conference on Solid Compounds of Transition Elements” (SCTE), Zaragoza, April 11-15, 2016

Member of the Program Committee and chair of session, J. M. Barandiaran

“VIII REUNIÓN de la Sociedad Española de Técnicas Neutrónicas” (SETN), Bilbao , 27-29 Junio.

Chair of the Organizing Committee: J. M. Barandiaran.

Members of the Organizing Committee: M. I. Arriortua, J. Gutierrez (treasurer) J. S. Garitaonandia.

“IV Meeting of the Italian and Spanish Crystallographic Associations”, Tenerife, June 2016.

Member of the Scientific Committee: Begoña Bazán.

“17ª Reunión Bienal del Grupo Especializado de Química Inorgánica y 11ª del Grupo Especializado de Química del Estado Sólido de la RSEQ”, Málaga, June 2016, Member of the Scientific Committee: Luis Lezama.

TALKS AND SEMINARS

INVITED SPEAKERS AT BCMATERIALS

- ❏ Prof. Antonio Hernando (Universidad Complutense & Director del Instituto de Magnetismo Aplicado, Madrid) “Onset of room temperature ferromagnetism in pure metals by plastic deformation”, 8 April 2016.
- ❏ Prof. Tae-Sik Yoon (Myongji University, Republic of Korea), “Nanoparticles and their assembly”, 22 April 2016.
- ❏ Dr. Vasudeva Siruguri (UGC-DAE Consortium for Scientific Research, Mumbai, India) “Magnetic field induced transitions and the magnetic glass state”, 25 June 2016.
- ❏ Prof Victor L'vov (Institute of Magnetism, and Taras Shevchenko National University, Kiev, Ukraine) “Heat capacity of metamagnetic shape memory alloys”, 14 July 2016.
- ❏ Dr. Teruo Ono (Kyoto University, Japan) Distinguish Lecturer of the IEEE Magnetic Society, “Spin Dynamics in Inhomogeneously Magnetized Systems” 7 Septiembre 2016.
- ❏ Dr. Carlos Martí-Gastaldo (Instituto de Ciencias Moleculares, Universidad de Valencia), “Peptide Metal-Organic Frameworks by sidechain engineering”, 27 September 2016.

- ❖ *Dr. María del Puerto Morales (Departamento de Biomateriales y Materiales Bioinspirados. ICCM-CSIC, Madrid) “Perspectivas del uso de nanopartículas magnéticas en el diagnóstico y tratamiento del cáncer”, 21 October 2016.*
- ❖ *Prof. Cristina Gómez Polo (Departamento de Física, Universidad Pública de Navarra) “Photocatalytic and sensing properties of TiO₂ nanostructures”, 21 October 2016.*
- ❖ *Dr. Josep Fontcuberta (Institut de Ciència de Materials de Barcelona) Distinguished Lecturer of the IEEE Magnetics Society, “The Magnetism of Oxides”, 28 October 2016.*

OTHER TALKS BY BCMATERIALS RESEARCHERS

15/07/2014 Prof. M^a Luisa Fernández-Gubieda: “Nanobiomagnetismo: magnetismo en bacterias y otros seres vivos” (Faculty of Science and Technology, UPV/EHU).

2016 in Pictures



Figure 16 (Up) Images from the 5th edition of the Workshop on "New Materials for a Better Life!", on November 18th, 2016 at the "Paraninfo" of the Faculty of Science & Technology, UPV/EHU, Leioa.



Figure 17 (Left) Basque Government gave an acknowledgement to ACTIMAT project, where BCMaterials takes part. The project was the best valued in the ELKARTEK2015 call because of its collaborative scope between RVCTi partners, the innovative technologies that studies and the relevance for the Basque industrial network.

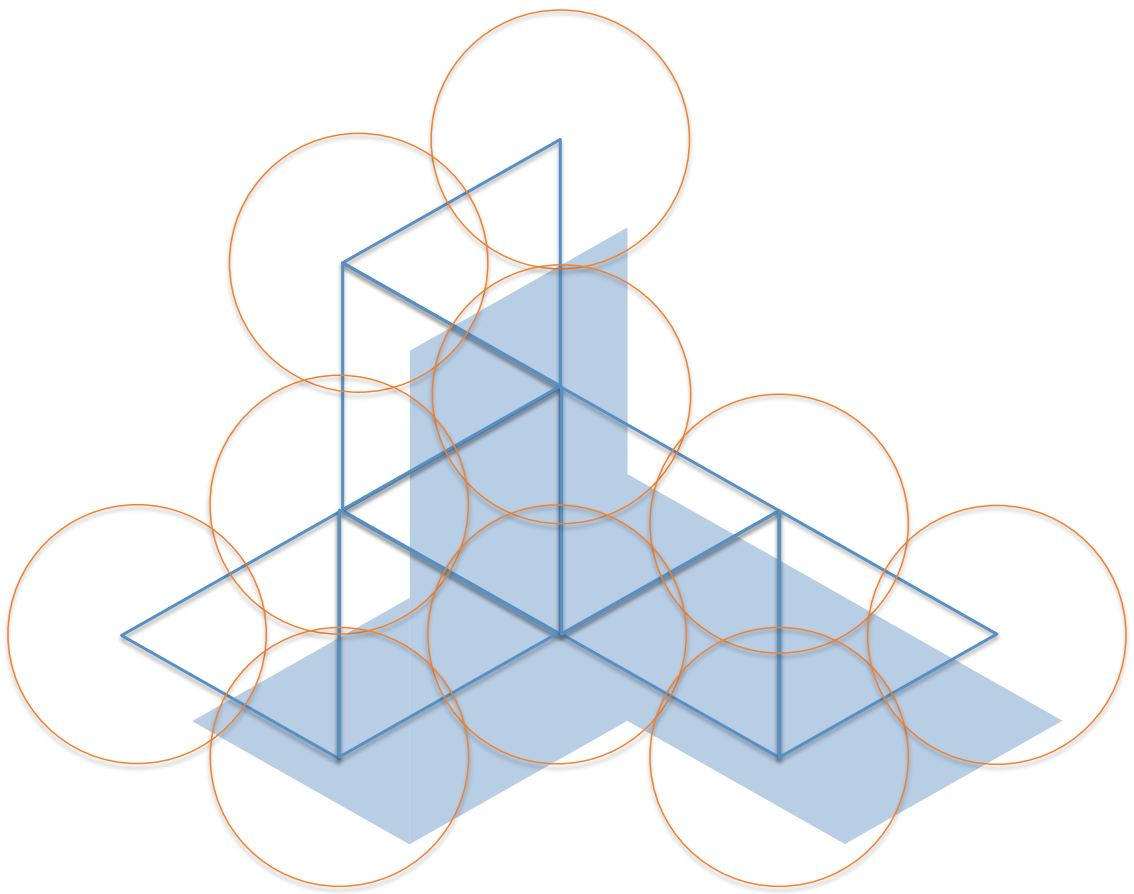
Figure 18 Images of the BCMaterials fortnightly seminars. This events are devoted to the discussion of the theses, research papers, articles, etc.



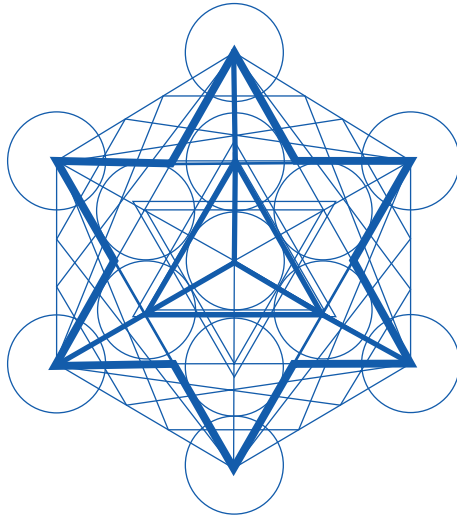
Figure 19 Images of "The Science Week" ("Zientzia astea / La semana de la ciencia")







High Level Education & Other Activies



MASTER ON NEW MATERIALS (ACADEMIC YEAR 2015-16)

This is an inter-University Master UPV/EHU- University of Cantabria.

The Master is intimately linked to BCMATERIALS: The academic responsible of the Master is Prof Maria Luisa Fernández Gubieda. Most BCMATERIALS academic members (faculty) do lecture in the Master and some researchers supervise Master Thesis in New Materials

The Master got 64 pre-registrations at the UPV/EHU. From those 23 candidates were selected, including 4 from the University of Cantabria. Finally we have 21 full time students this year.

We offered 4 fellowships to develop the Master Thesis at BCMATERIALS, All BCMATERIALS students are already working in the different research lines.

MASTER THESES DEFENDED DURING 2016:

- Mikel Múgica:** “Analysis of the Fatigue Cycling on Elastomeric Polymer with Ferromagnetic Particles Composites for Damping Applications”. UPV/EHU. Supervisor: V.A. Chernenko.
- Eugen Seif:** “Magnetothermomechanical Properties of Ni-Mn-Ga / Polymer Composites: Experiment and Modelling”. Technical University of Dortmund, Germany. Supervisor: V.A. Chernenko.
- Iker Lamas:** “Preparation and characterisation of nanostructurd materials for solar cells”. UPV/EHU. Supervisor: Maite Insausti.

- ✦ Mari Paz Crespo: “Applications of Shape Memory polymers to self-healing surfaces”. UPV/EHU. Supervisor: Jose Luis Vilas.
- ✦ Sara del Hoyo: “Preparation of polymer multilayer systems to optimize medical devices”. UPV/EHU. Supervisor: Leyre Perez.
- ✦ Joao Barbosa: “Shape Memory Materials Theory, Modelling and Simulation. Universidade do Minho. Supervisor: Senen Lanceros Mendez.

NEW PHD PROGRAM: DOCTORATE IN SCIENCE AND TECHNOLOGY OF MATERIALS

This PhD program is directed by Prof. Luis Lezama, member of BCMATERIALS, and incorporates all new PhD students from BCMATERIALS.

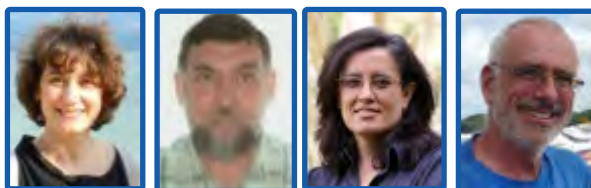
In his first year of operation the PhD program got 20 pre-registered students, from which 17 were accepted. In 2016 the program has 25 students.

PHD THESIS DEFENDED IN 2016

- ✦ Francisco Llano Tomé: “Host-guest chemistry of solid coordination frameworks (SCFs) based on Cu(II)-pyridine ligands. Supervisors: Karmele Urriaga y Begoña Bazán, UPV/EHU, January 2016
- ✦ Virginia Sáenz de Viteri Gimeno: “Development of protective coatings to improve the Ti6Al4V alloy behavior in orthopedic applications”. Supervisors: Gotzone Barandika y Amaia Igartua, UPV/EHU, January 2016
- ✦ Andoni Lasheras Aransay: “Magnetolectric metallic glass/polymer laminated composites: from fabrication to applications”. Supervisors: Dr Jon Gutiérrez Etxebarria and Dr Jose Luis Vilas Vilela. Defended at: UPV/EHU, Facultad de Ciencia y Tecnología, January 2016; Qualification: Sobresaliente Cum Laude and Doctor International.
- ✦ Cristina Cerrillo Redondo: “Towards the standardization of nanoecotoxicity testing: Selection of environmentally relevant methods”, Supervisors: Gotzone Barandika y Amaia Igartua, UPV/EHU, February 2016.
- ✦ Alberto Maceiras: “Polyimides for piezoelectric materials, magnetolectric nanocomposites and battery separators”; Supervisors: Dr Luis Manuel León and Dr María San Sebastián, Defended at: UPV/EHU, Facultad de Ciencia y Tecnología, September 2016; Qualification: Sobresaliente Cum Laude and Doctor International.
- ✦ Estibaliz Aranzabe Basterrechea: “Desarrollo de Pigmentos Cerámicos Multifuncionales Orientados a la Mejora de la Eficiencia Energética en Edificación”; Supervisors: María Isabel Arriortua Marcaida y la Ana Aranzabe García, UPV/EHU, December 2016.



1 2 3 4 5



6 7 8 9

1. PROF. ANTONIO HERNANDO
 2. PROF. TAE-SIK YOON
 3. DR. VASUDEVA SIRUGURI
 4. PROF. VICTOR L'VOV
 5. DR. TERUO ONO
 6. DR. CARLOS MARTÍ-GASTALDO
 7. DR. MARIA DEL PUERTO MORALES
 8. PROF. CRISTINA GÓMEZ POLO
 9. DR. JOSEP FONTCUBERTA

🔸 Daniela Correia: “Three dimensional scaffolds based on electroactive polymers for tissue engineering applications”; Supervisors: Senentxu Lanceros-Méndez; Maria Gabriela Botelho; José Luis Gómez Ribelles; Defended at University of Minho, Portugal, Doctoral Program in Materials Engineering, 2016; Qualification: Muito Bom (maximum qualification).

🔸 Mariana Marques: “Development of multifunctional coatings deposited on polymers based sensors for biomedical applications”; Supervisors: Sandra Maria Fernandes Carvalho; Mariana Contente Rangel Henriques; Senentxu Lanceros-Méndez; Defended at University of Minho, Portugal, Doctoral Program in Materials Engineering, 2016; Qualification: Muito Bom (maximum qualification).











OTHER ACTIVITIES

LARGE FACILITIES PROPOSALS AND MEASUREMENTS

🔸 ILL (Grenoble, France) Neutron diffraction experiment # 5-312478 “Magnetic structure of Zr_{1-x}Ce_xFe₁₀Si₂ and other 1:12 alloys”. Instrument: D20, time assigned: 2 days, July 2016, Local contact: Thomas Hansen; J.M. Barandiaran, D. Salazar, A. Martín-Cid

🔸 ILL (Grenoble, France) Proposal #: CRG-D1B-16-317, 2 days; “In-situ investigation of the formation of nanostructured nd-fe-b based spring magnets”; A. Martín-Cid, J.M. Barandiaran, D. Salazar, J.S. Garitaonandia






🔸 ALBA (Barcelona); CLAEISS; 9-13 Feb.2016 “XANES study on monodisperse M_xFe_{3-x}O₄ nanoparticles obtained by synthetic and biological routes” R. Martín-Rodríguez, A. Muela, M.L. Fernández-Gubieda, M. Insausti

-  ALBA (Barcelona); CLAEISS; 22-27 Jun. 2016 Friendly Beamtime “Commissioning of the beamline BL22 at ALBA”; L. Simonelli, C. Meneghini, M. Fernández-Gubieda, C. Marini, D. Heinis, L. Marcano, I. Carlomagno.
-  ISIS (Didcot-UK); LARMOR; 3-11 Jul.2016 “Magnetic and structural characterization of magnetite nanoparticle chains in magnetoactive bacteria”; P. Bender, L. Fernández-Barquín, M.L. Fernández-Gubieda, L. Marcano.
-  ESRF (Grenoble-France); BM25; 6-10 Jul. 2016 “XANES study on monodisperse $MxFe_{3-x}O_4$ nanoparticles obtained by synthetic and biological routes”; R. Martín-Rodríguez, M. Insausti, A. Muela, M.L. Fernández-Gubieda, L. Marcano.
-  Bessy II (Berlin-Germany), UE49_PGM SPEEM, 7-13 Nov. 2016 “Magnetic anisotropy of magnetite nanoparticles biosynthesized by magnetotactic bacteria”; L. Marcano, M.L. Fdez-Gubieda, A. Muela, A. García-Prieto, S. Valencia.
-  LMA (Zaragoza-Spain); Titan Cubed; 23 Nov.2016 “HRTEM analysis at early stages of the biomineralization process”; M.L. Fernández-Gubieda, A. Muela, L. Marcano.
-  LMA (Zaragoza-Spain); F30; 24 Nov.2016 “Chemical analysis with spatial resolution on magnetite nanoparticles with small amount of cobalt or Mn synthesized by biological routes”; M.L. Fernández-Gubieda, A. Muela, L. Marcano.
-  CELLS – ALBA synchrotron (Barcelona, Spain) Proposal #: 201509141815 shifts (5 days); “Investigating the intra-particle chemical and magnetic structure in arrays of magnetic nanostructures by soft x-ray resonant magnetic GISAXS”; M. Valvidares, P. Gargiani, C. Quiros, J.I. Diaz, M. Velez, R. Morales, E. Gonzalez.
-  CELLS – ALBA synchrotron (Barcelona, Spain) Proposal #: 2015091407; 5 shifts (5 days) “Correlation between exchange bias and magnetic spring domain wall across thickness in Permalloy/FeF₂ bilayers”; S. Ferrer, C. Redondo, R. Morales, B. Mora, C. Quirós.
-  ESRF (Grenoble, France) BM25B: 09/Dec/2016- 12/Dec/2016, 9 shifts; “Ni-Mn-Sn-Co metamagnetic shape memory alloys thin films. Martensitic transformation and crystallographic stress studies by means of grazing surface X-ray diffraction”.
-  ESRF (Grenoble, France) BM25B: 09 - 12 December 2016, 9 shifts; “Single crystal X-ray diffraction studies on porphyrin based MOF and vanadate based MOF microcrystals: Structural Resolution and Thermal Behaviour.”

VISITS TO FOREIGN INSTITUTIONS

-  University College and Royal Institution, London. (Prof. Quentin Pankhurst) 30 March, 2016, JM Barandiaran, M.L Fernández Gubieda and N. Elejalde, to prepare a H2020 project.
-  Center of Corporate Innovation and Technology of BSH Electrodomésticos España, Zaragoza (Dr. Juan Ramón Soler) 14 April 2016, JM Barandiaran and N. Elejalde, to discuss Master fellowships for 2016-17 and a H2020 project.
-  Universidad de Roma III (Italia) April 2016, 1 month, M.L Fernández Gubieda, Doctorate course: “Magnetism from bulk to the Nanoscale”.
-  Cavendish Laboratory University of Cambridge (Prof. Russell Cowburn) 14 January to 14 de April 2016, Maite Goiriena, Erasmus Plus Placement, “Fabrication and characterization of Permalloy microdiscs”.
-  IEEE Magnetics Society Summer School, Tohoku University, Sendai (Japan), 10-15 July 2016. Maite Goiriena and Andrés Martín-Cid.
-  Magnetoelasticity Laboratory at the University of Patras (Greece, Prof. Dimitris Kouzoudis) from April 4 to July 29 of 2016, Ariane Sagasti, Erasmus Plus Placement, “Surface functionalization of metallic glasses for bio- and chemical sensing purposes”.
-  Center for Advanced Nanoscience – University of California San Diego, USA (Prof. Ivan K. Schuller), from June 21 to August 19 of 2016, Rafael Morales, EU-FP7-MCA-IRSES “Growth of magnetic nanostructures in synthetic antiferromagnetic state”.

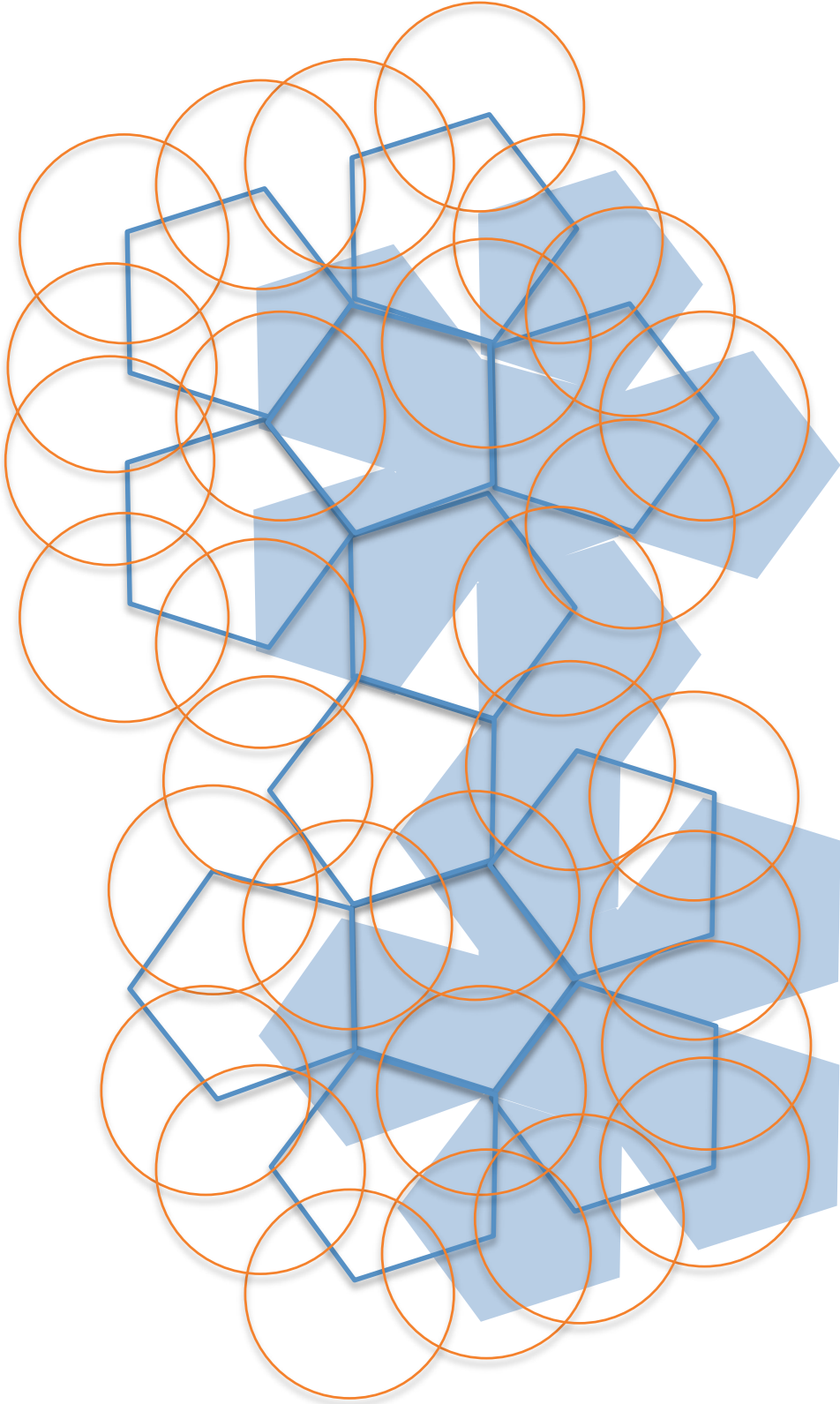
DISSEMINATION FOR GENERAL PUBLIC

-  The stand in “la semana de la ciencia” (the week of Science, see Figure 19 on page 36).
-  Radio interview about the project novamag, Radio.
-  Radio interview with Xabi Lasheras, Radio.
-  Radio interview with Catarina Lopes Radio.
-  Communication on newspaper (El Mundo): “Imanes libres de la influencia china” Sunday, February 7th, 2016.

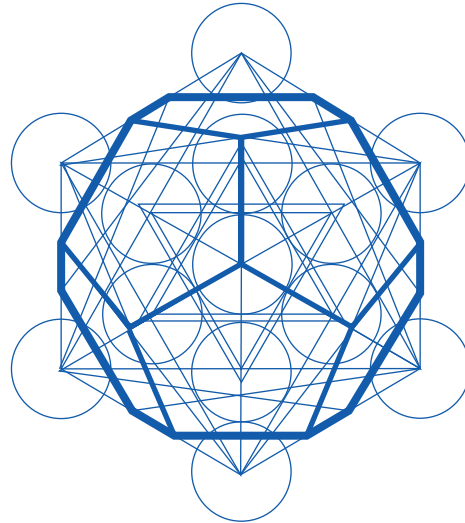
BCMATERIALS FORTNIGHTLY SEMINARS

<i>Fecha</i>	<i>Ponente</i>	<i>Título</i>
2014/12/26	ANDONI LASHERAS	TWO EXAMPLES OF FUNCTIONALIZATION OF MAGNETOELASTIC RESONANT PLATFORMS FOR SENSING PURPOSES: ZEOLITES AND ZINC OXIDE DEPOSITION PROCESSES
2016/12/14	ARIANE SAGASTI	TWO EXAMPLES OF FUNCTIONALIZATION OF MAGNETOELASTIC RESONANT PLATFORMS FOR SENSING PURPOSES: ZEOLITES AND ZINC OXIDE DEPOSITION PROCESSES
	JAVIER ALONSO	EXCHANGE BIAS EFFECTS IN IRON OXIDE-BASED NANOPARTICLE SYSTEMS
2016/11/30	CRISTINA ECHEVARRÍA	SM-BASED 1:12 SYSTEMS; INDUCTION OF A LOW MELTING PHASE
	NURIA GARCÍA	SHAPE MEMORY SYSTEMS BASED ON POLYCYCLOCTENE
2016/11/16	ROBERTO FERNÁNDEZ	COMPOSITE AGVO3@VO HYDROGELS AND XEROGELS: INTRINSIC PROPERTIES AND APPLICATIONS.
	EDUARDO FERNÁNDEZ	SELF-ASSEMBLY COPOLYMERS
2016/11/09	CATARINA LOPES	THE CONTRIBUTION OF IONIC LIQUIDS IN THE DEVELOPMENT OF NANOGENERATORS
	DANIEL SALAZAR	DEVELOPMENT OF NEW TETRAGONAL THMN12-TYPE PHASES WITH LOW RARE EARTH CONTENTS FOR PERMANENT MAGNET APPLICATIONS
2016/10/05	MAITE GOIRENA	NANODISCS MANUFACTURING BY SELF-ASSEMBLED TEMPLATES
	EUGEN SEIF	MAGNETOTHERMOMECHANICAL PROPERTIES OF Ni-MN-GA/POLYMER COMPOSITES: EXPERIMENT AND MODELLING
2016/09/21	IRATI RODRIGO	MAGNETIC-NANOPARTICLES AS A THERAGNOSTIC TOOL FOR LIVER METASTASES IN A MURINE MODEL
	MARIA SAN SEBASTIÁN	UNDERSTANDING AND TAILORING ELECTROACTIVE POLYMER BASED MATERIALS FOR ADVANCED APPLICATIONS
2016/09/14	ARIANE SAGASTI	MAGNETOELASTIC RESONATOR FOR HIGHLY SPECIFIC CHEMICAL AND BIOLOGICAL DETECTION: A CRITICAL STUDY
	ANDRÉS MARTIN	TETRAGONAL CE-BASED CE-SM(Fe,Co,Ti)12 ALLOYS FOR PERMANENT MAGNETS
2016/07/27	XABIER LASHERAS	SYNTHESIS, SURFACE MODIFICATION AND IN VITRO AND IN VIVO TOXICITY OF MAGNETIC NANOPARTICLES FOR BIOMEDICAL APPLICATIONS
	ANABEL PÉREZ	DEVELOPMENT OF HIGH TEMPERATURE NiMnGa FERROMAGNETIC SHAPE MEMORY ALLOYS
2016/07/13	IKER LAMAS	PREPARATION OF METAL AND SEMICONDUCTOR NANOSTRUCTURES FOR ENHANCEMENT OF PLASMONIC DYE-SENSITIZED SOLAR CELLS PERFORMANCE
	LOURDES MARCANO	MAGNETIC CHARACTERIZATION OF MAGNETIC NANOPARTICLES BIOSYNTHESIZED BY MAGNETOTACTIC BACTERIA
2016/06/30	MIKEL MÚGICA	ANALYSIS OF THE FATIGUE CYCLING ON ELASTOMERIC POLYMER WITH FERROMAGNETIC PARTICLES COMPOSITES FOR DAMPING APPLICATIONS
	MARI PAZ CRESPO	APPLICATIONS OF SHAPE MEMORY POLYMERS TO SELF-HEALING SURFACES
2016/06/15	SARA DEL HOYO	PREPARATION OF POLYMER MULTILAYER SYSTEMS TO OPTIMIZE BIOMEDICAL DEVICES
	ANABEL PÉREZ	HIGH TEMPERATURE FERROMAGNETIC SHAPE MEMORY ALLOYS

<i>Fecha</i>	<i>Ponente</i>	<i>Título</i>
2016/06/01	CATARINA LOPES	IONIC LIQUID@POLYMER COMPOSITE FOR ENERGY APPLICATIONS
	LUCA BERGAMINI	PICOSECOND CONTROL OF PLASMONIC NANOANTENNAS DRIVEN BY HOT-SPOT INDUCED PHASE-TRANSITION IN VO ₂
2016/05/18	DANIEL SALAZAR	DIRECT AND INDIRECT MEASUREMENT OF MAGNETOCALORIC EFFECT IN LA-SR _{1-x} BA MANGANITES
	IRATI RODRIGO	DEVELOPMENT OF EXPERIMENTAL TECHNIQUES FOR MAGNETIC HYPERTHERMIA THERAPY
2016/05/05	BEÑAT ARTETXE	SELF-ASSEMBLY OF LARGE LANTHANIDE-CONTAINING POLYOXOTUNGSTATES IN SOLUTION
	ROBERTO FERNÁNDEZ	3D TRIPLY INTERPENETRATED $[[\text{Cu}_2(\text{BPA})_2(\text{TAE})]+2(\text{NO}_3)_{22-}]]\cdot\text{NH}_2\text{O}$ (N=5, 3.5) CATIONIC MOF: DYNAMIC STRUCTURAL BEHAVIOUR
2016/04/20	MAITE GOIRIENA	FABRICATION AND CHARACTERIZATION OF SUBSTRATE-FREE SUB-100 NM PERMALLOY DISCS FOR BIOLOGICAL APPLICATIONS
	OIHANE ARRIORTUA	FUNCTIONALIZATION AND STUDY OF MAGNETITE NANOPARTICLES FOR APPLICATION IN MAGNETIC HYPERTHERMIA THERAPIES
2016/04/13	NURIA GARCÍA	SHAPE MEMORY PROPERTIES ON POLYMERIC SUBSTRATES WITH POTENTIAL FUTURE APPLICATIONS IN SELF-HEALING SYSTEMS
	JOÃO BARBOSA	APPLICATIONS OF SHAPE MEMORY CERAMICS TO OPTIMIZE HOME APPLIANCES
2016/03/23	EUGEN SEIF	MAGNETO-THERMOMECHANICAL PROPERTIES OF NiMnGa/POLYMER-COMPOSITES
	LUCA COPPARO	SYNTHESIS AND CHARACTERIZATION OF MAGNETIC NPS WITH THERAPEUTIC APPLICATIONS
2016/03/09	EDUARDO FERNÁNDEZ	SWITCHING VOLUME FRACTION IN HIGH DENSITY FePt NANODOTS ARRAY
	JAVIER ALONSO	ANISOTROPIC MAGNETIC NANOSTRUCTURES FOR ENHANCED HYPERTHERMIA
2016/02/24	PEDRO COSTA	ELASTOMER BASED COMPOSITES AS HIGHLY STRETCHABLE MATERIALS FOR SENSOR, ACTUATOR AND ENERGY GENERATION APPLICATIONS
	PEDRO MARTINS	UNCONVENTIONAL POLYMER-BASED MAGNETOELECTRIC MATERIALS FOR ADVANCED APPLICATIONS
2016/02/10	ANDRÉS MARTÍN	INFLUENCE OF ND CONTENT AND OF NB AND CU ON GRAIN BOUNDARY INFILTRATION IN ND-LEAN ND-Fe-B PERMANENT MAGNETS
	JAGOBA MARTÍN	SEQUENTIAL SINGLE-CRYSTAL-TO-SINGLE-CRYSTAL TRANSFORMATIONS IN A 3D POROUS HYBRID CONTAINING THE UNCOMMON PARATUNGSTATE A $[\text{W}_7\text{O}_{24}]_6$ - FRAGMENT AND Cu(II)-TETRAAZACOMPLEXES
2016/01/27	ADRIANA HUÍZAR	MAGNETIC ANISOTROPY IN ASSEMBLIES OF MAGNETITE NANOPARTICLES EXTRACTED FROM MAGNETOTACTIC BACTERIA MAGNETOSPIRILLUM GRYPHISWALDENS
	XABIER LASHERAS	UNDERSTANDING THE IMPACT OF MAGNETIC NPS AND NANOCAPSULES UPON A SIMPLIFIED IN VITRO MODEL OF THE HUMAN BLOOD VESSEL
2016/01/13	ESTIBALIZ LEGARRA	INFLUENCE OF THE ORDER-DISORDER TRANSITION ON THE MAGNETIC PROPERTIES OF Fe ₇₅ Al ₂₅ -XSIX ALLOYS
	MARÍA SAN SEBASTIÁN	POLYMER ELECTROLYTES



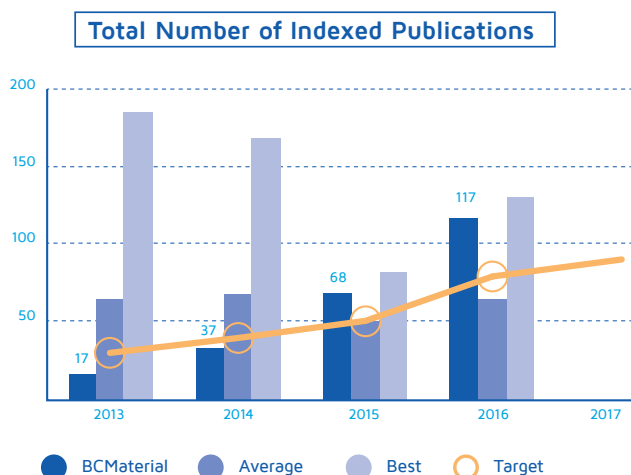
Main Research Production in 2015



SELECTED CONFERENCE CONTRIBUTIONS

INVITED TALKS

- ❏ “Magnetic shape memory materials for transducers” V.A. Chernenko and J.M. Barandiaran, IC-MAST, International Conference on Materials and Applications for Sensors and Transducers, Sept. 27-30, Athens, Greece.
- ❏ “Structure and Magnetism of Magnetic Shape Memory Alloys from Neutron and Synchrotron Studies”, V. A.Chernenko, J. M. Barandiarán, P. Lázpita, J. Gutiérrez, A. Kimura. ICFSMA 2016 Sept. 5-9, Sendai, Japan.
- ❏ “Magnetic Shape Memory Alloys: Lattice and Volume Instabilities”. V.A. Chernenko, “5th International Conference Smart and Multifunctional Materials, Structures & Systems” (CIMTEC 2016), Perugia, Italy, June 5-10, 2016.
- ❏ “Magnetic shape memory alloys: Recent research”, JM Barandiaran, VA Chernenko; 16th Czech and Slovak Conference on Magnetism (CESMAG), Kosice, Slovak Republic, June 13-17, 2016.
- ❏ “Some research on advanced magnetic materials at BC-Materials”, J. M. Barandiaran; Materials and technologies for the future, Institute for Advanced Materials, Pamplona, November 16, 2016.

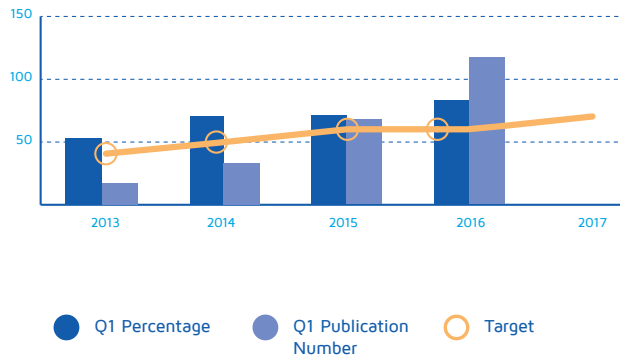


- “Optimal parameters for hyperthermia treatment with magnetic nanoparticle synthesized by *Magnetospirillum gryphiswaldense* bacteria”. M^a Luisa Fdez Gubieda (Plenary speaker); 6th Bionanomaterials Zing Conference, Varna (Bulgaria) May, 2016.
- “Nanoparticles for Magnetic Biosensing Systems”, G.V. Kurlyandskaya, INRIM Seminar, Torino, Italy, 14th October, 2016.
- “Magnetoimpedance sensitive elements based on CuBe/FeCoNi electroplated wires in single and double wire configurations”, G.V. Kurlyandskaya; European Magnetic Sensors and Actuators Conference, Torino, Italy, 12-15 July, 2016.
- “Nanostructured materials for magnetic biosensing”, G.V. Kurlyandskaya; 6th ZING Bionanomaterials Conference, Varna, Bulgaria, May 2016.
- “Nanoparticles for Magnetic Biosensing Systems”, G.V. Kurlyandskaya; 14th International Conference on Magnetic Fluids, Ekaterinburg, Russia, July 2016.
- “Bimetallic FeNi nanoparticles obtained by the electric explosion of wire: basis for functional nanocomposites”, G.V. Kurlyandskaya, I. Beketov, A. Safronov, T. Terzian, A. Larrañaga; Euro-Asian Symposium “Trends in Magnetism” EASTMAG-2016, August 15-19, 2016, Krasnoyarsk, Russia.

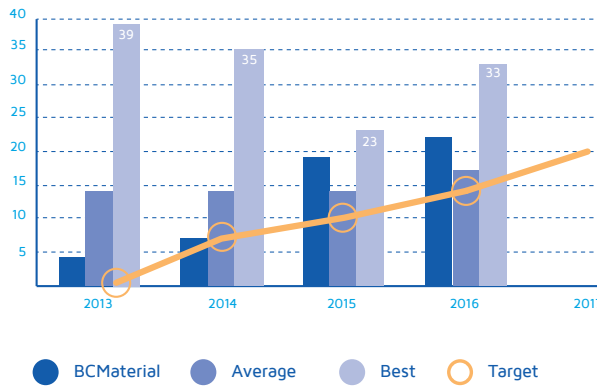
ORAL PRESENTATIONS

- ❏ “Mössbauer and neutron study of Zr₁-XCeXFe₁₀Si₂ alloys for permanent magnets applications”, A. Martín-Cid, D. Salazar, J. M. Barandiaran, J.S. Garitaonandia, T. Hansen, G. C. Hadjipanayis. *Magnetism and Magnetic Materials Conference, New Orleans, October 31- November 4, 2016.*
- ❏ “Coercivity enhancement in Nd-Fe-B(Nb-Cu) nanocrystalline alloys by grain boundary infiltration”, A. Martín-Cid, J. S. Garitaonandia, D. Salazar, R. Madugundo, J. M. Barandiaran, G. C. Hadjipanayis. *Magnetism and Magnetic Materials Conference, New Orleans, October 31- November 4, 2016.*
- ❏ “On the mineral core of ferritin-like proteins: structural and magnetic characterization”. J. Alonso. *9th International Conference on Fine Particles Magnetism. Gaithersburg, USA, 2016.*
- ❏ “Anisotropic Magnetic Nanostructures for Enhanced Hyperthermia”. J. Alonso. *13th Joint MMM-Intermag Conference. San Diego, USA, 2016.*
- ❏ “Nanodiscs manufacturing by self-assembled templates”, M. Goiriena-Goikoetxea, A. V. Svalov, J. Feuchtwanger and A. García-Arribas, *European Conference on Nanofilms (ECNF), Bilbao, 2016.*
- ❏ “3D interpenetrated network based on 1,3-benzenedicarboxylate and 1,2-bis(4-pyridyl)ethane”. Laura Bravo-García, Gotzone Barandika, Begoña Bazána, M. Karmele Urriaga, M. Isabel Arriortua., *18th International Conference on Material Science and Condensed Matter Physics (ICMSCMP 2016). Zurich (Switzerland), July 2016.*
- ❏ “Adsorption of dyes and iodine. Reaching outstanding kinetics with CuII-based metal-organic nanoballs”. Eder Amayuelas, Begoña Bazán, M. Karmele Urriaga, Gotzone Barandika, María I. Arriortua. *18th International Conference on Material Science and Condensed Matter Physics (ICMSCMP 2016). Zurich (Switzerland), July 2016.*
- ❏ “Composite AgVO₃@V₅+1.6V₄+0.4O_{4.8} hydrogels and xerogels. Protonic conduction and pollutant sequestration”. Roberto Fernandez de Luis, Ana Martinez-Amesti, Edurne S. Larrea, Anthony R. West, María I. Arriortua. *7th International conference on Advanced Nanomaterials (ANM2016), Aveiro (Portugal), July 2016.*
- ❏ “Metalloporphyrin based solid coordination frameworks: mimicking the natural properties”. Arkaitz Fidalgo-Marijuan, Gotzone Barandika, Begoña Bazan, Miren Karmele Urriaga, Edurne S. Larrea, Marta Iglesias, María I. Arriortua. *3rd International Conference on Bioinspired and Biobased Chemistry & Materials, Niza (France), October 2016.*

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- ❖ “Novel 3D porphyrin-based MOF: designing structural features for dyes and gas adsorption”. Eder Amayuelas, Begoña Bazan, Miren Karmele Urtiaga, Gotzone Barandika, Paul Iacomì, Phillip Llewellyn, María I. Arriortua. 3rd International Conference on Bioinspired and Biobased Chemistry & Materials, Niza (France), October 2016.
- ❖ “Effect of doping level x in $\text{Ln}_{1-x}\text{M}_x\text{Cr}_{0.9}\text{Ni}_{0.1}\text{O}_3$ SOFC anodes”. Aroa Morán, Aritza Wain, Karmele Vidal, Aitor Larrañaga, Miguel Laguna, María I. Arriortua. International discussion on hydrogen energy and applications, Nantes (France), November 2016.
- ❖ “Magnetic Shape Memory Alloys: Magnetoelastic Properties Affected by Volume Effects”. V.A. Chernenko JEMS 2016, 21-26 August, Glasgow, UK.
- ❖ “Development of high temperature Ni-Mn-Ga ferromagnetic shape memory alloys”. A. Pérez-Checa, J. Feuchtwanger, D. Musiienko, A. Sozinov, J.M. Barandiaran, K. Ullakko, V. Chernenko, JEMS 2016, 21-26 August, Glasgow, UK.
- ❖ “Some aspects of magnetocaloric and elastocaloric behavior of metamagnetic shape memory alloys”, V.A. Chernenko, C.O. Aguilar-Ortiz, P. Álvarez-Alonso, E. Villa, H. Flores Zúñiga; 2016 MRS Spring Meeting & Exhibit, March 28-April 1, 2016 Phoenix, Arizona.
- ❖ “Metamagnetic shape memory thin films”, I.R. Aseginolaza, V.A. Chernenko, J. M. Barandiaran. 20th International Conference on Solid Compounds of Transition Elements, SCTE-2016. Zaragoza.
- ❖ “Effect of Fe doping and magnetic field on martensitic transformation in MnNi-Sn magnetic shape memory alloys”, P. Lázpita, V. A. Chernenko, J. M. Barandiarán, M. Sasmaz, X. Sáez de Cámara, 20th International Conference on Solid Compounds of Transition Elements, SCTE-2016, Zaragoza.

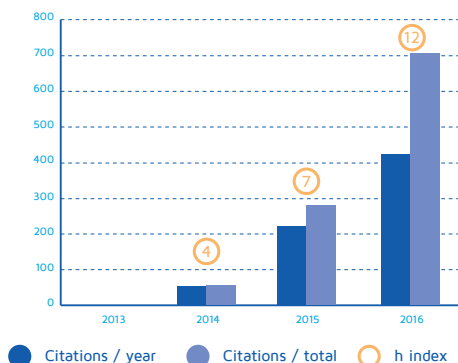
BOOK CHAPTERS:

- ❖ Martensitic Transformation of NiMnGa Shape Memory Alloys Thin Films Studied by Flash DSC, JM Barandiaran, IR Aseginolaza, A Mota-Cobián, VA Chernenko. “Fast Scanning Calorimetry”, Springer, 2016, Part IV, pgs. 775-785.
- ❖ X-ray Absorption Fine Structure spectroscopy in Fe oxides and oxyhydroxides, María Luisa Fernández-Gubieda Ana García-Prieto Javier Alonso C. Meneghini Wiley-VCH, 2016, ISBN 978-3-527-33882-5.
- ❖ Magnetic Shape Memory Materials with Improved Functional Properties: Scientific Aspects, VA L'vov, VA Chernenko, JM Barandiaran.
- ❖ “Novel Functional Magnetic Materials”, Springer Series in Materials Science, 2016, pgs. 1-40.

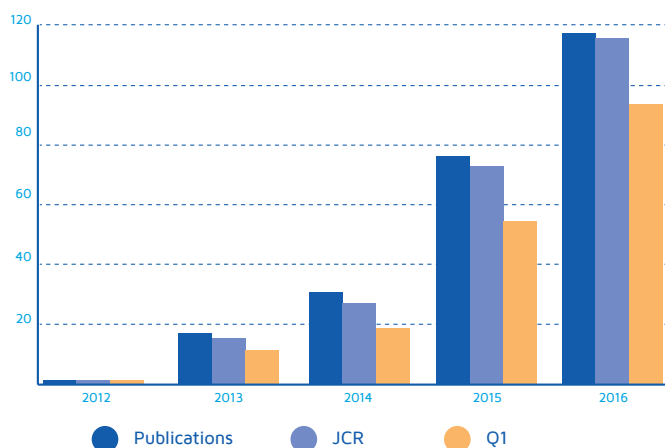
PAPERS

1. Development of poly(vinylidene fluoride)/ionic liquid electrospun fibers for tissue engineering applications; J. C. Dias D. M. Correia Catarina Lopes Sylvie Ribeiro Clarisse Ribeiro V. Sencadas G. Botelho J. M. S. S. Esperança J.M. Laza José Luis Vilas Luis Manuel León Senentxu Lanceros-Mendez; *Journal of Materials Science*, 2016, 51, Issue 9, pp 4442–4450.
2. $A_x(\text{H}_3\text{O})_{2-x}\text{Mn}_5(\text{HPO}_3)_6$ ($A = \text{Li}, \text{Na}, \text{K}$ and NH_4): open-framework manganese(II) phosphites templated by mixed cationic species; Joseba Orive Roberto Fernández J. Rodríguez Fernández Luis Lezama María Isabel Arriortua; *Dalton Transactions*, 2016, 45, 12188–12199.
3. Commensurate Superstructure of the $\{\text{Cu}(\text{NO}_3)(\text{H}_2\text{O})\}(\text{HTae})(\text{Bpy})$ Coordination Polymer: An Example of 2D Hydrogen-Bonding Networks as Magnetic Exchange Pathway; Roberto Fernández Edurne S. Larrea Joseba Orive Luis Lezama María Isabel Arriortua; *ACS Inorganic Chemistry*, 2016, 55(22), 11662–11675.
4. Catalytic Performance of a New 1D $\text{Cu}(\text{II})$ Coordination Polymer $\{\text{Cu}(\text{NO}_3)(\text{H}_2\text{O})\}(\text{HTae})(4,4\text{-Bpy})$ for Knoevenagel Condensation; Edurne S. Larrea Roberto Fernández María Isabel Arriortua; *Molecules*, 2016, 21(12), 1651.
5. Covalently and Ionically Crosslinked Chitosan Nanogels for Drug Delivery; Leyre Pérez J.M. Laza Arturo Álvarez Bautista; *Current Pharmaceutical Design*, 2016, 22, 3380–3398.
6. Physical aging and mechanical performance of poly(l-lactide)/ZnO nanocomposites; Erlantz Lizundia Leyre Pérez Míriam Sáenz Pérez David Patrocinio José Luis Vilas Luis Manuel León; *Journal of Applied Polymer Science*, 2016, 133, 45.
7. Construction of antibacterial poly(ethylene terephthalate) films via layer by layer assembly of chitosan and hyaluronic acid; Sara del Hoyo Leyre Pérez F. Gómez-Galván Erlantz Lizundia Ivo Kuritka Vladimir Sedlarik J.M. Laza José Luis Vilas; *Carbohydrate Polymers*, 2016, 143, 35–43.
8. Ferromagnetic glass-coated microwires with good heating properties for magnetic hyperthermia; A. Talaat Javier Alonso V. Zhukova Eneko Garaio José Ángel García H. Srikanth M. H. Phan A. Zhukov; *Scientific Reports*, 2016, 6, 39300.
9. Boosted Hyperthermia Therapy by Combined AC Magnetic and Photothermal Exposures in $\text{Ag}/\text{Fe}_3\text{O}_4$ Nanoflowers; Raja Das N. Rinaldi-Montes Javier Alonso Z. Amghouz Eneko Garaio José Ángel García P. Gorriá J. A. Blanco M. H. Phan H. Srikanth; *ACS Applied Materials & Interfaces*, 2016, 8 (38), pp 25162–25169.
10. Optimal Parameters for Hyperthermia Treatment Using Biomineralized Magnetite Nanoparticles: Theoretical and Experimental Approach; Alicia Muela David Muñoz Rosa Martín-Rodríguez I. Orue Eneko Garaio A. Abad Diaz de Cerio Javier Alonso José Ángel García María Luisa Fernández-Gubieda; *Journal of Physical Chemistry C*, 2016, 120 (42), pp 24437–24448.
11. Exchange Bias Effects in Iron Oxide-Based Nanoparticle Systems; M. H. Phan Javier Alonso H. Khurshid Paula Lampen-Kelley Sayan Chandra K. Stojak Repa Z. Nemati Raja Das Oscar Iglesias H. Srikanth; *Nanomaterials*, 2016, 6(11), 221.
12. Disclosure of Double Exchange Bias Effect in Chromium (III) Oxide Nanoparticles; N. Rinaldi-Montes P. Gorriá A. B. Fuertes D. Martínez-Blanco Luca Olivi I Puente-Orench Javier Alonso M. H. Phan H. Srikanth Xavi Marti J. A. Blanco; *IEEE Transactions on Magnetics*, 2016, Volume: PP, Issue: 99, 1–1.
13. Remotely Controlled Micromanipulation by Buckling Instabilities in Fe_3O_4 Nanoparticle Embedded Poly(N-isopropylacrylamide) Surface Arrays; Vinicio Carias Z. Nemati K. Stojak Repa Javier Alonso H. Srikanth Jürgen Rühle Ryan Toomey Jing Wang; *ACS Applied Materials & Interfaces*, 2016, 8 (41), pp 28012–28018.
14. Effect of Nb and Cu on the crystallization behavior of under-stoichiometric Nd–Fe–B alloys; Daniel Salazar Andrés Martín Cid Rajasekhar Madugundo José S. Garitaonandia José Manuel Barandiarán George C. Hadjipanayis; *Journal of Physics D: Applied Physics*, 2016, 50, 015305

Citations BCMaterials



Publications BCMaterials



15. *Adiabatic magnetocaloric effect in Ni₅₀Mn₃₅In₁₅ ribbons*; P. Álvarez-Alonso C. O. Aguilar-Ortiz J. P. Camarillo Daniel Salazar H. Flores-Zuñiga Volodymyr Chernenko; *Applied Physics Letters*, 2016, 109, 212402.
16. *Antitumor magnetic hyperthermia induced by RGD-functionalized Fe₃O₄ nanoparticles, in an experimental model of colorectal liver metastases*; Oihane Kistiñe Arriortua Eneko Garaio Borja Herrero de la Parte Maite Insausti Luis Lezama Fernando Plazaola José Ángel García Jesús M. Aizpurua Maialen Sagartzazu Mireia Irazola Nestor Etxebarria Ignacio García-Alonso Alberto Saiz-López Javier Echevarría-Uraga; *Beilstein Journal of Nanotechnology*, 2016, 7, 1532-1542.
17. *Imidazolium-based ionic liquid type dependence of the bending response of polymer actuators*; R. Mejri J. C. Dias S. Besbes Hentati G. Botelho J. M. S. S. Esperança C. M. Costa Senentxu Lanceros-Mendez; *European Polymer Journal*, 2016, 85, 445-451.
18. *Magnetically Controlled Drug Release System through Magnetomechanical Actuation*; João António Mesquita Barbosa D. M. Correia R. Gonçalves Clarisse Ribeiro G. Botelho P. Martins Senentxu Lanceros-Mendez; *Advanced Healthcare Materials*, 2016, In press.
19. *Synthesis of highly magnetostrictive nanostructures and their application in a polymer-based piezoelectric sensing device*; R. Gonçalves A. Larrea T. Zheng M. J. Higgins V. Sebastian Senentxu Lanceros-Mendez P. Martins; *European Polymer Journal*, 2016, 84, 685-692.
20. *High performance screen-printed electrodes prepared by a green solvent approach for lithium-ion batteries*; A. Gören J. Mendes H. M. Rodrigues R. E. Sousa J. Oliveira Loic Hilliou C. M. Costa María Manuela Silva Senentxu Lanceros-Mendez; *Journal of Power Sources*, 2016, 334, 65-77.
21. *Thermal and Magnetic Diversity in the Behaviour of the CuII-bdc-bpa System: 1D, 2D and Interpenetrated 3D Frameworks*; Laura Bravo García Gotzone Barandika Arkaitz Fidalgo-Marijuan Begoña Bazán Miren-Karmele Urtiaga Luis Lezama María Isabel Arriortua; *European Journal of Inorganic Chemistry*, 2016, 29, 4783-4791.
22. *Crystal structure of K_{0.75}[FeII_{3.75}FeIII_{1.25}(HP O₃)₆]-0.5H₂O, an open-framework iron phosphite with mixed-valent FeII/FeIII ions*; Edurne S. Larrea José Luis Mesa Estibaliz Legarra Saez Andrés Tomás Aguayo María Isabel Arriortua; *Acta Crystallographica Section E: Crystallographic Communications*, 2016, 72, 63-65.
23. *Poly(vinylidene fluoride-hexafluoropropylene)/bayerite composite membranes for efficient arsenic removal from water*; H. Salazar Joao Nunes-Pereira D. M. Correia V. F. Cardoso R. Gonçalves P. M. Martins Stanislav Ferdov M. D. Martins G. Botelho Senentxu Lanceros-Mendez; *Materials Chemistry and Physics*, 2016, 183, 430-438.
24. *Ciprofloxacin wastewater treated by UVA photocatalysis: contribution of irradiated TiO₂ and ZnO nanoparticles on the final toxicity as assessed by *Vibrio fischeri**; A. R. Silva P. M. Martins Sara Teixeira S. A. C. Carabineiro K. Kuehn G. Cumiberti

- M. M. Alves Senentxu Lanceros-Mendez L. Pereira; *RSC Advances*, 2016, 6, 95494-95503.
25. Effect of anion type in the performance of ionic liquid/poly(vinylidene fluoride) electromechanical actuators; R. Mejri J. C. Dias S. Besbes Hentati M. S. Martins C. M. Costa Senentxu Lanceros-Mendez; *Journal of Non-Crystalline Solids*, 2016, 453, 8-15.
26. Effect of cyano dipolar groups on the performance of lithium-ion battery electrospun polyimide gel electrolyte membranes; Alberto Maceiras Martínez A. Gören V. Sencadas C. M. Costa José Luis Vilas Senentxu Lanceros-Mendez Luis Manuel León; *Journal of Electroanalytical Chemistry*, 2016, 778, 57-65.
27. ^{57}Fe emission Mössbauer spectroscopy following dilute implantation of ^{57}Mn into In_2O_3 ; A. Mokhles Gerami K. Johnston H. P. Gunnlaugsson K. Nomura R. Mantovan H. Masenda Y. A. Matveyev T. E. Molholt M. Ncube S. Shayestehaminzadeh Iraultza Unzueta H. Gislason P. B. Krastev G. Langouche D. Naidoo S. Ólafsson; *Hyperfine Interactions*, 2016, 237:75.
28. Mechanically induced disorder and crystallization process in Ni-Mn-In ball-milled alloys; Sanchez-Alarcos, V. Recarte, V. Perez-Landazabal, J. I. S. Larumbe R. Caballero-Flores Iraultza Unzueta José Ángel García Fernando Plazaola Jose A. Rodríguez-Velamazán; *Journal of Alloys and Compounds*, 2016, 689, 983-991.
29. ^{57}Fe Emission Mössbauer Study on $\text{Gd}_3\text{Ga}_5\text{O}_{12}$ implanted with dilute ^{57}Mn ; P. B. Krastev H. P. Gunnlaugsson K. Nomura V. Adoons A. Mokhles Gerami K. Johnston M. Ncube R. Mantovan H. Masenda Y. A. Matveyev T. E. Molholt Iraultza Unzueta K. Bharuth-Ram H. Gislason G. Langouche D. Naidoo S. Ólafsson; *Hyperfine Interactions*, 2016, 237:37.
30. Observation of a charge delocalization from Se vacancies in Bi_2Se_3 : A positron annihilation study of native defects; Iraultza Unzueta N. Zabala V. Marín-Borrás V. Muñoz-Sanjosé José Ángel García Fernando Plazaola; *Physical Review B*, 2016, 94, 014117.
31. Improved magnetodielectric coefficient on polymer based composites through enhanced indirect magnetoelectric coupling; P. Martins D. Silva M. P. Silva Senentxu Lanceros-Mendez; *Applied Physics Letters*, 2016, 109, 112905.
32. Computer simulation evaluation of the geometrical parameters affecting the performance of two dimensional interdigitated batteries; D. Miranda C. M. Costa A. M. Almeida Senentxu Lanceros-Mendez; *Journal of Electroanalytical Chemistry*, 2016, 780, 1-11.
33. Energy-saving control strategies for a ferromagnetic shape memory alloy based actuator; E. Asua J. Jugo M. Eguiraun Alfredo García-Arribas J. Feuchtwanger V. Etxebarria; *Sensors and Actuators A: Physical*, 2016, 249, 112-121.
34. All-inkjet-printed low-pass filters with adjustable cutoff frequency consisting of resistors, inductors and transistors for sensor applications; H. F. Castro V. Correia E. Sowade K. Y. Mitra J. G. Rocha R. R. Baumann Senentxu Lanceros-Mendez; *Organic Electronics*, 2016, 38, 205-212.
35. Finite-Size Effects in the Absorption Spectra of a Single-Wall Carbon Nanotube; J. Silva Micael J. T. Oliveira Senentxu Lanceros-Mendez Fernando Nogueira; *Journal of Physical Chemistry C*, 2016, 120 (32), pp 18268-18274.
36. Preparation and properties of metal-containing polyamide hybrid composites via reactive microencapsulation; Carlos Bréda Nadya Dencheva Senentxu Lanceros-Mendez Zlatan Denchev; *Journal of Materials Science*, 2016, 1-21.
37. Influence of fluoropolymer binders on the electrochemical performance of C-LiFePO₄ based cathodes; A. Gören C. M. Costa María Manuela Silva Senentxu Lanceros-Mendez; *Solid State Ionics*, 2016, 295, 57-64.
38. Electronic optimization for an energy harvesting system based on magnetoelectric Metglas/poly(vinylidene fluoride)/Metglas composites; S. Reis M. P. Silva N. Castro V. Correia J. G. Rocha P. Martins Andoni Lasheras Jon Gutierrez Senentxu Lanceros-Mendez; *Smart Materials and Structures*, 2016, 25, 085028.

39. Comparative study of sol-gel methods for the facile synthesis of tailored magnetic silica spheres; V. F. Cardoso S. Irusta N. Navascues Senentxu Lanceros-Mendez; *Materials Research Express*, 2016, 3, 075402.
40. Effect of water on the structure of a prototype ionic liquid; Oleg Borodin David L. Price Bachir Aoun Miguel A. González Justin B. Hooper Maiko Kofu Shinji Kohara Osamu Yamamuro Marie-Louise Saboungi; *Physical Chemistry Chemical Physics*, 2016.
41. Effects of coating spherical iron oxide nanoparticles; Irena Milosevic Laurence Motte Bachir Aoun Tao Li Ren, Y Cheng-Jun Sun Marie-Louise Saboungi; *BBA – Biochimica et Biophysica Acta*, 2016.
42. Green solvent approach for printable large deformation thermoplastic elastomer based piezoresistive sensors and their suitability for biomedical applications; Bruna F. Gonçalves Pedro Filipe Ribeiro da Costa J. Oliveira Sylvie Ribeiro V. Correia G. Botelho Senentxu Lanceros-Mendez; *Journal of Polymer Science*, 2016.
43. Piezoresistive response of nano-architected Ti_xCu_y thin films for sensor applications; Armando Ferreira J. Borges C. Lopes N. Martin Senentxu Lanceros-Mendez F. Vaz; *Sensors and Actuators A: Physical*, 2016, 247, 105-114.
44. Giant Electric-Field-Induced Strain in PVDF-Based Battery Separator Membranes Probed by Electrochemical Strain Microscopy; Konstantin Romanyuk C. M. Costa Sergey Yu. Luchkin Andrei L. Kholkin Senentxu Lanceros-Mendez; *Langmuir*, 2016, 32, 5267-5276.
45. Role of the antiferromagnetic bulk spins in exchange bias; Ivan K. Schuller Rafael Morales X. Batlle Ulrich Nowak Gernot Güntherodt; *Journal of Magnetism and Magnetic Materials*, 2016, 416, 2-9.
46. Engineering magnetic nanostructures with inverse hysteresis loops; B. Mora N. Soriano C. Redondo A. Arteché D. Navas Rafael Morales; *Nano Research*, 2016, 1-7.
47. Reusability of photocatalytic TiO_2 and ZnO nanoparticles immobilized in poly(vinylidene difluoride)-co-trifluoroethylene; Sara Teixeira P. M. Martins Senentxu Lanceros-Mendez K. Kühn G. Cuniberti; *Applied Surface Science*, 2016, 384, 497-504.
48. Low temperature magnetic properties of a $\text{Ni}_{50}\text{Mn}_{34}\text{In}_{16}$ ball-milled metamagnetic shape memory alloy; S. Larumbe Iraultza Unzueta Sanchez-Alarcos, V. Perez-Landazabal, J. I. Recarte, V. José Ángel García Fernando Plazaola; *Journal of Non-Crystalline Solids*, 2016, 447, 16-20.
49. Flexible thin film magnetoimpedance sensors; Galina V. Kurlyandskaya Eduardo Fernández Andrey Svalov A. Burgoa Beitia Alfredo García-Arribas Aitor Larrañaga; *Journal of Magnetism and Magnetic Materials*, 2016, 415, 91-96.
50. Improved performance of rare earth doped LiMn_2O_4 cathodes for lithium-ion battery applications; Pura Ram A. Gören Stanislav Ferdov María Manuela Silva Rahul Singhal C. M. Costa Rakesh K. Sharma Senentxu Lanceros-Mendez; *New Journal of Chemistry*, 2016.
51. From Superhydrophobic- to superhydrophilic-patterned poly(vinylidene fluoride-co-chlorotrifluoroethylene) architectures as a novel platform for biotechnological applications; V. F. Cardoso Ana R. Machado Vânia C. Pinto Paulo J. Sousa G. Botelho Graça Minas Senentxu Lanceros-Mendez; *Journal of Polymer Science*, 2016, 54, 1802-1810 (see Figure 10 on page 23).
52. Processing and size range separation of pristine and magnetic poly(L-lactic acid) based microspheres for biomedical applications; D. M. Correia V. Sencadas Clarisse Ribeiro P. M. Martins P. Martins F. M. Gama G. Botelho Senentxu Lanceros-Mendez; *Journal of Colloid and Interface Science*, 2016, 476, 79-86.
53. Quantification of size effects in the magnetoelectric response of metallic glass/PVDF laminates; Andoni Lasheras Jon Gutierrez José Manuel Barandiarán; *Applied Physics Letters*, 2016, 108, 222903.

54. *A green solvent strategy for the development of piezoelectric poly(vinylidene fluoride-trifluoroethylene) films for sensors and actuators applications*; Joao Nunes-Pereira P. Martins V. F. Cardoso C. M. Costa Senentxu Lanceros-Mendez; *Materials & Design*, 2016, 104, 183-189.
55. *Optimization of filler type within poly(vinylidene fluoride-co-trifluoroethylene) composite separator membranes for improved lithium-ion battery performance*; Joao Nunes-Pereira Manab Kundu A. Gören Maria Manuela Silva C. M. Costa Lifeng Liu Senentxu Lanceros-Mendez; *Composites Part B: Engineering*, 2016, 96, 94-102.
56. *Naphthyl-Containing Organophosphonate Derivatives of Keggin-Type Polyoxotungstates*; Nerea Andino Beñat Artetxe Santiago Reinoso Pablo Vitoria Leire San Felices José I. Martínez Fernando López Arbeloa Juan M. Gutiérrez-Zorrilla; *Inorganics*, 2016, 4(2), 14.
57. *A Robust Open Framework Formed by Decavanadate Clusters and Copper(II) Complexes of Macrocyclic Polyamines: Permanent Microporosity and Catalytic Oxidation of Cycloalkanes*; Jagoba Martín-Caballero Ana San José Wéry Santiago Reinoso Beñat Artetxe Leire San Felices Bouchra El Bakkali Guido Trautwein Juan Alcañiz-Monge José Luis Vilas Juan M. Gutiérrez-Zorrilla; *ACS Inorganic Chemistry*, 2016, 55, 4970-4979.
58. *Piezoresistive response of spray-printed carbon nanotube/poly(vinylidene fluoride) composites*; Armando Ferreira Senentxu Lanceros-Mendez; *Composites Part B: Engineering*, 2016, 96, 242-247.
59. *TiO₂/graphene oxide immobilized in P(VDF-TrFE) electrospun membranes with enhanced visible-light-induced photocatalytic performance*; Nuno A. Almeida P. M. Martins Sara Teixeira José A. Lopes da Silva V. Sencadas K. Kühn G. Cuniberti Senentxu Lanceros-Mendez Paula A. A. P. Marques; *Journal of Materials Science*, 2016, 51, 6974-6986.
60. *Magnetic composite scaffolds of polycaprolactone/nFeHA, for bone-tissue engineering*; Esperanza Díaz Tajada B. Valle García José Manuel Barandiarán; *International Journal of Polymeric Materials and Polymeric Biomaterials*, 2016, 65, 593-600.
61. *Tunable High Aspect Ratio Iron Oxide Nanorods for Enhanced Hyperthermia*; Raja Das Javier Alonso Z. Nemati Vijaysankar Kalappattil David Torres Manh-Huong Phan Eneko Garaio José Ángel García J. L. Sánchez Llamazares H. Srikanth; *Journal of Physical Chemistry C*, 2016.
62. *Core/shell iron/iron oxide nanoparticles: are they promising for magnetic hyperthermia?*; Z. Nemati Javier Alonso H. Khurshid M. H. Phan H. Srikanth; *RSC Advances*, 2016, 6, 38697-38702.
63. *Enhanced Magnetic Hyperthermia in Iron Oxide Nano-Octopods: Size and Anisotropy Effects*; Z. Nemati Javier Alonso L. M. Martínez H. Khurshid Eneko Garaio José Ángel García M. H. Phan H. Srikanth; *Journal of Physical Chemistry C*, 2016, 120, 8370-8379.
64. *Magnetic nanoscopic correlations in the crossover between a superspin glass and a superferromagnet*; D Alba Venero S. E. Rogers S. Langridge Javier Alonso María Luisa Fernández-Gubieda Andrey Svalov L. Fernández Barquín; *Journal of Applied Physics*, 2016, 119, 143902.
65. *Syntheses, crystal structures and magnetic studies of new manganese(II) coordination polymers with ditopic N-pyridinylisonicotinohydrazide ligand and dicyanamide*; Rahman Bikas Nader Noshiranzadeh Leslaw Sieron Hassan Hosseini-Monfared José Manuel Barandiarán Tadeusz Lis Javier Alonso; *Inorganic Chemistry Communications*, 2016, 67, 85-89.
66. *Polysaccharide polyelectrolyte multilayer coating on poly(ethylene terephthalate)*; Leyre Pérez Erlantz Lizundia Sara del Hoyo Ariane Sagasti Leire Ruiz-Rubio José Luis Vilas; *Polymer International*, 2016.
67. *Magnetic and conventional shape memory behavior of Mn-Ni-Sn and Mn-Ni-Sn(Fe) alloys*; A. S. Turabi P. Lazpita M. Sasmaz H. E. Karaca Volodymyr Chernenko; *Journal of Physics D: Applied Physics*, 2016, 49, 205002.
68. *PLLA/ZnO nanocomposites: Dynamic surfaces to harness cell differentiation*; Sara Trujillo Erlantz Lizundia José Luis Vilas Manuel Salmeron-Sanchez; *Colloids and Surfaces B: Biointerfaces*, 2016, 144, 152-160

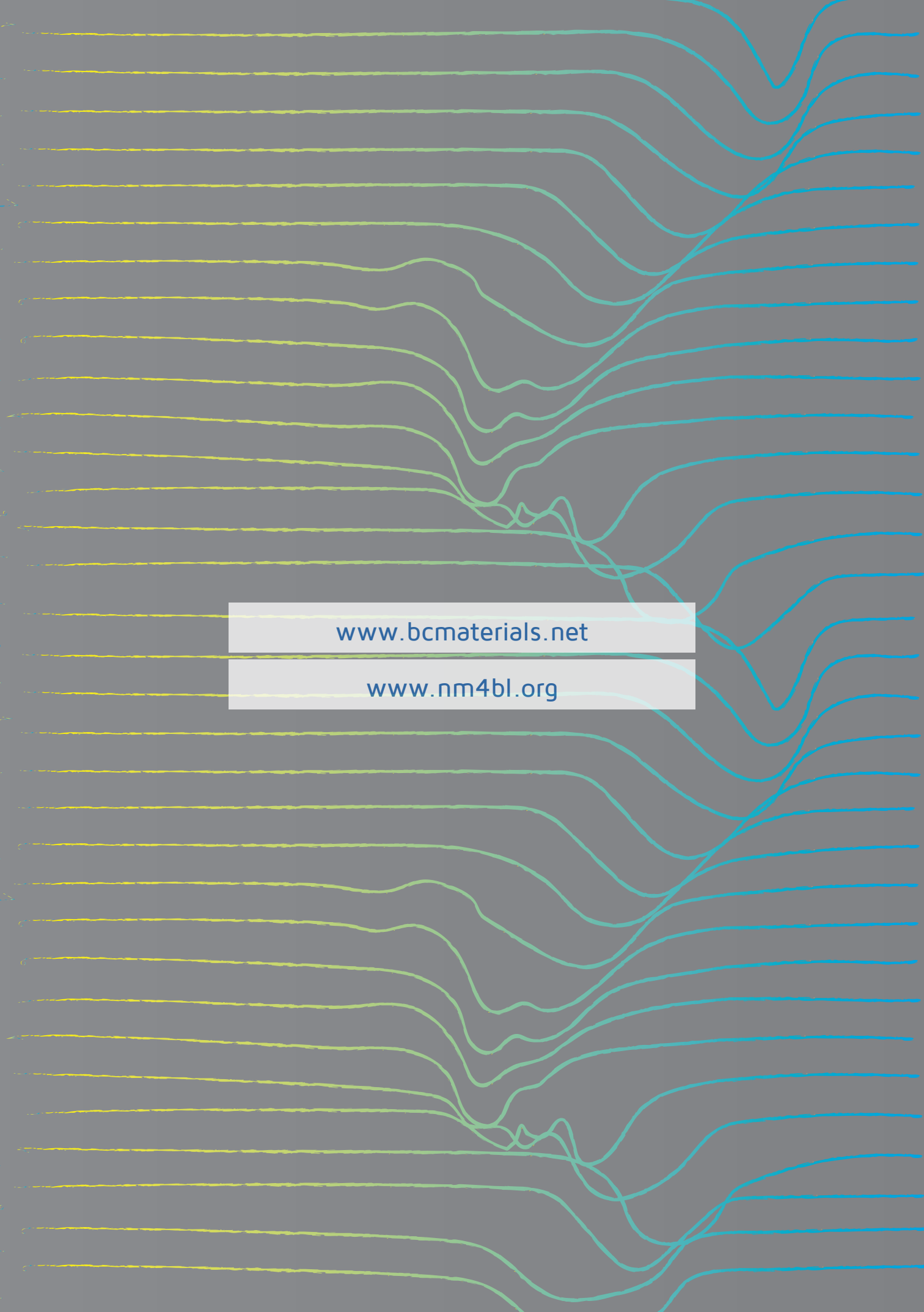
69. Strong increase of the dielectric response of carbon nanotube/poly(vinylidene fluoride) composites induced by carbon nanotube type and pre-treatment; P. Costa J. Silva Senentxu Lanceros-Mendez; *Composites Part B: Engineering*, 2016, 93, 310-316.
70. Cu-coated cellulose nanopaper for green and low-cost electronics; Erlantz Lizundia Marc Delgado-Aguilar Pere Mutjé Eduardo Fernández Beatriz Robles-Hernández M de la Fuente Rodríguez José Luis Vilas Luis Manuel León; *Cellulose*, 2016, 1-14.
71. Onset of room temperature ferromagnetism by plastic deformation in three paramagnetic pure metals; C. M. Cepeda-Jiménez A. Hernando José Manuel Barandiarán M. T. Pérez-Prado; *Scripta Materialia*, 2016, 118, 41-45.
72. Martensitic transformation and magnetic field induced effects in Ni₄₂Co₈Mn₃₉Sn₁₁ metamagnetic shape memory alloy; P. Lazpita M. Sasmaz Eduard Cesari José Manuel Barandiarán Jon Gutierrez Volodymyr Chernenko; *Acta Materialia*, 2016, 109, 170-176.
73. Self-patterning of epitaxial Ni-Mn-Ga/MgO(001) thin films; I. R. Aseguinolaza Golub, V. Salyuk, O. Y. B. Muntifering W. B. Knowlton P.Müllner José Manuel Barandiarán Volodymyr Chernenko; *Acta Materialia*, 2016, 111, 194-201.
74. Submicron R₂Fe₁₄B particles; O. Koylu-Alkan José Manuel Barandiarán Daniel Salazar George C. Hadjipanayis; *AIP ADVANCES*, 2016, 6, 056027.
75. Strain analysis on Ti_{1-x}Ag_x and Ag-TiN_x electrodes deposited on polymer based sensors; S. M. Marques P. Costa Senentxu Lanceros-Mendez S. Carvalho; *Thin Solid Films*, 2016, 604, 55-62.
76. High performance screen printable lithium-ion battery cathode ink based on C-LiFePO₄; R. E. Sousa J. Oliveira A. Gören D. Miranda M. Silva Loic Hilliou C. M. Costa Senentxu Lanceros-Mendez; *Electrochimica Acta*, 2016, 196, 92-100.
77. Superhydrophilic poly(L-lactic acid) electrospun membranes for biomedical applications obtained by argon and oxygen plasma treatment; D. M. Correia Clarisse Ribeiro G. Botelho J. Borges C. Lopes F. Vaz S. A. C. Carabineiro A. V. Machado Senentxu Lanceros-Mendez; *Applied Surface Science*, 2016, 371, 74-82.
78. CuII-based metal-organic nanoballs for very rapid adsorption of dyes and iodine; Eder Amayuelas Arkaitz Fidalgo-Marijuan Begoña Bazán Miren-Karmele Urriaga Gotzone Barandika María Isabel Arriortua; *CrystEngComm*, 2016, 18, 1709-1712.
79. Chemical Synthesis and Magnetic Properties of Monodisperse Nickel Ferrite Nanoparticles for Biomedical Applications; Xabier Lasheras Maite Insausti Izaskun Gil de Muro Eneko Garaio Fernando Plazaola María Moros Laura De Matteis Jesús M. de la Fuente Luis Lezama; *Journal of Physical Chemistry C*, 2016, 120, 3492-3500.
80. Bovine serum albumin binding, antioxidant and anticancer properties of an oxidovanadium(IV) complex with luteolin; Luciana G. Naso Luis Lezama María Valcarcel Clarisa Salado Patricia Villacé Danel Kortazar Evelina G. Ferrer Patricia A. M. Williams; *Journal of Inorganic Biochemistry*, 2016, 157, 80-93.
81. New Perspectives for Old Clusters: Anderson-Evans Anions as Building Blocks of Large Polyoxometalate Frameworks in a Series of Heterometallic 3d-4f Species; Beñat Artetxe Santiago Reinoso Leire San Felices Luis Lezama Juan M. Gutiérrez-Zorrilla Cristian Vicent Fadi Haso Tianbo Liu; *Chemistry – A European Journal*, 2016, 22, 4616-4525.
82. High-yield fabrication of 60 nm Permalloy nanodiscs in well-defined magnetic vortex state for biomedical applications; Maite Goirienea-Goikoetxea Alfredo García-Arribas M. Rouco Andrey Svalov José Manuel Barandiarán; *Nanotechnology*, 2016, 27, 175302 (Featured article and cover, vol. 27 (17), 29 April 2016).
83. Enhanced magnetic anisotropy and heating efficiency in multi-functional manganese ferrite/graphene oxide nanostructures; Anh-Tuan Le Chu Duy Giang Le Thin Tam Ta Quoc Tuan Vu Ngoc Phan Javier Alonso Jagannath Devkota Eneko Garaio José Ángel García Rosa Martín-Rodríguez María Luisa Fernández-Gubieda H. Srikanth Manh-Huong Phan; *Nanotechnology*, 2016, 27, 155707.

84. Superparamagnetic nanoparticles encapsulated in lipid vesicles for advanced magnetic hyperthermia and biodetection; Javier Alonso H. Khurshid Jagannath Devkota Z. Nemati Nawal K. Khadka H. Srikanth Jianjun Pan Manh-Huong Phan; *Journal of Applied Physics*, 2016, 119, 083904.
85. Remote triggering of thermoresponsive PNIPAM by iron oxide nanoparticles; D. J. Denmark J. Bradley D. Mukherjee Javier Alonso S. Shakespeare N. Bernal M. H. Phan H. Srikanth S. Witanachchi P. Mukherjee; *RSC Advances*, 2016, 6, 5641-5652.
86. Increasing X-ray to visible transduction performance of Gd₂O₃:Eu³⁺+PVDF composites by PPO/POPOP addition; J. Oliveira P. M. Martins P. Martins V. Correia J. G. Rocha Senentxu Lanceros-Mendez; *Composites Part B: Engineering*, 2016, 91, 610-614.
87. Poly(L-lactide)/branched β -cyclodextrin blends: Thermal, morphological and mechanical properties; Erlantz Lizundia F. Gómez-Galván Leyre Pérez Luis Manuel León José Luis Vilas; *Carbohydrate Polymers*, 2016, 144, 25-32.
88. MC3T3-E1 Cell Response to Ti_{1-x}Ag_x and Ag-TiN_x Electrodes Deposited on Piezoelectric Poly(vinylidene fluoride) Substrates for Sensor Applications; S. M. Marques P. Rico I. Carvalho J. L. Gómez Ribelles L. Fialho Senentxu Lanceros-Mendez M. Henriques S. Carvalho; *ACS Applied Materials & Interfaces*, 2016, 8 (6), pp 4199-4207.
89. Differentiation of mesenchymal stem cells for cartilage tissue engineering: Individual and synergetic effects of three-dimensional environment and mechanical loading; J. A. Panadero Senentxu Lanceros-Mendez J. L. Gómez Ribelles; *Acta Biomaterialia*, 2016.
90. Large tensile superelasticity from intermartensitic transformations in Ni₄₉Mn₂₈Ga₂₃ single crystal; Volodymyr Chernenko E. Villa Daniel Salazar José Manuel Barandiarán; *Applied Physics Letters*, 2016, 108, 071903.
91. Assemblies of magnetite nanoparticles extracted from magnetotactic bacteria: A magnetic study; A. M. Huizar-Félix D. Muñoz I. Orue C. Magén A. Ibarra José Manuel Barandiarán Alicia Muela María Luisa Fernández-Gubieda; *Applied Physics Letters*, 2016, 108, 063109.
92. Towards the development of eco-friendly disposable polymers: ZnO-initiated thermal and hydrolytic degradation in poly(L-lactide)/ZnO nanocomposites; Erlantz Lizundia Leire Ruiz-Rubio José Luis Vilas Luis Manuel León; *RSC Advances*, 2016, 6, 15660-15669.
93. Theoretical description of magnetocaloric effect in the shape memory alloy exhibiting metamagnetic behavior; Victor A L'vov Anna Kosogor José Manuel Barandiarán Volodymyr Chernenko; *Journal of Applied Physics*, 2016, 119, 013902.
94. Influence of Fe doping and magnetic field on martensitic transition in Ni-Mn-Sn melt-spun ribbons: C. O. Aguilar-Ortiz D. Soto-Parra P. Álvarez-Alonso P. Lazpita Daniel Salazar P. O. Castillo-Villa H. Flores-Zuñiga Volodymyr Chernenko; *Acta Materialia*, 2016, 107, 9-16.
95. Comparative efficiency of TiO₂ nanoparticles in suspension vs. immobilization into P(VDF-TrFE) porous membranes; P. Martins R. Miranda J. Marques Carlos. J. Tavares G. Botelho Senentxu Lanceros-Mendez; *RSC Advances*, 2016, 6, 12708-12716.
96. PLLA-grafted cellulose nanocrystals: Role of the CNC content and grafting on the PLA bionanocomposite film properties; Erlantz Lizundia Elena Fortunati Franco Dominici José Luis Vilas Luis Manuel León Ilaria Armentano Luigi Torre José M. Kenny; *Carbohydrate Polymers*, 2016, 142, 105-113.
97. Three-dimensional orientation of poly(L-lactide) crystals under uniaxial drawing; Erlantz Lizundia Aitor Larrañaga José Luis Vilas Luis Manuel León; *RSC Advances*, 2016, 6, 11943-11951.
98. Proving the suitability of magnetoelectric stimuli for tissue engineering applications; Clarisse Ribeiro V. Correia P. Martins F. M. Gama Senentxu Lanceros-Mendez; *Colloids and Surfaces B: Biointerfaces*, 2016, 140, 430-436.
99. Computer simulations of the influence of geometry in the performance of conventional and unconventional lithium-ion batteries; D. Miranda C. M. Costa A. M. Almeida Senentxu Lanceros-Mendez; *Applied Energy*, 2016, 165, 318-328.

100. *Characterization of Metglas/poly(vinylidene fluoride)/Metglas magnetoelectric laminates for AC/DC magnetic sensor applications*; S. Reis M. Silva N. Castro V. Correia P. Martins Andoni Lasheras Jon Gutierrez José Manuel Barandiarán J. G. Rocha Senentxu Lancersos-Mendez; *Materials & Design*, 2016, 92, 906-910.
101. *On the mineral core of ferritin-like proteins: a structural and magnetic characterization*; Ana García-Prieto Javier Alonso David Muñoz L. Marcano Ana Abad Roberto Fernández I. Orue O. Mathon Alicia Muela María Luisa Fernández-Gubieda; *Nanoscale*, 2016, 8, 1088-1099.
102. *High coercivity in rare-earth lean nanocomposite magnets by grain boundary infiltration*; Rajasekhar Madugundo Daniel Salazar José Manuel Barandiarán George C. Hadjipanayis; *Journal of Magnetism and Magnetic Materials*, 2016, 400, 300-303.
103. *Poly(L-lactide)/ZnO nanocomposites as efficient UV-shielding coatings for packaging applications*; Erlantz Lizundia Leire Ruiz-Rubio José Luis Vilas Luis Manuel León; *Journal of Applied Polymer Science*, 2016, 133, 2.
104. *Solvent and relative humidity effect on highly ordered polystyrene honeycomb patterns analyzed by Voronoi tessellation*. Ruiz-Rubio, L.; Azpitarte, I.; García-Huete, N.; Laza, J. M.; Vilas, J. L.; León, L. M. *J. Appl. Polym. Sci.* 2016, 133.
105. *In situ measurements of free volume during recovery process of a shape memory polymer*. García-Huete, N.; Axpe, E.; Cuevas, J. M.; Mérida, D.; Laza, J. M.; García, J. A.; Vilas, J. L.; Plazaola, F.; León, L. M. *Polymer* 2017, 109, 66-70.
106. *Studying nanoparticle's 3D shape by aspects maps: determination of morphology of bacterial magnetic nanoparticles*, D. Peddis, G. Muscas, R. Mathieu, P. Anil Kumar, G. Varvaro, G. Singh, I. Orue, D. Gil-Carton, L. Marcano, A. Muela, M. L. Fdez-Gubieda; *Faraday Discussion* 2016, 191, 177 (Impact Factor: 4.606) DOI:10.1039/c6fd00059b.
107. *Magnetic properties and magnetoimpedance of short CuBe/CoFeNi electroplated microtubes* El Kammouni R., Kurllyandskaya, G.V., Vázquez M., Volchkov S.O.; *Sens. Act. A-Physical Vol. 248* (2016) 155-161.
108. *Thin-film magneto-impedance structures with very large sensitivity*, García-Arribas A., Fernandez E., Svalov A., Kurllyandskaya G.V., Barandiaran, J.M.; *J. Magn. Magn. Mater. Vol. 400* (2016) 321-326.
109. *Flexible thin film magnetoimpedance sensors*, G.V. Kurllyandskaya, E. Fernández, A. Svalov, A. Burgoa Beitia, A. García-Arribas, A. Larrañaga; *J. Magn. Mater.* 415 (2016) 91-96.
110. *Commensurate Superstructure of the {Cu(NO₃)(H₂O)}(HTae)(Bpy) Coordination Polymer: An Example of 2D Hydrogen-Bonding Networks as Magnetic Exchange Pathway*, Roberto Fernández de Luis, Edurne S. Larrea, Joseba Orive, Luis Lezama and María I. Arriortua; *Inorg. Chem.*, 2016, 55 (22), pp 11662-11675
111. *The effect of partial substitution of Ni by Mg on the structural, magnetic and spectroscopic properties of the double perovskite Sr₂NiTeO₆*, B. Orayech, L. Ortega-San-Martin, I. Urcelay-Olabarria, L. Lezama, T. Rojo, M.I. Arriortua, J.M. Igartua; *Dalton Trans.*, 2016, pp. 14378 - 14393.
112. *Tuning the Size of Palladium Nanoparticles in Organic and Aqueous Solutions: Influence of Aminated and Thiolated Ligands*, I. Castellanos-Rubio, M. Insausti, I. Gil de Muro, T. Rojo, L. Lezama; *J. Nanosci. Nanotechnol.*, 16 4, pp. 4071 - 4079.
113. *Physico-chemical and electrochemical properties of NiO/C composites for high performance lithium and sodium ion battery anodes*, A. Iturrondobeitia, A. Goñi, I. Gil de Muro, L. Lezama, T. Rojo; *Journal of Materials Chemistry A* (2017) in press.
114. *A new technique to obtain vanadyl (IV) sodium vanadium fluorophosphate nanoparticles: microwave-assisted hydrothermal method at low temperature and fast reaction times*, P. Serras, S. Setién, A. Peña, L. Lezama, T. Rojo, V. Palomares; *ChemElectroChem* (2017) in press.



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