INDEX
Presentation and objectives ................................................................. 6

1. Scientific activity .............................................................................. 8
   1.2. Nanobiotechnology ...................................................................... 12
   1.3. Nanopharmacotherapy .................................................................. 20
   1.4. Nanomagnetism, Nanoelectronics and Nanophotonics .................... 22
   1.5. Nanostructured Materials .............................................................. 30
   1.6. Nanoenergy: Production, storage and Environment ....................... 32

2. General Activity report ................................................................. 36

Appendix 1 ......................................................................................... 42
List of Projects Funded (2010-2011)

Appendix 2 .......................................................................................... 54
List of publications

Appendix 3 .......................................................................................... 88
List of patents

Appendix 4 .......................................................................................... 90
List of members

Appendix 5 .......................................................................................... 94
List of trainees and postdocs
A thorough understanding of the behaviour of matter at both the atomic and the molecular scales is possible nowadays thanks to the wide background of theories and models existing to this end. This is also true of the behaviour of matter at microscopic level. There is, however, an entire field yet to be explored just in the middle, where systems present dimensions of about, or below, 100 nanometers. A large number of processes and phenomena, such as the ones which take place during catalysis, or the ones observable in immunology, electronics, magnetism, or optics, present similar lengths as well. A wide range of properties having their origins in the processes which take place in such scale lengths can be modified just by controlling the structure of systems at nanometric scale. The manufacturing and the study of nanosystems which may offer alternative functional properties are therefore the biggest challenges which nanoscience and nanotechnology set before us today, and we can face these challenges with the help of the wide knowledge we already have in these disciplines and of a large choice of methodologies.

The great expectations existing nowadays about the application of new technologies based on the development of nanostructured materials, as well as of new tools aimed at an accurate handling of the nanoscale, have pebbled the way for a research field which is now experiencing a decisive growth: nanotechnology. The various applications of nanotechnology can be seen and felt each day with higher intensity, and its impact on everyday life shall not definitely stop growing in the near future. Nanotechnology can in fact be applied to almost every field of research nowadays and, without doubt, it shall be at the basis of most technologies of the future.

The University of Barcelona created in 2006 the Institute of Nanoscience and Nanotechnology (IN2UB), which has as an aim to coordinate multidisciplinary research activities carried out by several research groups of this institution. The IN2UB wants to contribute to the progress of science and innovation while spurring, at the same time, industrial excellence. Researchers who are members of the IN2UB come from different scientific disciplines, such as Physics, Chemistry, Pharmacy Science, Biochemistry and Medicine. In this framework, the IN2UB aims at promoting, both internally and internationally, the collaboration among different groups and research centers by strengthening interdisciplinary activities which integrate both basic and applied research. The IN2UB is thus participating in national strategic programs and in several international projects and actions as well.

The institute integrates six different research lines:
- Modeling and Simulation of Systems and Properties of Matter in the Nanoscale
- Nanobiotechnology
- Nanopharmacotherapy
- Nanomagnetism, nanoelectronics and nanophotonics
- Nanostructured Materials
- Nanoenergy

Since its creation, the researchers and staff at the Institute of Nanoscience and Nanotechnology have been working intently to favour the most suitable synergies among researchers by encouraging interdisciplinary activities that shall result in new frontier-knowledge projects and to encourage relationships between researchers and those corporations with an interest in the different applications of nanotechnologies, by stimulating the implementation of joint projects that shall suit the technologically challenging requirements of the business sector.

Moreover, the University of Barcelona offers the Master in Nanoscience and Nanotechnology, and a Doctoral Studies Programme in Nanosciences, which aim at providing students with a deep and oriented training in both the nanoscience and nanotechnology fields. Teaching is based on research activity, transfer of knowledge and the sharing of experiences and procedures. The academic staff belonging to the IN2UB has a most singular role in these studies’ teaching activities.
1

SCIENTIFIC ACTIVITY
1.1. MODELING AND SIMULATION OF SYSTEMS AND PROPERTIES OF MATTER IN THE NANOSCALE

The research carried out by the **Theoretical Physics of Nanoscopic Systems Group** can be sorted in three different areas:

1. **Semiconductor Nanostructures**: through a full configuration interaction, the group has observed the existence of Fermi liquid and Wigner distribution in an elongated 3D nanocrystals subject to an inhomogenous spatial confining potentials.

2. **Bose-Einstein Condensates**: the group has studied the appearance of phase slippage and self-trapping in a self-induced bosonic Josephons junction, produced by the anisotropic long range dipolar interaction.

3. **Quantum Fluids**: through a time-dependent density functional formalism, the group has studied the desorption of alkali atoms from helium nanodroplets that compare very well with the experimental results obtained with a photoelectron spectroscopy.

*He droplet doped with a sodium atom. The sodium atom is simulated with a test particles approximation (blue ones).*
The **Nanosystems Statistical Physics Group** has been focusing on the study of several non-equilibrium-related phenomena and has explored different research lines:

1. An analysis of the magnetisation dynamics of nanoparticles at very short time scales has been performed. This analysis has led to predicting a new regime by which magnetisation performs a nutational motion which could be observed experimentally.

Phase diagram for a mixture of oppositely charged nanocolloids changed to an oscillating electric field. As a function of the oscillation frequency and amplitude strength of the external field (characterized by the effective colloid Péclet number) colloids with opposite charge (depicted with different color) separate into stripes that can change the number of observed stripes and their orientation with respect to the direction of the forcing filed. The observed patterns are sensitive to the hydrodynamic coupling among oppositely moving colloids.

2. It has been shown that thermodynamic quantities such as temperature cannot be defined consistently enough at very short length scales, and a lower limit for a thermodynamic description has been established.

3. Optimal resting-growth strategies of microbial populations in fluctuating environments have been studied.
4. An analysis of the protein crystal growth under non-isothermal conditions has been performed.

5. The role of nanocolloids in blockcopolymer phases has been analyzed. Through appropriate, newly developed computational coarse-grained approaches, it has been shown that the wetting properties of nanocolloids can be exploited to control the stability of lamellar phases and promote new morphologies and patterns.

6. A new computational approach has been developed to study the electrokinetics of nanocolloids in regimes of strong colloidal charges and strong fields. It has been exploited to identify the induced dynamic interactions between colloids in these nonlinear regimes, and to characterize these new dynamic interactions and their impact in the stability of nonequilibrium nanocolloidal suspensions.

7. The role of static and dynamic wetting on the stability of forced capillary fluid films has been analyzed. Exploiting coarse-grained, hybrid computational schemes, we have identified a new instability mechanism which promotes drop emission on heterogeneous slid substrates. This mechanism, based on the affinity of the forced liquid to the solid substrate, opens the possibility for the development of new approaches to control drop emission and transport in microfluidic devices.

8. The structures induced by an oscillating field on charged nanocolloidal mixtures have been considered. The group researchers have shown that the interaction of colloids through the solvent affect the relative stability of segregated structures and have a direct impact in how the forcing external field orients the stripes of colloids.
1.2. NANOBIO TECHNOLOGY

The research carried out by the Non-linear Physics in Nanobiophysics Group can be summarized as follows:

As far as the biophysics area is concerned, outstanding results have been obtained in some relevant subjects, such as the study of the molecular motor F1-ATP dynamics, theoretical modeling based on stochastic, differential equations, and the comparison between the theoretical and the experimental results. Moreover, predictions have been made, still pending of further experimental testing. The developed models include both the mechanical part of the models and the energetic one, derived from the ATP hydrolysis. Regarding neurophysics, it is worth mentioning that a series of works have been carried out on the synchronization of neuronal models and its role in signal transmission.

With regard to Brownian movement, it has been shown, by means of extensive simulations, that some anomalies exist concerning both transport and diffusion within Brownian non-interacting particle systems when in movement on surfaces which present a certain degree of disorder. In that sense, three different regimes have been defined: subtransport, subdiffusion and superdiffusion.
Mechanical properties of cells play a critical role in many essential biological functions including migration, contraction, differentiation and gene expression. Moreover, cells sense and respond actively to adhesive forces and deformations exerted by the adjacent cells and the extracellular matrix (ECM). The Biophysics and Bioengineering Unit applies nanotechnologies to probe the mechanical properties of molecules, cells and ECM-rich gels at the nanoscale. Nanomechanics of neutrophils have been measured with atomic force microscopy (AFM) in healthy subjects and in patients with advanced hypoxemic chronic obstructive pulmonary disease before and after bilateral lung transplantation. Using flat ended cylindrical AFM tips nanofabricated with focused ion beam technology, the unit researchers have probed integrin-specific mechanoresponses to compression and extension in lung cells. Nanorheological properties of thin samples of lung ECM obtained from rats have also been probed by applying small amplitude oscillations over a wide frequency range. Using AFM in image mode, the topography and pore size distributions of ECM gels used in 3D cultures has been characterized.

The researchers working at the Small Biosystems Lab Group have studied further DNA and RNA individual molecules. The group has also published several articles on DNA and RNA dynamic spectroscopy of forces and on the energetics of the nucleic acids, as well as on other subjects related to the study of individual molecules. It is also worth mentioning that new forms of short molecular handles have been introduced.
1. SCIENTIFIC ACTIVITY

The Microbian Enzymes for Industrial Applications Group has recently developed new enzymes to be used in hydrolysis, synthesis, and/or biotransformation of natural polymers and chemical compounds. In this sense, molecular studies of glycohydrolases and lipases have been done. The group has worked as well towards isolation, design and improvement of enzymes for biotechnological uses, such as paper bleaching and recycling, production of biofuel, synthesis of new compounds from waste materials, and the development of new materials from a lignocellulose, or a lipid-derived basis. The group has also achieved the biochemical characterization of lipases, cellulases and xylanases, improving at the same time its genetic handling. This is a work which implies basic studies related to the sampling, cloning, and purifying of enzymes, as well as structure-function or protein-engineering more advanced studies.

Along the past year, the work of the Intracellular compartments and Membrane Trafficking Group has involved the biochemical pathway that leads to the synthesis of phospholipids in the secretory membrane trafficking as a regulatory source of diacylglycerol (DAG). This work links with the involvement of the lipid phosphate phosphatase (LPP3) in the early secretory pathway, an enzyme that dephosphorylates phosphatidic acid to form DAG. On the other hand, the group has extensively collaborated with the laboratories of Dr. G. Baldini and E. Giralt. With the former, secretory trafficking impairments in hepatocytes that express a mutant form of alpha-1-antitripsin –a protein necessary

Thin Layer Chromatography (TLC) of the transesterification products released from Triolein (T, Sigma) by LipC lipase of Pseudomonas sp. 42A2 immobilised on MP-1000 (lane 1), EP-100 (lane 2) or Celite (lane 3). The transesterification reactions were carried out in 3% (lanes a), 5% (lanes b), 10% (lanes c) or 15% (lanes d) of water, containing 16% methanol slowly added. The FAMEs produced by CalB lipase (C) and a biodiesel sample chemically synthesized (BD) are shown as controls.
for liver physiology and whose disfunction causes hepatoma—, have been reported, while an in vitro model of blood brain barrier (BBB) has been provided to the latter group, in order for them to assay the internalization of functionalized nanoparticles by the clathrin-dependent route. Regarding the molecular mechanisms by which ethanol produces harmful effects on the cytoskeletal organization of astrocytes, new insights have been provided, and the precise subcellular localization and secretory transport functions in the Golgi complex of beta III spectrin—a protein which actively participates in its characteristic flattened membrane architecture—has been reported.

*Primary cultures of cortical newborn rat astrocytes, exposed chronically to ethanol (199mM - 7 days) and transfected with siRNA. Stained with phalloidin (green, F-actin), fluorescent siRNA (red) and DAPI (blue, nucleus).*
The researchers of the **Peptides and Proteins: Physicochemical Studies Group** have been focusing their work on two main research lines.

1. **The study of surface active properties of GBV-C peptides from the point of view of their self-aggregation properties and their interaction with membranes at the nanoscale level.** The main objective is the study of the potential of these peptides in the inhibition of the fusion process caused by the HIV fusion peptide.

2. **The performance of biophysical and microbiological studies of multifunctional, polycationic peptide constructions with membrane activity.**

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The **Supramolecular Systems in Nanobiomedicine Group** has developed work in the synthesis and functionalization of gold nanoparticles (AuNP) with:

1. **new thiol functionalized porphyrines,** active in photodynamic therapy, and
2. **cyclic peptides,** with antimicrobial and anticancer activity (Fig.1). The group is also responsible for the (bio)functionalization of microtools to tag cells and determine intracellular parameters (Fig.2), and also to study the interaction between receptor molecules and ligands using a novel tuning fork system. Also, we used gemini amphiphilic systems to obtain nanostructured gels that will be studied for drug delivery (Fig 3).

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*LB films of 2x2 μm (top) and 500x500 nm (bottom) at an extraction surface pressure of 10mN m⁻¹: a) and d) E1 (64-81); b) and e) HIV -1 FP; and c) and f) E1 (64-81): HIV -1 FP at a molar ratio of 0.6:0.4. (BIOCHIMICA ET BIOPHYSICA ACTA-BIOMEMBRANES Volume: 1808 Issue: 9 Pages: 2178-2188 DOI: 10.1016/j.bbamem.2011.05.020).*
The **Nanobioengineering Group** is a truly multidisciplinary team working in the application of nanotechnology to the development of new biomedical systems and devices, mainly for diagnostic purposes. The main activities of the group involve the physical and chemical functionalization of materials for the study of biomolecule and cell interactions and for the development of new biosensors integrated in lab-on-a-chip devices. The technology and results obtained in the laboratory are employed in medical applications ranging from portable diagnosis devices to implantable prostheses for regenerative medicine purposes.
The research carried out at the **Laser Processing Group** along the 2011-12 period has been focused on the two lines in the field of laser microfabrication which constitute the main activity of the group: laser microprinting, and laser scribing of transparent materials.

**Laser microprinting:** We have investigated the performances of the technique for printing lines of inks with high-resolution. Several process parameters, like drop overlap or laser fluence have been analyzed systematically. In addition, we have studied the possibility of applying the technique to the preparation of miniaturized odor sensors.

**Laser scribing:** We have developed a method to control the position of the focus of a femtosecond laser beam on a transparent material with accuracy better than 0.5 µm. The method, which operation principle relies on the highly non-linear interaction of ultrashort pulses with materials, allows obtaining features with extremely high resolution in a very reproducible way.

![Diagram](image.png)

**a)** Laser-printed lines displaying different morphologies depending on the overlap (Δx) between adjacent droplets and **b)** 2 mm long line printed at a 40 µm overlap (scale bar is always 50 µm). **c)** Swelling on PMMA induced by femtosecond laser irradiation.
The Group for the Study of Biomolecular Interactions has been focusing on the development of nanosystems intended to establish new therapies against malaria, including strategies based on the single-molecule force spectroscopy for the identification of new antimalarial and antibiotic agents and the design of nanovectors suitable for drug release against malaria. This includes the study of metabolic pathways present in the parasite causing malaria but absent in humans, with the aim of identifying specific enzymes as therapeutic targets. Another line of research includes the study of amyloid fibers as a new material for the fabrication of coaxial nanowires as possible new targets for vaccines.
1.3. NANOPHARMACOTHERAPY

The Drug Development within Nanostructured Systems has been working with biocompatible polymeric meso/macroporous materials and nanoparticles, using highly-concentrated emulsions and nano-emulsions as templates. These nanosystems can be used as implants for controlled drug release. The group is currently exploring the development and characterization of crosslinked self-assembled nanostructures for the treatment of arthritic diseases and hepatic pathologies. The research group has also been working in the analysis of the mechanisms involved in the freeze-drying process of polymeric nanostructured systems, determining the collapse temperature by thermal analysis and freeze-drying microscopy. The incorporation of nanostructured lipid carriers to semisolid formulations for improve topical adhesion has also been studied.
The **Drug Design and Response-evaluation within Pharmaceutical Nanostructured and self-ordered Systems Group** has mainly focused on the in vivo evaluation of polymeric poly lactic-co-glycolic acid nanoparticles (PLGA) containing tricyclic antidepressants. Specifically, the analgesic and anti-allodynic effects of these systems have been evaluated after their subcutaneous administration in healthy rats by means of thermal stimulation (plantar test), and in rats with sciatic nerve chronic constriction injury, respectively.

Simultaneously, the group has worked with magnetic liposomes developed by the Department of Physical Chemistry of the Faculty of Pharmacy of the UB. In this case, the group has worked with a model-developed inflammation in mice, and has studied the biodistribution of iron from the magnetoliposomes administered intravenously, both in the presence and in absence of an external magnetic field. Finally, in collaboration with the CSIC, permeation in human skin of clindamycin formulated in highly-concentrated emulsions has been studied.

The **Colloids Group** has been working with magnetic particles based on iron oxides (ferrofluids and magnetoliposomes). Such nanoparticles have been used in hyperthermia and ablation therapies. In both cases, materials mimicking the tumor tissue (the so-called phantoms) were used. For hyperthermia studies, magnetite nanoparticles stabilized with polyethylenglycol, and an external magnetic waveguide, as a source of radiation, were used, whereas for thermal ablation, the same ferrofluid alone or encapsulated in liposomes, and a radiation of 2.45 GHz were used. On the other hand, the effect of an external magnet on the biodistribution of magnetoliposomes in mice was also studied. Simultaneously, the group has been working with liposomes and has performed the following studies:

- **a** the effect of the surface charge of artificial model membranes on the aggregation of amyloid ß-peptide (related to the Alzheimer’s disease),
- **b** the interaction with platelets of liposomes bearing fibrinogen, and
- **c** the role of the electrostatic depletion attraction on the structure of charged liposome-polymer mixtures.

*Properties and characteristic of a ferrofluid formed by magnetite stabilized with polyethylenglycol.*
1.4. NANOMAGNETISM, NANOELECTRONICS I NANOPHOTONICS

The main target of the Molecular Magnetism Group has been the design of discrete systems with high nuclearity or 1D compounds with single-molecule/chain magnet response (SMM/SCM). The research has been mainly focused on anisotropic cations as the NiII, MnIII, IV and occasionally lanthanides, with the aim to obtaining high nuclearity systems (nanomolecules) with a ground state of maximum multiplicity spin and high anisotropy able to show the SMM/SCM properties. The bridging ligands which offered best results have been phosphonate ligands and the polytopics pyridyl-oximates, often combined with azido bridges. The group is starting as well an innovative line of work focused on supramolecular aspects of magnetic systems as the encapsulation of anions in clusters derived of oximate ligands.

An example of one manganese Single-Chain Magnet built from ferromagnetic clusters, with local ground state $S = 9$, linked by end-on azido and oximato bridges.

In the field of magnetic materials, the Magnetism Group has focused on the study of the quantum dynamics of the vortex state induced in micrometre-sized permalloy disks by the application of a magnetic field in the plane of the samples [Phys. Rev. B 85, 180401 (2012)]. The time evolution of the magnetization of these materials has been interpreted as quantum tunneling of the vortex core through the pinning barriers associated with the presence of structural defects. In the field of superconductors, the group has investigated the effect of the application of a magnetic field on the quantum magnetic relaxation in a disk-shaped type-I lead sample [Phys. Rev. B 85, 064506 (2012)]. The results have been discussed in the framework of a theoretical model developed in collaboration with Prof. Eugene Chudnovsky of the City University of New York in which the time variation of the magnetization is described in terms of the motion of nanometre-sized interfaces between normal and superconducting zones in the intermediate state.

(a) AFM image of the array of permalloy disks studied. The angle of the perspective view is 45°. (b) Spin field of the vortex state in one of the permalloy disks considered in (a). The vortex core is displaced transversely to the direction of the applied field, H.
The Magnetism and Functional Molecules Group (GMMF) has during the period 2011-2012 received funding from the European Union (ERC Starting Grant), which represents a major step forward both in terms of recruitment and of acquisition of new infrastructure. Thus, the group has gained access to 60 m² of additional laboratory space and has acquired a single crystal X-ray diffractometer. Some of the most relevant highlights for 2011-2011 are:


iii) The preparation of photochromic ligands for the construction of photomagnetic systems.

Representation of a CNOT operation as realized by a [Tb(III)]₂ molecule by manipulation of its electronic spins. Below is a scheme of this operation in form of rotations of the spins embodying the qubits.
Research carried out by the **Micro-nanoengineering and Nanoscopies for photonic and electronic Devices Group (MIND)** has been developed in different and complementary fields.

The **Nano and Microtechnologies Unit** has developed nanodevices and systems based on nanostructures, in order to fabricate a new class of advanced chemical sensors.

![SEM image of a SnO2 gas nanosensor fabricated on top of a microhotplate. The inset corresponds to an enlargement of the red square in the image and allows to see the 50nm-thick SnO2 nanowire contacted using focused electron beam assisted deposition.](image)

As a part of the same group, the **Applied Nanoelectronics Unit** has focused its research on sensors, printed electronics and simulation. The development of sensors has continued, based on previous knowledge on monolithic ceramic technology for rigid devices in the framework of project Nanomat. Besides, flexible devices were developed for project Infinitex. Both approximations take advantage of the reactivity of certain nanostructures, like metal oxide nanofibers or carbon nanofibers -see figure-, as sensing materials. For the development of these sensors at the nanoscale, advanced inkjet printing technology was set-up. Such a development and deep knowledge on printed electronics allowed the unit to propose the use of inkjet for passive applications in different fields (projects Thermprint and Trilobits) and for active applications. In fact new printed transistors based on graphene are expected in the next year. Finally, the unit has continued his strategy on simulation by the development of an advanced tool for first-principle compute of the transport of quantum dots.
Also within the MIND group, the **LENS (Laboratory of Electron Nanoscopy) team** has been actively working in several lines. From the point of view of instrumentation development, the main focus has been the combination of advanced operational modes in Transmission Electron Microscopy. Starting with an innovative approach using electron Tomography and Electron beam precession in imaging mode, the combination Electron Energy Loss Spectroscopy with Electron Tomography and Electron Beam Precession (this latest mode giving rise to an international patent application 12160112.4-221) has extended the research field to advanced modes in analytical electron microscopy.

*Experimental and simulated high resolution TEM images of Nb$_2$O$_5$ nanowires used as humidity sensors.*
From the point of view of materials science and technology, LENS has been collaborating in national and international contexts in structural and chemical sub-nanometer / atomic resolution characterization of materials and devices in the field of: i) tandem solar cells based in Si nanocrystals; ii) proton conducting materials for solid oxide fuel cells; iii) complex oxides core-shell magnetic nanoparticles for biomedical applications; iv) biferroic materials for spintronic applications; v) semiconducting nanowires for chemical sensors and vi) III-V nitrides for optoelectronic devices.

Si-nanocrystals for advanced tandem solar cells.
The Electrophotonics Unit of MIND is working on the IP EU project HELIOS: Photonics and Electronics Functional Integration on CMOS. Particularly, the unit has shown during this year a new type of integrated light emitters which can emit with high efficiency in the infrared and visible (see pictures). By a careful design and fabrication process, the integrated nanoLEDs have been coupled to a slot waveguide and to the exterior through a grating. Thus, the unit has been able to show that light in a Photonic Integrated Circuit (PIC) can be generated, distributed and coupled. The light is in the visible and infrared in devices with only few tens of nm. Er ions are coupled to Silicon nanocrystals in the active layers and are excited by the impact of hot electrons. A photon is emitted when they de-excite. So, these devices are of impact excitation type with a high V threshold.

Moreover, and in collaboration with other members of the MIND group, the Electrophotonics Unit has continued this year their successful work in the STREP EU Project NASCENT: Nanostructured Tandem Solar Cells. The objective is to fabricate a double solar cell in which the upper part is made up of thin nanocrystalline layers of Si and/or SiC. The size of the nanocrystals is controlled to the atomic scale and thus due to quantum confinement effects, the band gap absorption of the upper cell can be tailored following the needs. We have estimated that a band gap of 1.7 eV maximizes efficiency of the overall cell for a Si bulk solar cell down.
Within the frame of the Nanoblock project, other researchers from the MIND group have explored the fabrication of highly ordered nanostructures for electronic and photonic nanodevices has been further developed using block-copolymer nanotechnology. By means of electron beam deposition, ion beam synthesis or reactive ion etching, the formation of organized nanoparticles and nanowires has been attained onto selected regions of submicrometric size, where the active area of the devices will be defined.

Silicon nanoparticles row deposited onto a nanotrench defined by means of graphoepitaxy.

Laminar silicon wires defined by reactive ion etching of 20 nm silicon layer patterned by means of a block-polymer etching mask.

The Organic Materials Group has been focusing on the study of a new family of organic molecules unprecedented in the literature, since they have magnetic properties despite the absence of both radical structures and metal atoms. It is remarkable that these systems maintain their magnetic order, at least, between 4 K, and room temperature. Sixteen new molecules were synthesized, designed with the aim of improving the properties of the first molecules discovered by the group. Of these materials, we studied their biradical character and magnetic behaviour, and we conducted a thorough computational study of its structure. As a result, the group has proposed a general structure for the design of biradical molecules with magnetic properties. The group is also preparing polymeric and dendrimer-structured derivatives of these molecules.
The Magnetic Nanomaterials Group has achieved during the past months a real-space characterization on the subnanometer scale of the magnetic, chemical, and structural properties of iron-oxide nanoparticles via aberration-corrected scanning transmission electron microscopy. For the first time, electron magnetic chiral dichroism has been used to map the magnetization of nanoparticles in real space with subnanometer spatial resolution. It has been found that the surface of the nanoparticles is magnetically ordered. Combining the results with density functional calculations, it has been established how magnetization is restored in the surface layer, and it is concluded that the nature and number of molecules in the capping layer is an essential ingredient in the fabrication of nanoparticles with optimal magnetic properties (See Surfactant Organic Molecules Restore Magnetism in Metal-Oxide Nanoparticle Surfaces; Nano Letters 12 (2012) 2499).

Real-space magnetization characterization with nanometer resolution. The scale bar represents 5 nm in all panels. (a) Aberration-corrected STEM bright-field image of a Fe₃O₄ nanoparticle. (b,c) High-resolution Z-contrast STEM images of two Fe₃O₄ nanoparticles along the <111> and the <001> zone axes, respectively, showing high crystal quality. Nominal particle sizes are 9 and 5 nm, respectively. (d) Color-coded $L_{23}$ ratio maps obtained from the spectrum image of the nanoparticle shown in panel (a) acquired at symmetric positions in the diffraction pattern: $I^+$ (left) and at $I^-$ (right), respectively. (e) Averaged EELS spectra in the Fe $L_{23}$ edges, after background subtraction, for the nanoparticle shown in panel a measured at $I^+$ and $I^-$ and the resultant dichroic signal (in blue), represented by the difference, which has been magnified by a factor of 5 in the Figure. This signal is magnetic in nature and stands for the magnetization of a single nanoparticle with sub-nanometre resolution. (f) Top: $L_{23}$ profile along the direction of the blue arrow in panel d (in red and in black for $I^+$ and $I^-$ $L_{23}$ ratio maps, respectively). Bottom: difference between $I^+$ and $I^-$ $L_{23}$ ratios along the nanoparticle. This difference is magnetic in nature and is proportional to the local magnetization of a single nanoparticle with sub-nanometre resolution.
1.5. **NANOSTRUCTURED MATERIALS**

The **Thin-film and Metallic Micro / Nanostructures Electrodeposition Group** is mainly working in the use of electrochemical techniques to prepare alloys with potential uses in sensors and devices. The knowledge and control of the electrochemical process allows defining the best electrodeposition conditions to obtain micro/nanostructures of magnetic alloys. Recent work refers to CoPt and CoNi magnetic nanowires preparation with different aspect ratio, composition and crystalline phase. Also, new strategies to obtain structures with variable shape and size by means electrochemical method are being developed, including the use of microemulsions or adsorbed monolayers. The use of ionic liquids of new generation allows extending the possibilities of electrodeposition to the preparation of alloys as CoPt without hydrogen evolution interference or alloys containing rare earth elements, which are not available by electrodeposition in aqueous solutions.

![Electrodeposited CoNi magnetic structures](image)

*Electrodeposited CoNi magnetic structures (porous films and nanowires of 20 nm of diameter.)*

The **Self-organised Complexity & Self-Assembling Materials Group (SOC&SAM)** develops basic research in the field of soft Nanotechnology, combining experimental studies in liquid crystals, colloidal systems, and monomolecular films of biomimetic molecules. Within the context of the latter type of systems, the group has shown that bottom-up chemical and top-down physical influences can be coupled arbitrarily to determine the chirality of a self-assembled supramolecular system, paving the way for new approaches in the development of chiral materials and processes. The group has also focused on the study of transport phenomena in two-dimensional micro-flows of surfactant monolayers, exploring different scenarios to enhance passive mixing. In the context of composite liquid-crystal/micro-particle materials we have explored different paradigms for controlled transport, such as the directed motion of passive micro-particles driven by non-linear electrophoretic effects in the anisotropic liquids or the direct manipulation of anisometric paramagnetic Janus micro-particles driven by a combination of external fields.

![Confined colloidal particles](image)

*Confined colloidal particles self-assemble due to electrohydrodynamic interactions in the presence of an external alternate electric field. While spherical particles form ordered colloidal crystallites, anisometric particles arrange into complex non-compact morphologies.*
The **Physics and Engineering of Nano-structured and Amorphous Materials Group (FEMAN)** has obtained evidences of graphene of very few layers at relatively large area, deposited by a new modified CVD method (project BIOGRAPH). The results of development of new materials have been reported in two doctoral thesis entitled: “Production and characterisation of Fe@C nanoparticles obtained by arc-discharge plasma” by Noemí Aguiló-Aguayo and “Producción de nanoparticulas de sí monodispersas obtenidas mediante plasma modulado” by María José Inestrosa Izurieta, both resulting from the projects NANOBIOMED and NANOTRAPPING respectively.

Further studies have been done on the possible applications of carbon nanotubes in the energy field (supercapacitors) and in the field of environment concerning the extremely high-surface nanostructured materials aimed at trapping specific pollutants.

The activity of the **Homogeneous Catalysis Group** is still focusing, with regard to issues related to nanoscience, on the search for new ligands capable of stabilizing systems with nanoparticles, mainly Palladium Platinum and Ruthenium, so that they can be studied as precursors of species showing a catalytic activity different from the activity observed in molecular systems. The design of ligands stabilizing the nanoparticles constitutes an important part of the work carried out by the group. In particular, it is important to prepare chiral ligands that can introduce some control on the enantioselectivity so that they can be applied in the process of asymmetric synthesis later on. The use of ionic liquids as solvents in catalytic processes allows us to study firsthand the changes that occur in the particles used.
1.6. NANOENERGY: PRODUCTION, STORAGE AND ENVIRONMENT

The Electronic Materials and Energy Group (M-2E) has made progress in the manufacturing of transparent and flexible TFTs for inkjet, by using metal oxides as semiconductor electrodes. Several Indium-oxide-based compositions with various additives were tested, verifying polarity, quality and continuity of the layers, transparency, morphology, compatibility with previously developed materials and their electrical characteristics. The group is currently studying an optimal method to develop an entirely transparent and flexible electronics.

Characteristics I-V curves of thin transistors (TFTs) based on transparent metallic oxides and fabricated by means of inkjet process.
Within the scope of nanoenergy, The **Solar Energy Group** has focused its research on the improvement of silicon-thin-film-based solar cells. In particular, all the relevant aspects in order to optimize light absorption by the devices have been considered, such as the development of transparent conductive oxides for front and back contacts, the introduction of nanometric layers as optical couplers between the front transparent conducting oxide and the amorphous silicon device, or the development of textures on the glass substrate to enhance light scattering.

The **Catalytic Materials Group (MATCAT)** has been working on the development and design of new materials with catalytic properties for use in processes of reformation of bioalcohols which may be applied to an alternative production of hydrogen and to the chemical recycling of CO2, by means of their conversion into higher alcohols. The materials are fabricated following different methods, and their structural and physico-chemical characteristics are related to their catalytic behaviour in the aforementioned processes, among others.

**EPMA-EDX analysis, of a Pd-Zn-based catalytic membrane reactor.**
The activity of the Centre of Design and Optimization of Materials (DIOPMA) in the field of nanotechnology is related to the following research lines:

1. Synthesis of nanostructured materials by manufacturing components (electrodes and electrolytes) for Solid Oxide Fuel Cells (SOFCs), and superconductor materials using polyacrylamide gel combustion method. We also work on the synthesis of nanoparticles via conventional routes, by reduction in aqueous media and surfactants, and on the characterization of these nanoparticles by TEM. In addition, we also develop the synthesis of Ni nanoparticles by magnetic separation, and nanofibers and crystallization of polymers using electrospinning technique.

2. Nanomechanical characterization of different functional ceramics, using nanoindentation technique: electrolytes for SOFCs, such as YSZ (yttria stabilized zirconia), YSZ-PSZ (yttria and partial stabilized zirconia) composites, GDC (gadolinia doped ceria), and LSGM (perovskite base on lanthanum, strontium, gallium and magnesium), and superconductor materials (YBCO). Mechanical properties, such as Young modulus (E), hardness (H) and fracture toughness (KIC), and fracture mechanisms activated during indentation process are studied by nanoindentation technique and atomic force microscopy (AFM).
2
GENERAL ACTIVITY REPORT
During the 2011-2012 academic year, 10 new students have enrolled (first year). The total number of students enrolled in the programme at present is 54. The PhD program in Nanoscience began during the 2007-2008 academic year and from then until October 2012, a number of 18 doctoral theses have been read, and the theses read between November 1st 2011 and October 31st 2012 are the following:

- **Nanostructure Effects on the Magnetic Properties of Magnetite Nanoparticles: from Synthesis to Applications in Nanomedicine.**
  Author: Nicolás Pérez Rodríguez. Supervisor: Xavier Batlle Gelabert.

- **Customizing a Low Temperature System for Microwave Transmission Measurements. Quantum Transport in Thin TiN Films and Nanostructures.**
  Author: Carla Carbonell Cortés. Supervisor: Antoni García Santiago.

- **Studying Electrostatic Polarization Forces at the Nanoscales. Dielectric Constants of a Supported Biomembranes measured in air and Liquid Environment.**
  Author: Georg Gramse. Supervisor: Gabriel Gomila Lluch

- **Synthesis, Characterization and Application of $\text{Ce}_x\text{Zr}_{1-x}\text{O}_2$ Nanostructured Materials.**
  Author: Sarah Abdolahzadeh-Ghom. Supervisor: Joan Ramón Morante i Lleonart.

- **Optical Grating Coupler Biosensor and Biomedical Applications.**
  Author: Lorena Diéguez Moure. Supervisors: Dr. Mauricio Moreno Sereno and Dr. Elena Martínez Fraiz.

- **Construction of Versatile Biomolecule Nanoplatforms via Dip-pen Nanolithography and their Application in Bio-Sensing and Cell Differentiation.**
  Author: Sabine Oberhansl. Supervisors: Dr. Elena Martínez Fraiz and Dr. Josep Samitier Martí.

- **Novel Magnetic Dynamic Phenomena at Low Temperatures: I – Topological Hysteresis and Quantum Tunneling in a Pb Type-I Superconductor II – Magnetic Deflagration in $\text{Gd}_5\text{Ge}_2$.**
  Author: Saúl Vélez Centoral. Supervisors: Dr. Javier Tejada Palacios and Dr. Antoni García Santiago.

For further details on the Programme, please visit the site: [http://www.ub.edu/in2ub/doctorat_nanociencia](http://www.ub.edu/in2ub/doctorat_nanociencia)
During the academic year 2011-2012, the IN²UB has organized or given support to the seminars and conferences listed below:

- **Mid-nineteenth-century Technologies for Innovative Memories and Sensors, by Xavier Martí (Institute of Physics, Czech Academy of Sciences / Charles University in Prague).**
  April 27th, 2012

- **Lorenz Miroscopy, by César Magén (Instituto de Nanociencia de Aragón).**
  May 7th-11th, 2012

- **Dynamics of Nanoscaled Spin Systems, by Hamid Kachkachi (Promes, CNRS, University of Perpignan).**
  June, 25th-29th, 2012

- **Interface Science at the University of Colorado: Single-molecule Tracking, liquid Crystal Biodetection, and Monolayer-mediated Heterogenous Catalysis, by Daniel K. Schwartz (University of Boulder, Colorado).**
  July 5th, 2012

- **Rapid, Cheap, Label-free Detection of Cancer Markers Using NanowiresInterfaced to Viruses, by Reginald M. Penner (Department of Chemistry, and Department of Chemical Engineering and Materials Science, University of California, Irvine).**
  July 16th, 2012

- **Sniffing Molecules with Metal Nanowires, by Reginald M. Penner (Department of Chemistry, and Department of Chemical Engineering and Materials Science, University of California, Irvine).**
  July 19th, 2012

- **Principles and Methods of Micro & Nanofabrication, by Antonis Olziersky (Institute of Microelectronics, National Center for Scientific Research “Demokritos”, Athens).**
  September 25th-28th, 2012

- **Science and Technology of Modern Permanent Magnet Materials, by George C. Hadjipanayis (Department of Physics and Astronomy Sharp Lab, University of Delaware IEEE Magnetics society Distinguished lecturer 2012).**
  September 17th, 2012

- **Simulations in Nanoscience, by Sergey V. Buldyrev (Department of Physics, Yeshiva University, New York City).**
  September, 14th-20th, 2012
Falling into the academic year 2012-2013, the IN²UB celebrated the fifth edition of its yearly meeting on November 15th 2012. The meeting was held at the premises of the University of Barcelona (Aula Enric Casassas), and was attended by both members of the IN²UB and young researchers working with the groups composing the institute. The conference attendees had the chance to see 25 posters presented by young researchers and to attend ten lectures offered by a plenary speaker (Ilya Revikine, CIC BiomaGUNE, San Sebastián) and members of both the IN²UB and the CCiTUB (Centres Científics i Tecnològics de la Universitat de Barcelona).

Since July 2009, the IN²UB is part of the scientific cluster SECPHO (Southern European Cluster of Photonics and Optics). The IN²UB collaborates with the costs and activities of the cluster through an annual fee. Likewise, the IN²UB organizes a yearly visit to the laboratories of photonics and optics groups of IN²UB linked to SECPHO and funds to its members attendance to specialized conferences when required. On the other hand, the SECPHO third yearly meeting is expected to take place by the end of November within the larger frame of the SPIE Conference (see http://spie.org/x13206.xml).

After approval by the IUPAP in January 2010 of the city to host the XX edition of the ICM 2015, the IN²UB has continued working towards the organisation of this event. Currently, 80% of the bulk of the research carried out in magnetism is closely related to nanotechnologies, and the IN²UB members therefore believe that holding this conference in our city will be extremely positive for the scientific community.
doing research in this field in our country. Last July, 2012, the organising committee of ICM 2015 travelled to Busan with occasion of the ICM 2012, in order to present to its organizers and attendants the 2015 ICM event to be held in Barcelona.

In addition, and connected to international conferences, the IN²UB has cofunded and supported the MOLMAT 2012 conference (see http://molmat2012.com/). The Fifth International Congress on Molecular Magnetism (MOLMAT2012) was celebrated in Barcelona on the past July 3d to 6th, at the facilities of the Auditori AXA. This congress is a multidisciplinary meeting point aimed at bringing together scientists from very diverse disciplines who share an interest on the wide topic of Molecular Materials. The July edition included sessions on Surface Science, Porous Materials, Magnetism, Optical Properties, Biomaterials, Theoretical Chemistry and Nanomaterials, and was the first to be celebrated out of France, as an initial step towards the full internationalization of the event. The meeting was chaired by a professor from the Department of Inorganic Chemistry of the Universitat de Barcelona (UB), Dr. Guillem Aromí, while the organizing committee was mainly composed by members of the same department (Dr. Núria Aliaga-Alcalde, Dr. Imma Angurell, Dr. Leoni A. Barrios, Dr. Albert Figuerola, Dr. Patrick Gámez, Dr. Arnald Grabulosa, Dr. Laura Rodríguez, Dr. José Sánchez Costa, Dr. E. Carolina Sañudo, Dr. Ramón Vicente) together with Dr. Jordi Ribas and Dr. Mercè Deumal (Department of Physical Chemistry, UB) and Dr. Olivier Roubeau (University of Zaragoza - CSIC). The Department of Inorganic Chemistry was also represented in the specialized scientific committee (Dr. Albert Escuer and Dr. Eliseo Ruiz). This fifth edition of MOLMAT was honored by the presence of 14 distinguished invited speakers from around the world, who contributed to a total of 61 oral presentations. The total number of participants was above 400 people, representing a total of 42 countries from the five continents.
APPENDIX 1

LIST OF
PROJECTS FUNDED
2011-2012
MODELING AND SIMULATION OF SYSTEMS AND PROPERTIES OF MATTER IN THE NANOSCALE

Principal Investigator: MANUEL BARRANCO GÓMEZ (Estructura i Constituents de la Matèria)
Title: Física Nuclear Teòrica i de Moltes Partícules en Interacció.
Reference: 2009SGR1289 Institution: UB

Principal Investigator: MANUEL BARRANCO GÓMEZ (Estructura i Constituents de la Matèria)
Title: Estructura y dinámica cuántica de sistemas atómicos y electrónicos
Reference: FIS2008-00421/FIS Institution: UB

Principal Investigator: RICARDO MAYOL SANCHEZ (Estructura i Constituents de la Matèria)
Title: Research topics in the structure and dynamics of atomic, nuclear and electronic systems
Reference: FIS2011-28617-C02-01 Institution: UB

Principal Investigator: ANTONI PLANES VILA (Estructura i Constituents de la Matèria)
Title: Materials: Transicions de Fase Estructural i Magnètiques
Reference: 2009SGR893 Institution: UB

Principal Investigator: EDUARD VIVES SANTA-EULALIA (Estructura i Constituents de la Matèria)
Title: Relación entre propiedades ferroicas en materiales con características multifuncionales
Reference: MAT2010-15114 Institution: UB

Principal Investigator: LLUIS MAÑOSA CARRERA (Estructura i Constituents de la Matèria)
Title: Materiales Calóricos Gigantes para aprovechamiento de energía y refrigeración sostenible
Reference: PRI-PIBIN-2011-0780 Institution: UB

Principal Investigator: JOSE MIGUEL RUBI CAPACETI (Física Fonamental)
Title: Física Estadística
Reference: 2009SGR634 Institution: UB

Principal Investigator: JOSE MIGUEL RUBI CAPACETI (Física Fonamental)
Title: Modelización, cinética y conversión de energía en sistemas nanoscópicos
Reference: FIS2008-04386/FIS Institution: UB

Principal Investigator: JOSE MIGUEL RUBI CAPACETI (Física Fonamental)
Title: Formación, transporte y energética en sistemas multidisciplinarios en la mesoescala
Reference: FIS2011-22603 Institution: UB

Principal Investigator: IGNACIO PAGONABARRAGA MORA (Física Fonamental)
Title: Pulsatile Viscus and Viscoelastic Microfluidics (Micropulsatile)
Reference: PIEF-GA-2011-301214 Institution: UB

Principal Investigator: M. DEL CARMEN MIGUEL LOPEZ (Física Fonamental)
Title: Robustez, adaptabilidad y fallos en materiales complejos y redes socio-tecnológicas
Reference: FIS2010-21781-C02-02 Institution: UB

Principal Investigator: GIANCARLO FRANZESE (Física Fonamental)
Title: Dinámica y Termodinámica del Agua Nano-Confinada e Interfacial
Reference: FIS2009-10210 Institution: UB

Principal Investigator: GIANCARLO FRANZESE (Física Fonamental)
Title: Modelling basis and kinetics of nanoparticle interaction with membranes, uptake into cells, and sub-cellular and inter-compartmental transport (NanoTransKinetics)
EU Reference: NMP4-SL-2011-266737 Institution: UB
NANOBIOENGINEERING

Principal Investigator: JORDI ORTIN RULL
(Estructura i Constituents de la Matèria)
Title: Física no lineal Reference: 2009SGR14 Institution: Universitat de Barcelona

Principal Investigator: JOSE MARIA SANCHO HERRERO (Estructura i Constituents de la Matèria)
Title: Dinàmica no lineal estocàstica en sistemes físics i biofísics Reference: FIS2009-13360-C03-01 Institution: Universitat de Barcelona

Principal Investigator: JAUME CASADEMUNT VADER (Estructura i Constituents de la Matèria)
Title: Autoorganització en materials blands i matriu viva: II) Fluidos complexes, Cèlules i Tejids Reference: FIS2010-21924-C02-02 Institution: Universitat de Barcelona

Principal Investigator: AURORA HERNANDEZ MACHADO (Estructura i Constituents de la Matèria)
Title: Dinàmica interfacial en fluidos i sistemes biofísics: Teòria i experimentos Reference: FIS2009-12964-C05-02 Institution: Universitat de Barcelona

Principal Investigator: FCO.I.JAVIER PASTOR BLASCO (Microbiologia)
Title: Grup de Biodegradació de Xenobiòtics i Productes Naturals: aspects bàsics i aplicacions a tecnologies netes Reference: 2009SGR819 Institution: Universitat de Barcelona

Principal Investigator: FCO.I.JAVIER PASTOR BLASCO (Microbiologia)
Title: Enzimas para la valorización y mejora biotecnológica de las fibras de celulosa Reference: CTQ2010-20238-C03-02 Institution: Universitat de Barcelona

Principal Investigator: M. PILAR DIAZ LUCEA (Microbiologia)
Title: Tecnologías enzimáticas para la producción de biomateriales de nueva generación: Biocatálisis mediada por lipasas Reference: CTQ2010-21183-C02-02 Institution: Universitat de Barcelona

Principal Investigator: RAMON FARRE VENTURA (Ciències Fisiològiques I)
Title: Efecto de los estímulos mecánicos en la diferenciación de células madre hacia el fenotipo epitelial alveolar Reference: SAF2008-02991 Institution: Universitat de Barcelona

Principal Investigator: DANIEL NAVAJAS NAVARRO (Ciències Fisiològiques I)
Title: Alteración de la nanomecánica de los neutrófilos en la lesión pulmonar inducida por el ventilador Reference: PI081908 Institution: Universitat de Barcelona

Principal Investigator: DANIEL NAVAJAS NAVARRO (Ciències Fisiològiques I)
Title: Señalización mecánica en la diferenciación de células madre en el pulmón. Modelo pulmón-en-un-chip Reference: PI11/00089 Institution: IBEC

Principal Investigator: RAMON FARRE VENTURA (Ciències Fisiològiques I)
Title: Biongeniería del pulmón mediante cultivo de células madre en la matriz descelularizada del órgano: efecto de los estímulos biofísicos en la optimización del bioreactor Reference: SAF2011-22576 Institution: Universitat de Barcelona

Principal Investigator: DANIEL NAVAJAS NAVARRO (Ciències Fisiològiques I)
APPENDIX 1 _ List of Projects

**Title:** Mechanical pathways in cells: from molecular mechanisms to cell function (MecPath) **EU Reference:** PCIG10-GA-2011-303848** Institution:** Universitat de Barcelona

**Principal Investigator:** GUSTAVO EGEA GURI (Biologia Cel.lular i Anatomia Patològica)

**Title:** Tràfic intracel·lular i dinàmica del citoesquelet **Reference:** 2009SGR1070 **Institution:** Universitat de Barcelona

**Principal Investigator:** GUSTAVO EGEA GURI (Biologia Cel·lular i Neurociències)

**Title:** El citoesqueleto de actina y la homeostasis del diacilglicerol en la organización del aparato de Golgi **Reference:** BFU2009-07186 **Institution:** Universitat de Barcelona

**Principal Investigator:** M. ASUNCION ALSINA ESTELLER (Fisicoquímica)

**Title:** Diseño, desarrollo sintético, estudio biofísico y evaluación biológica de lipopéptidos cíclicos como nuevos agentes antimicrobianos y anticancerígenos **Reference:** CTQ2008-06200/BQU **Institution:** Universitat de Barcelona

**Principal Investigator:** M. ASUNCION ALSINA ESTELLER (Fisicoquímica)

**Title:** Deseño, desarrollo sintético, estudio biofísico y evaluación biológica de lipopéptidos cíclicos como nuevos agentes antimicrobianos y anticancerígenos **Reference:** CTQ2009-13969-C02-02 **Institution:** Universitat de Barcelona
APPENDIX 1  _ LIST OF PROJECTS

Institution: Universitat de Barcelona
Principal Investigator: ISABEL HARO VILLAR
Title: Diseño de nanosistemas peptídicos de liberación controlada para la administración ocular de fármacos
Reference: CSIC-CITMA

Title: Funcionalización de micronanoherramientas para ciencias de la vida
Reference: TEC2011-29140-C03-02
Institution: UB

Principal Investigator: JOSE LUIS MORENZA GIL (Física Aplicada i Òptica)
Title: Capes Fines i Enginyeria de Superfícies
Reference: 2009SGR1538
Institution: Universitat de Barcelona

Principal Investigator: PEDRO SERRA COROMINA (Física Aplicada i Òptica)
Title: Desarrollo de una nueva técnica de impresión directa con láser para la realización de micromotivos de biomoléculas
Reference: MAT2010-15905
Institution: Universitat de Barcelona

Principal Investigator: PEDRO SERRA COROMINA (Física Aplicada i Òptica)
Title: Laser printing of organic/inorganic material for the fabrication of electronic devices (E-LIFT)
Reference: 247868
Institution: Universitat de Barcelona

Exploración de nuevas moléculas direccionadoras eficientes para la liberación de antimaláricos mediante nanovectores. MICINN BIO2011-25039.

Principal Investigator: JORDI BORRELL HERNANDEZ (Fisicoquímica)
Title: Nanoestructura de Biomembranes (NANOBIOMEMB)
Reference: 2009SGR1179
Institution: Universitat de Barcelona

Principal Investigator: Investigador principal: JORDI HERNANDEZ BORRELL (Fisicoquímica)
Title: Investigación de la nanoestructura de la región periférica de un modelo de proteína integral de membrana
Reference: CTQ2008-03922/BQU
Institution: Universitat de Barcelona

Principal Investigator: JOSEP SAMITIER MARTI (Electrònica)
Title: Bioelectrònica i nanobioenginyeria:
SIC-BIO  Reference: 2009SGR505  Institution: IBEC - Institut de Bioenginyeria de Catalunya

Principal Investigator: JOSEP SAMITIER MARTI (Electrònica)
Title: Terapias regenerativas con células madre para el fallo cardiaco
Reference: PLE2009/0147  Institution: IBEC - Institut de Bioenginyeria de Catalunya

Principal Investigator: JOSEP SAMITIER MARTI (Electrònica)
Title: LABINACHIP: Nuevos métodos para la fabricación de dispositivos microfluidicos
Reference: IDC-20101178  Institution: IBEC - Institut de Bioenginyeria de Catalunya

Principal Investigator: JOSEP SAMITIER MARTI (Electrònica)
Title: Creixement 2011 del CEMIC-Dep. d'Electrònica-UB (centre tecno)
Reference: TECCIT11-1-0023
Institution: Universitat de Barcelona

Principal Investigator: JOSEP SAMITIER MARTI (Electrònica)
Title: Universal Diagnostic Platforms Based On Oligonucleotide Codified Nanoparticles and DNA Microarray Sensor Devices
Reference: DPI2011-29216-C02-01
Institution: IBEC

Principal Investigator: JOSEP SAMITIER MARTI (Electrònica)
Title: Plataforma Nanomedicina 2011
Reference: INF-2011-0047-30000
Institution: IBEC

Principal Investigator: JOSEP SAMITIER MARTI (Electrònica)
Title: An integrated platform enabling Theranostic applications at the Point of Primary Care (TheraEDGE) EU Reference: 216027
Institution: Universitat de Barcelona

Principal Investigator: JOSEP SAMITIER MARTI (Electrònica)
Title: Array of Robots Augmenting the KiNematics of Endoluminal Surgery (ARAKNES)
EU Reference: 224565
Institution: Universitat de Barcelona

Principal Investigator: JOSEP SAMITIER MARTI (Electrònica)
Title: Bioelectronic Olfactory Neuron Device (BOND)
EU Reference: 228685
Institution: Universitat de Barcelona

Principal Investigator: MARIA JOSE GARCIA CELMA (Farmàcia i Tecnologia Farmacèutica)
Title: Tecnologías de autoagregación de moléculas anfífilicas para aplicaciones terapéuticas
Reference: CTQ2011-29336-C03-03
Institution: Universitat de Barcelona

Principal Investigator: MARIA LUISA GARCIA LOPEZ (Fisicoquímica)
Title: Análisis del proceso de liofilización y esterilización de sistemas nanoestructurados y su efecto en el comportamiento biofarmacéutico y en el perfil toxicológico
Reference: MAT2010-19877
Institution: Universitat de Barcelona

Principal Investigator: ELIANA SOUTO
Title: NanoLaseRelief: Integrating

NANOPHARMACOTHERAPY

Principal Investigator: MARIA JOSE GARCIA CELMA (Farmàcia i Tecnologia Farmacèutica)
Title: Tecnologías de autoagregación de moléculas anfífilicas para aplicaciones terapéuticas
Reference: CTQ2011-29336-C03-03
Institution: Universitat de Barcelona

Principal Investigator: MARIA LUISA GARCIA LOPEZ (Fisicoquímica)
Title: Análisis del proceso de liofilización y esterilización de sistemas nanoestructurados y su efecto en el comportamiento biofarmacéutico y en el perfil toxicológico
Reference: MAT2010-19877
Institution: Universitat de Barcelona

Principal Investigator: ELIANA SOUTO
Title: NanoLaserRelief: Integrating
**APPENDIX 1 LIST OF PROJECTS**

**NANOTECHNOLOGIES FOR PAIN RELIEF IN LASER THERAPY OF VASCULAR LESIONS**

**Reference:** PTDC/SAU-FAR/113100/2009

**Institution:** External

**Principal Investigator:** ISABEL HARO VILLAR

**Title:** Diseño de nanosistemas peptídicos de liberación controlada para la administración ocular de fármacos

**Reference:** CSIC-CITMA

**Institution:** External

**Principal Investigator:** MARIA JOSE GARCIA CELMA (Farmacia i Tecnologia Farmacèutica)

**Title:** Obtención y caracterización de estructuras meso/macroporosas a partir de emulsiones altamente concentradas: aplicación en Biomedicina como implantes y sistemas de liberación controlada de fármacos

**Reference:** CTQ2008-06892-C03-02/PPQ

**Institution:** Universitat de Barcelona

**NANOMAGNETISM, NANOELECTRONICS AND NANOPHOTONICS**

**Principal Investigator:** RAMON VICENTE CASTILLO (Química Inorgánica)

**Title:** Interaccions magnètiques i magnetisme molecular

**Reference:** 2009SGR1454

**Institution:** Universitat de Barcelona

**Principal Investigator:** ALBERTO ESCUER FITE (Química Inorgánica)

**Title:** Magnetismo molecular:sistemas magnéticos ordenados (SCM, SMM) y modelos bioinorgánicos derivados de elementos de transición d y f

**Reference:** CTQ2009-07264

**Institution:** Universitat de Barcelona

**Principal Investigator:** GUILLEM AROMI BEDMAR (Química Inorgánica)

**Title:** Diseño, Síntesis y Estudio Físico-Químico de Materiales Funcionales de Base Molecular

**Reference:** CTQ2009-06959

**Institution:** Universitat de Barcelona

**Principal Investigator:** GUILLEM AROMI BEDMAR (Química Inorgánica)

**Title:** Design and Preparation of Functional Molecules for Quantum Computing and Information Processing (FuncMolQIP)

**EU Reference:** 258060

**Institution:** Universitat de Barcelona

**Principal Investigator:** MANUEL VARELA FERNANDEZ (Física Aplicada i Òptica)

**Title:** Oxidos Multifuncionales para la Manipulación de Spin y Comunicaciones Agiles

**Reference:** MAT2008-06761-C03-03/NAN

**Institution:** Universitat de Barcelona
**APPENDIX 1 _ LIST OF PROJECTS**

**Principal Investigator:** MANUEL VARELA FERNANDEZ (Física Aplicada i Òptica)
**Title:** Materiales avanzados y nanotecnologías para dispositivos y sistemas eléctricos, eléctricos, electrónicos y magnetoelectrónicos innovadores
**Reference:** CSD2007-00041
**Institution:** Universitat de Barcelona

**Principal Investigator:** MANUEL VARELA FERNANDEZ (Física Aplicada i Òptica)
**Title:** Oxidos y estructuras híbridas de respuesta multifuncional
**Reference:** MAT2011-29269-C03-03
**Institution:** Universitat de Barcelona

**Principal Investigator:** JAVIER TEJADA PALACIOS (Física Fonamental)
**Title:** Grup de Magnetisme
**Reference:** 2009SGR1249
**Institution:** Universitat de Barcelona

**Principal Investigator:** JAVIER TEJADA PALACIOS (Física Fonamental)
**Title:** Experimentos a bajas temperaturas con ondas acústicas superficiales, microondas y campos magnéticos giratorios, en sistemas magnéticos y superconductores
**Reference:** MAT2008-04535/MAT
**Institution:** Universitat de Barcelona

**Principal Investigator:** JOAN MANEL HERNANDEZ FERRAS (Física Fonamental)
**Title:** Fenómenos a escala nanométrica en materiales magnéticos y superconductores a bajas temperaturas, bajo la acción de microondas de alta frecuencia y campos magnéticos rotatorios
**Reference:** MAT2011-23698
**Institution:** Universitat de Barcelona

**Principal Investigator:** JAVIER TEJADA PALACIOS (Física Fonamental)
**Title:** Spint torque oscillators with applications in non digital computing science and communications (SpinTorqOsc)
**EU Reference:** 253214
**Institution:** Universitat de Barcelona

**Principal Investigator:** Mª DOLORES VELASCO CASTRILLO (Química Orgànica)
**Title:** Preparación y estudio de materiales orgánicos multifuncionales. Desarrollo de dispositivos optoelectrónicos y aplicaciones magnéticas
**Reference:** CTQ2009-13797
**Institution:** Universitat de Barcelona

**Principal Investigator:** ALBERT CORNET CALVERAS (Electrònica)
**Title:** Micro-nanotecnologies i nanoscòpies per dispositius electrònics i fotònics (MIND)
**Reference:** 2009SGR35
**Institution:** Universitat de Barcelona

**Principal Investigator:** JUAN DANIEL PRADES GARCIA (Electrònica)
**Title:** Sistemas de detección y cuantificación de biomarcadores de la Enfermedad de Alzheimer (KIT-ALZHEIMER)
**Reference:** IPT-2011-1055-900000
**Institution:** Universitat de Barcelona

**Principal Investigator:** ALBERT CIRERA HERNANDEZ (Electrònica)
**Title:** Desarrollo de una tecnología de esterilización ambiental en continuo para la eliminación de toxinas químicas y biológicas en interiores de aviones y espacios cerrados
**Reference:** IPT-2012-1277-300000
**Institution:** Universitat de Barcelona

**Principal Investigator:** ALBERT CIRERA HERNANDEZ (Electrònica)
**Title:** Materiales Híbridos y recubrimientos basados en nanopartículas (NANOMAT). Actividad 2
**Reference:** NANOMAT
**Institution:** Universitat de Barcelona

**Principal Investigator:** ALBERT CIRERA HERNANDEZ (Electrònica)
**Title:** Nanosensores integrados sobre microtecnología cerámica monolítica
**Reference:** TRA2009-0078
**Institution:** Universitat de Barcelona

**Principal Investigator:** ALBERT CIRERA HERNANDEZ (Electrònica)
Title: Investigación de estructuras textiles con capacidad sensórica y que actúen como sistemas activos (Actuadores). CENIT INFINITEX
Reference: INFINITEX Institution: FBG

Principal Investigator: ALBERTO ROMANO RODRIGUEZ (Electrónica)
Title: Sistema modular basado en micro- y nanotecnologías avanzadas para aplicaciones de seguridad y calidad ambiental
Reference: TEC2010-21357-C05
Institution: Universitat de Barcelona

Principal Investigator: BLAS GARRIDO FERNANDEZ (Electrónica)
Title: Interconexión óptica modulable a GHz y Láser a microdisco basados en tecnología CMOS
Reference: TEC2009-08359
Institution: Universitat de Barcelona

Principal Investigator: BLAS GARRIDO FERNANDEZ (Electrónica)
Title: Silicon Nanodots for Solar Cell Tandem (NASCENT)
EU Reference: NMP4-SL-2010-245977
Institution: Universitat de Barcelona

Principal Investigator: BLAS GARRIDO FERNANDEZ (Electrónica)
Title: PHotonics ELeCtronics functional Integration on CMOS (HELIOS)
EU Reference: 224312
Institution: Universitat de Barcelona

Principal Investigator: PAOLO PELLEGRINO (Electrónica)
Title: NANOdevice fabrication using BLOCK -copolymer based technology
Reference: EU2008-03806
Institution: Universitat de Barcelona

Principal Investigator: FRANCISCA PEIRO MARTINEZ (Electrónica)
Title: Soluciones en Microscopía Electrónica aplicada a Materiales Nanoestructurados
Reference: MAT2010-16407
Institution: Universitat de Barcelona

Principal Investigator: AMILCAR RAMON LABARTA RODRIGUEZ (Física Fonamental)
Title: Grup de Nanomaterials Magnètics
Reference: 2009SGR876
Institution: Universitat de Barcelona

Principal Investigator: XAVIER BATLLE GELABERT (Física Fonamental)
Title: Magnetismo y transporte de carga dependiente de espín en materiales nanoestructurados ordenados/desordenados metálicos/aislantes
Reference: MAT2009-08667
Institution: Universitat de Barcelona
NANOSTRUCTURED MATERIALS

Principal Investigator: CARLOS MARIA MULLER JEVENOIS (Química Física)
Title: ELECTRODEP Reference: 2009SGR949
Institution: Universitat de Barcelona

Principal Investigator: ELISA VALLES GIMENEZ
(Química Física)
Title: Métodos electroquímicos para la preparación de materiales base CoPt con propiedades magnéticas y mecánicas modulables Reference: CTQ2010-20726
Institution: Universitat de Barcelona

Principal Investigator: JAIME RAMON GRANELL SANVICENTE (Química Inorgánica)
Title: Grup de Química Organometal·lica Reference: 2009SGR1164 Institution: Universitat de Barcelona

Principal Investigator: GUILLERMO MULLER JEVENOIS (Química Inorgánica)
Title: Diseño de nuevos ligandos quirales P-dadores: química de la coordinación, nanopartículas metálicas y aplicaciones en procesos enantioselectivos Reference: CTQ2010-16292 Institution: Universitat de Barcelona

Principal Investigator: ENRIC BERTRAN SERRA (Física Aplicada i Òptica)
Title: Física i Enginyeria de Materials Amorfs i Nanoestructures (FEMAN) Reference: 2009SGR185 Institution: Universitat de Barcelona

Principal Investigator: ENRIC BERTRAN SERRA (Física Aplicada i Òptica)
Title: Sistemas Multifuncionales de Absorción de Contaminantes Emergentes Basados en Nanotubos de Carbono Reference: CTQ2009-14671-C02-01 Institution: Universitat de Barcelona

Principal Investigator: JOSE LUIS ANDUJAR BELLA (Física Aplicada i Òptica)
Title: Crecimiento de capas

Principal Investigator: JOSE MARIA GUTIERREZ GONZALEZ (Enginyeria Química)
Title: Tecnologías de Autoagregación de Compuestos Anfílicos para Aplicaciones en Alimentos Funcionales y Cosmética
Reference: CTQ2011-29336-C03-02 Institution: Universitat de Barcelona

Principal Investigator: JOSE LUIS MORENZA GIL ( Física Aplicada i Òptica)
Title: Capes Fines i Enginyeria de Superfícies Reference: 2009SGR1538 Institution: UB - Universitat de Barcelona

Principal Investigator: JOAN ESTEVE PUJOL (Física Aplicada i Òptica)
Title: Functonalización superficial de materiales para aplicaciones de alto valor añadido (FUNCOAT) Reference: CSD2008-00023 Institution: Universitat de Barcelona

Principal Investigator: ARTURO LOUSA RODRIGUEZ (Física Aplicada i Òptica)
Title: Estrategias de funcionalización mediante tratamientos superficiales de aleaciones CoCrMo para la mejora del rendimiento de prótesis articulares Metal-sobre-Metal Reference: MAT2011-29698-C03-03 Institution: Universitat de Barcelona

Principal Investigator: FRANCESC SAGUES MESTRE (Química Física)
Title: SOC&SAM (Self-Organized Complexity and Self-Assembling Materials) Reference: 2009SGR1055 Institution: Universitat de Barcelona

Principal Investigator: FRANCESC SAGUES MESTRE (Química Física)
APPENDIX 1 _ LIST OF PROJECTS

NANOENERGY: PRODUCTION, STORAGE AND ENVIRONMENT

Principal Investigator: MERCE SEGARRA RUBI (Ciència dels Materials i Enginyeria Metall·úrgica)
Title: Auto-organización en materiales blandos y materia viva: I) Monocapas de surfactantes. Cristales Líquidos y Coloides
Reference: FIS2010-21924-C02-01
Institution: Universitat de Barcelona

Principal Investigator: MERCE SEGARRA RUBI (Ciència dels Materials i Enginyeria Metall·úrgica)
Title: Grup de disseny i optimització de processos i materials
Reference: 2009SGR645
Institution: Universitat de Barcelona

Principal Investigator: MERCE SEGARRA RUBI (Ciència dels Materials i Enginyeria Metall·úrgica)
Title: Diseño y obtención de pilas de combustible de óxido sólido de temperatura intermedia. Nuevos componentes y configuraciones
Reference: MAT2008-06785-C02-01/MAT
Institution: Universitat de Barcelona

Principal Investigator: MERCE SEGARRA RUBI (Ciència dels Materials i Enginyeria Metall·úrgica)
Title: Celdas reversibles de óxido sólido de temperatura intermedia
Reference: MAT2011-23623
Institution: Universitat de Barcelona

Principal Investigator: MERCE SEGARRA RUBI (Ciència dels Materials i Enginyeria Metall·úrgica)
Title: Incentivació de la transferència tecnològica del centre DIOPMA (itt-diopma)
Reference: TECCT11-1-0022
Institution: Universitat de Barcelona
Principal Investigator: JOAN RAMON MORANTE LLEONART (Electrònica)

Title: Materials electrònics i energia (m-2e)
Reference: 2009SGR440
Institution: IREC - Institut de Recerca en Energia de Catalunya

Principal Investigator: JOAN RAMON MORANTE LLEONART (Electrònica)
Title: REDES 2025
Institution: IREC - Institut de Recerca en Energia de Catalunya

Principal Investigator: JOAN RAMON MORANTE LLEONART (Electrònica)
Title: Nuevas utilizaciones industriales sostenibles del CO2
Reference: CEN-2008 - 1027
Institution: IREC- Institut de Recerca en Energia de Catalunya

Principal Investigator: JOAN RAMON MORANTE LLEONART (Electrònica)
Title: Development of more efficient catalysts for the design of sustainable chemical processes and clean energy production
Reference: CSD2009-00050
Institution: IREC- Institut de Recerca en Energia de Catalunya

Principal Investigator: JOAN RAMON MORANTE LLEONART (Electrònica)
Title: Multifunctional materials in 3D nano architectures for energy conversion and storage
Reference: MAT2010-21510
Institution: IREC- Institut de Recerca en Energia de Catalunya
APPENDIX 1 LIST OF PROJECTS

Principal Investigator: JOAN RAMON MORANTE LLEONART (Electrònica)
Title: S3 EU Reference: FP7-NMP-2009-47768
Institution: IREC- Institut de Recerca en Energia de Catalunya

Principal Investigator: JOAN BERTOMEU BALAGUERO (Física Aplicada i Òptica)
Title: Grup d’Energia Solar Reference: 2009SGR1532
Institution: Universitat de Barcelona

Principal Investigator: JOAN BERTOMEU BALAGUERO (Física Aplicada i Òptica)
Title: Diseño e industrialización de módulos fotovoltaicos en Silicio de capa fina (Microsil08)
Reference: PSS-120000-2008-2-3-4-5-6
Institution: Universitat de Barcelona

Principal Investigator: JOAN BERTOMEU BALAGUERO (Física Aplicada i Òptica)
Title: Avances en Materiales e Interfaces para Células solares de silicio en lámina delgada
Reference: ENE2010-21384-C04-03
Institution: Universitat de Barcelona

Principal Investigator: JOAN BERTOMEU BALAGUERO (Física Aplicada i Òptica)
Title: Indisol - Innovación en dispositivos fotovoltaicos e integración arquitectónica solar
Reference: IPT-420000-2010-6
Institution: Universitat de Barcelona

Principal Investigator: JOAN BERTOMEU BALAGUERO (Física Aplicada i Òptica)
Title: High Efficient Very Large Area Thin Film Silicon Photovoltaic Modules (HELATHIS)
Reference: 241378
Institution: Universitat de Barcelona

Principal Investigator: NARCISO HOMS MARTI (Química Inorgànica)
Title: Diseño de catalizadores multicomponentes para la producción de hidrógeno de alta pureza por reformado oxidante de bioalcoholes
Reference: MAT2008-02561/MAT
Institution: Universitat de Barcelona

Principal Investigator: NARCISO HOMS MARTI (Química Inorgànica)
Title: Soluciones a la Producción de Hidrógeno Energético y Reconversión asociada CENIT SPHERA
Reference: SPHERA
Institution: Universitat de Barcelona

Principal Investigator: NARCISO HOMS MARTI (Química Inorgànica)
Title: Materials Inorgànics Avançats i catalísi
Reference: 2009SGR674
Institution: Universitat de Barcelona

Principal Investigator: NARCISO HOMS MARTI (Química Inorgànica)
APPENDIX 2 _ LIST OF PUBLICATIONS

MODELING AND SIMULATION OF SYSTEMS AND PROPERTIES OF MATTER IN THE NANOSCALE

- **Title:** NUCLEATION AND CAVITATION IN PARAHYDROGEN  
  **Author(s):** Pi, Marti; Barranco, Manuel; Navarro, Jesus; et al.  
  **Source:** CHEMICAL PHYSICS  
  **Volume:** 399  
  **Pages:** 213-217  
  **DOI:** 0.1016/j.chemphys.2011.04.033  
  **Published:** MAY 3 2012

- **Title:** MG IMPURITY IN HELIUM DROPLETS  
  **Author(s):** Navarro, J.; Mateo, D.; Barranco, M.; et al.  
  **Source:** JOURNAL OF CHEMICAL PHYSICS  
  **Volume:** 136  
  **Issue:** 5  
  **Article Number:** 054301  
  **DOI:** 10.1063/1.3675919  
  **Published:** FEB 7 2012

- **Title:** DESORPTION OF ALKALI ATOMS FROM HE-4 NANODROPLETS  
  **Author(s):** Hernando, Alberto; Barranco, Manuel; Pi, Marti; et al.  
  **Source:** PHYSICAL CHEMISTRY CHEMICAL PHYSICS  
  **Volume:** 14  
  **Issue:** 11  
  **Pages:** 3996-4010  
  **DOI:** 10.1039/c2cp23526a  
  **Published:** 2012

- **Title:** CONFIGURATION INTERACTION APPROACH TO FERMI LIQUID-WIGNER CRYSTAL MIXED PHASES IN SEMICONDUCTOR NANODUMBBELLS  
  **Author(s):** Ballester, A.; Movilla, J. L.; Escartin, J. M.; et al.  
  **Source:** JOURNAL OF APPLIED PHYSICS  
  **Volume:** 112  
  **Issue:** 2  
  **Article Number:** 024311  
  **DOI:** 10.1063/1.4737774  
  **Published:** JUL 15 2012

- **Title:** HELIUM MEDIATED DEPOSITION: MODELING THE HE-TIO2(110)-(1X1) INTERACTION POTENTIAL AND APPLICATION TO THE COLLISION OF A HELIUM DROPLET FROM DENSITY FUNCTIONAL CALCULATIONS  
  **Author(s):** Aguirre, Nestor F.; Mateo, David; Mitrushchenkov, Alexander O.; et al.  
  **Source:** JOURNAL OF CHEMICAL PHYSICS  
  **Volume:** 136  
  **Issue:** 12  
  **Article Number:** 124703  
  **DOI:** 10.1063/1.3698173  
  **Published:** MAR 28 2012

- **Title:** RUNNING FASTER TOGETHER: HUGE SPEED UP OF THERMAL RATCHETS DUE TO HYDRODYNAMIC COUPLING  
  **Author(s):** Malgaretti, Paolo; Pagonabarraga, Ignacio; Frenkel, Daan  
  **Source:** PHYSICAL REVIEW LETTERS  
  **Volume:** 109  
  **Issue:** 16  
  **Article Number:** 168101  
  **DOI:** 10.1103/PhysRevLett.109.168101  
  **Published:** OCT 17 2012

- **Title:** DENSITY-DEPENDENT DISPERSAL AND POPULATION AGGREGATION PATTERNS  
  **Author(s):** Mendez, Vicenc; Campos, Daniel; Pagonabarraga, Ignacio; et al.  
  **Source:** JOURNAL OF THEORETICAL BIOLOGY  
  **Volume:** 309  
  **Pages:** 113-120  
  **DOI:** 10.1016/j.jtbi.2012.06.015  
  **Published:** SEP 21 2012

- **Title:** INSTRINSIC OSCILLATIONS OF POLYMERIZING ANTIPARALLEL MICROTBULES IN A MOTOR BATH (VOL 98, 68005, 2012)  
  **Author(s):** Muhuri, Sudipto; Pagonabarraga, Ignacio; Casademunt, Jaume  
  **Source:** EPL  
  **Volume:** 99  
  **Issue:** 1  
  **Article Number:** 19901  
  **DOI:** 10.1209/0295-5075/99/19901  
  **Published:** JUL 2012
APPENDIX 2  LIST OF PUBLICATIONS

- **Title:** INTRINSIC OSCILLATIONS OF POLYMERIZING ANTIPARALLEL MICROTUBULES IN A MOTOR BATH  
  **Author(s):** Muhuri, Sudipto; Pagonabarraga, Ignacio; Casademunt, Jaume  
  **Source:** EPL  
  **Volume:** 98  
  **Issue:** 6  
  **Article Number:** 68005  
  **DOI:** 10.1209/0295-5075/98/68005  
  **Published:** JUN 2012

- **Title:** WETTING DYNAMICS: ADSORBED COLLOIDS RELAX SLOWLY  
  **Author(s):** Pagonabarraga, Ignacio  
  **Source:** NATURE MATERIALS  
  **Volume:** 11  
  **Issue:** 2  
  **Pages:** 99-100  
  **DOI:** 10.1038/nmat3235  
  **Published:** FEB 2012

- **Title:** COOPERATIVE RECTIFICATION IN CONFINED BROWNIAN RATCHETS  
  **Author(s):** Malgaretti, Paolo; Pagonabarraga, Ignacio; Miguel Rubi, J.  
  **Source:** PHYSICAL REVIEW E  
  **Volume:** 85  
  **Issue:** 1  
  **Article Number:** 010105  
  **DOI:** 10.1103/PhysRevE.85.010105  
  **Part:** Part 1  
  **Published:** JAN 20 2012

- **Title:** AFM MEASUREMENTS AND LIPID REARRANGEMENTS: EVIDENCE FROM RED BLOOD CELL SHAPE CHANGES  
  **Author(s):** Melzak, Kathryn A.; Lazaro, Guillermo R.; Hernandez-Machado, Aurora; et al.  
  **Source:** SOFT MATTER  
  **Volume:** 8  
  **Issue:** 29  
  **Pages:** 7716-7726  
  **DOI:** 10.1039/c2sm25530h  
  **Published:** 2012

- **Title:** STRESS DISTRIBUTION OF FACETED PARTICLES IN A SILO AFTER ITS PARTIAL DISCHARGE  
  **Author(s):** Kanzaki, T.; Acevedo, M.; Zuriguel, I.; et al.  
  **Source:** EUROPEAN PHYSICAL JOURNAL E  
  **Volume:** 34  
  **Issue:** 12  
  **Article Number:** 133  
  **DOI:** 10.1140/epje/i2011-11133-5  
  **Published:** DEC 2011

- **Title:** PHASE SEGREGATION AND TRANSPORT IN A TWO-SPECIES MULTI-LANE SYSTEM  
  **Author(s):** Muhuri, Sudipto; Pagonabarraga, Ignacio  
  **Source:** JOURNAL OF STATISTICAL MECHANICS-THEORY AND EXPERIMENT  
  **Article Number:** P11011  
  **DOI:** 10.1088/1742-5468/2011/11/P11011  
  **Published:** NOV 2011

- **Title:** BIOPHYSICS OF ACTIVE VESICLE TRANSPORT, AN INTERMEDIATE STEP THAT COUPLES EXCITATION AND EXOCYTOSIS OF SEROTONIN IN THE NEURONAL SOMA  
  **Author(s):** De-Miguel, Francisco F.; Santamaria-Holek, Ivan; Noguez, Paula; et al.  
  **Source:** PLOS ONE  
  **Volume:** 7  
  **Issue:** 10  
  **Article Number:** e45454  
  **DOI:** 10.1371/journal.pone.0045454  
  **Published:** OCT 3 2012

- **Title:** ON THE THERMODYNAMIC EFFICIENCY OF CA2+-ATPase MOLECULAR MACHINES  
  **Author(s):** Lervik, Anders; Bresme, Fernando; Kjelstrup, Signe; et al.  
  **Source:** BIOPHYSICAL JOURNAL  
  **Volume:** 103  
  **Issue:** 6  
  **Pages:** 1218-1226  
  **DOI:** 10.1016/j.bpj.2012.07.057  
  **Published:** SEP 19 2012

- **Title:** A NON-EQUILIBRIUM THERMODYNAMICS MODEL FOR COMBINED ADSORPTION AND DIFFUSION PROCESSES IN MICRO- AND NANOPORES  
  **Author(s):** Santamaria-Holek, Ivan; Grzywna, Zbigniew J.; Miguel Rubi, J.  
  **Source:** JOURNAL OF NON-EQUILIBRIUM THERMODYNAMICS  
  **Volume:** 37  
  **Issue:** 3  
  **Pages:** 273-290  
  **DOI:** 10.1515/
APPENDIX 2 _ LIST OF PUBLICATIONS

Title: **DIPOLAR TRANSFORMATIONS OF TWO-DIMENSIONAL QUANTUM DOTS ARRAYS PROVEN BY ELECTRON ENERGY LOSS SPECTROSCOPY**  
Author(s): Moctezuma, R. E.; Nossa, J. F.; Camacho, A.; et al.  
Source: JOURNAL OF APPLIED PHYSICS  
Volume: 112  Issue: 2  Article Number: 024105  
DOI: 10.1063/1.4737791  
Published: JUL 15 2012

Title: **THERMOMOLECULAR ORIENTATION OF NONPOLAR FLUIDS**  
Author(s): Roemer, Frank; Bresme, Fernando; Muscatello, Jordan; et al.  
Source: PHYSICAL REVIEW LETTERS  
Volume: 108  Issue: 10  Article Number: 105901  
DOI: 10.1103/PhysRevLett.108.105901  
Published: MAR 7 2012

Title: **FAR-FROM-EQUILIBRIUM PROCESSES WITHOUT NET THERMAL EXCHANGE VIA ENERGY SORTING**  
Author(s): Vilar, Jose M. G.; Rubi, J. Miguel  
Source: JOURNAL OF CHEMICAL PHYSICS  
Volume: 136  Issue: 6  Article Number: 064115  
DOI: 10.1063/1.3683441  
Published: FEB 14 2012

Title: **ENTROPIC SPLITTER FOR PARTICLE SEPARATION**  
Author(s): Reguera, D.; Luque, A.; Burada, P. S.; et al.  
Source: PHYSICAL REVIEW LETTERS  
Volume: 108  Issue: 2  Article Number: 020604  
DOI: 10.1103/PhysRevLett.108.020604  
Published: JAN 13 2012

Title: **DIRECT MEASUREMENT OF PHAGE phi29 STIFFNESS PROVIDES EVIDENCE OF INTERNAL PRESSURE**  
Author(s): Hernando-Perez, Mercedes; Miranda, Roberto; Aznar, Maria; et al.  
Source: SMALL  
Volume: 8  Issue: 15  Pages: 2366-2370  
DOI: 10.1002/smll.201200664  
Published: AUG 6 2012

Title: **RELEVANCE OF CAPSID STRUCTURE IN THE BUCKLING AND MATURATION OF SPHERICAL VIRUSES**  
Author(s): Aznar, Maria; Luque, Antoni; Reguera, David  
Source: PHYSICAL BIOLOGY  
Volume: 9  Issue: 3  Article Number: 036003  
DOI: 10.1088/1478-3975/9/3/036003  
Published: JUN 2012

Title: **PHYSICS OF SHELL ASSEMBLY: LINE TENSION, HOLE IMPLOSION, AND CLOSURE CATASTROPHE**  
Author(s): Luque, Antoni; Reguera, David; Morozov, Alexander; et al.  
Source: JOURNAL OF CHEMICAL PHYSICS  
Volume: 136  Issue: 18  Article Number: 184507  
DOI: 10.1063/1.4712304  
Published: MAY 14 2012

Title: **HYSTERESIS EFFECTS IN THE INVERSE MAGNETOCALORIC EFFECT IN MARTENSITIC Ni-Mn-In AND Ni-Mn-Sn**  
Author(s): Titov, I.; Acet, M.; Farle, M.; et al.  
Source: JOURNAL OF APPLIED PHYSICS  
Volume: 112  Issue: 7  Article Number: 073914  
DOI: 10.1063/1.4757425  
Published: OCT 1 2012

Title: **BAROCALORIC EFFECT IN THE MAGNETOCALORIC PROTOTYPE Gd5Si2Ge2**  
Author(s): Yuce, Suheyla; Barrio, Maria; Erre, Bans; et al.  
Source: APPLIED PHYSICS LETTERS

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**APPENDIX 2 _ LIST OF PUBLICATIONS**

- **Title:** DIPOLAR TRANSFORMATIONS OF TWO-DIMENSIONAL QUANTUM DOTS ARRAYS PROVEN BY ELECTRON ENERGY LOSS SPECTROSCOPY  
  **Author(s):** Moctezuma, R. E.; Nossa, J. F.; Camacho, A.; et al.  
  **Source:** JOURNAL OF APPLIED PHYSICS  
  **Volume:** 112  **Issue:** 2  **Article Number:** 024105  
  **DOI:** 10.1063/1.4737791  
  **Published:** JUL 15 2012

- **Title:** THERMOMOLECULAR ORIENTATION OF NONPOLAR FLUIDS  
  **Author(s):** Roemer, Frank; Bresme, Fernando; Muscatello, Jordan; et al.  
  **Source:** PHYSICAL REVIEW LETTERS  
  **Volume:** 108  **Issue:** 10  **Article Number:** 105901  
  **DOI:** 10.1103/PhysRevLett.108.105901  
  **Published:** MAR 7 2012

- **Title:** FAR-FROM-EQUILIBRIUM PROCESSES WITHOUT NET THERMAL EXCHANGE VIA ENERGY SORTING  
  **Author(s):** Vilar, Jose M. G.; Rubi, J. Miguel  
  **Source:** JOURNAL OF CHEMICAL PHYSICS  
  **Volume:** 136  **Issue:** 6  **Article Number:** 064115  
  **DOI:** 10.1063/1.3683441  
  **Published:** FEB 14 2012

- **Title:** ENTROPIC SPLITTER FOR PARTICLE SEPARATION  
  **Author(s):** Reguera, D.; Luque, A.; Burada, P. S.; et al.  
  **Source:** PHYSICAL REVIEW LETTERS  
  **Volume:** 108  **Issue:** 2  **Article Number:** 020604  
  **DOI:** 10.1103/PhysRevLett.108.020604  
  **Published:** JAN 13 2012

- **Title:** DIRECT MEASUREMENT OF PHAGE phi29 STIFFNESS PROVIDES EVIDENCE OF INTERNAL PRESSURE  
  **Author(s):** Hernando-Perez, Mercedes; Miranda, Roberto; Aznar, Maria; et al.  
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  **Volume:** 8  **Issue:** 15  **Pages:** 2366-2370  
  **DOI:** 10.1002/smll.201200664  
  **Published:** AUG 6 2012

- **Title:** RELEVANCE OF CAPSID STRUCTURE IN THE BUCKLING AND MATURATION OF SPHERICAL VIRUSES  
  **Author(s):** Aznar, Maria; Luque, Antoni; Reguera, David  
  **Source:** PHYSICAL BIOLOGY  
  **Volume:** 9  **Issue:** 3  **Article Number:** 036003  
  **DOI:** 10.1088/1478-3975/9/3/036003  
  **Published:** JUN 2012

- **Title:** PHYSICS OF SHELL ASSEMBLY: LINE TENSION, HOLE IMPLOSION, AND CLOSURE CATASTROPHE  
  **Author(s):** Luque, Antoni; Reguera, David; Morozov, Alexander; et al.  
  **Source:** JOURNAL OF CHEMICAL PHYSICS  
  **Volume:** 136  **Issue:** 18  **Article Number:** 184507  
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- **Title:** HYSTERESIS EFFECTS IN THE INVERSE MAGNETOCALORIC EFFECT IN MARTENSITIC Ni-Mn-In AND Ni-Mn-Sn  
  **Author(s):** Titov, I.; Acet, M.; Farle, M.; et al.  
  **Source:** JOURNAL OF APPLIED PHYSICS  
  **Volume:** 112  **Issue:** 7  **Article Number:** 073914  
  **DOI:** 10.1063/1.4757425  
  **Published:** OCT 1 2012

- **Title:** BAROCALORIC EFFECT IN THE MAGNETOCALORIC PROTOTYPE Gd5Si2Ge2  
  **Author(s):** Yuce, Suheyla; Barrio, Maria; Erre, Bans; et al.  
  **Source:** APPLIED PHYSICS LETTERS
APPENDIX 2 _ LIST OF PUBLICATIONS

Volume: 101 Issue: 7 Article Number: 071906 DOI: 10.1063/1.4745920 Published: AUG 13 2012

Title: THERMODYNAMICS OF FERROTOROIDIC MATERIALS: TOROIDOCALORIC EFFECT
Author(s): Castan, Teresa; Planes, Antoni; Saxena, Avadh Source: PHYSICAL REVIEW B Volume: 85 Issue: 14 Article Number: 144429 DOI: 10.1103/PhysRevB.85.144429 Published: APR 27 2012

Title: INVERSE BAROCALORIC EFFECT IN THE GIANT MAGNETOCALORIC La-Fe-Si-Co COMPOUND
Author(s): Manosa, Lluis; Gonzalez-Alonso, David; Planes, Antoni; et al. Source: NATURE COMMUNICATIONS Volume: 2 Article Number: 595 DOI: 10.1038/ncomms1606 Published: DEC 2011

Title: CONFINEMENT OF ANOMALOUS LIQUIDS IN NANOPOROUS MATRICES
Author(s): Strekalova, Elena G.; Luo, Jiayuan; Stanley, H. Eugene; et al. Source: PHYSICAL REVIEW LETTERS Volume: 109 Issue: 10 Article Number: 105701 DOI: 10.1103/PhysRevLett.109.105701 Published: AUG 27 2012

Title: NANOCONFINEMENT SUPPRESSES FLUCTUATIONS IN SUPER-COOLED WATER

Title: UNDERSTANDING THE ROLE OF HYDROGEN BONDS IN WATER DYNAMICS AND PROTEIN STABILITY
Author(s): Bianco, Valentino; Iskrov, Svilen; Franzese, Giancarlo Source: JOURNAL OF BIOLOGICAL PHYSICS Volume: 38 Issue: 1 Special Issue: SI Pages: 27-48 DOI: 10.1007/s10867-011-9235-7 Published: JAN 2012
Title: EFFECT OF HYDROPHOBIC ENVIRONMENTS ON THE HYPOTHEZIZED LIQUID- LIQUID CRITICAL POINT OF WATER
Author(s): Strekalova, Elena G.; Corradini, Dario; Mazza, Marco G.; et al.
Source: JOURNAL OF BIOLOGICAL PHYSICS
Volume: 38 Issue: 1 Special Issue: SI
Pages: 97-111 DOI: 10.1007/s10867-011-9241-9 Published: JAN 2012

Title: MORE THAN ONE DYNAMIC CROSSOVER IN PROTEIN HYDRATION WATER
Author(s): Mazza, Marco G.; Stokely, Kevin; Pagnotta, Sara E.; et al.
Source: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA
Volume: 108 Issue: 50
Pages: 19873-19878 DOI: 10.1073/pnas.1104299108 Published: DEC 13 2011

Title: UNDERSTANDING DIFFUSION AND DENSITY ANOMALY IN A COARSE-GRAINED MODEL FOR WATER CONFINED BETWEEN HYDROPHOBIC WALLS
Author(s): de los Santos, Francisco; Franzese, Giancarlo
Source: JOURNAL OF PHYSICAL CHEMISTRY B
Volume: 115 Issue: 48
Pages: 14311-14320 DOI: 10.1021/jp206197t Published: DEC 8 2011

NANOBIOTECHNOLOGY

Title: PHYSICS OF MOLECULAR MACHINES OPERATED BY A PARTICLE FLUX
Author(s): Perez-Carrasco, R.; Sancho, J. M.
Source: EPL
Volume: 100 Issue: 4
Article Number: 40001 DOI: 10.1209/0295-5075/100/40001 Published: NOV 2012

Title: WEAK DISORDER IN PERIODIC POTENTIALS: ANOMALOUS TRANSPORT AND DIFFUSION
Author(s): Lindenberg, Katja; Sancho, J. M.; Khoury, M.; et al.
Source: FLUCTUATION AND NOISE LETTERS
Volume: 11 Issue: 1 Special Issue: SI
Article Number: 1240004 DOI: 10.1142/S0219477512400044 Published: MAR 2012

Title: POWER AND EFFICIENCY OF F1-ATPASE MOLECULAR MOTOR
Author(s): Sancho, J. M.; Perez-Carrasco, Ruben
Source: FLUCTUATION AND NOISE LETTERS
Volume: 11 Issue: 1 Special Issue: SI
Article Number: 1240003 DOI: 10.1142/S0219477512400032 Published: MAR 2012

Title: ASYMMETRIC STOCHASTIC SWITCHING DRIVEN BY INTRINSIC MOLECULAR NOISE
Author(s): Frigola, David; Casanellas, Laura; Sancho, Jose M.; et al.
Source: PLOS ONE
Volume: 7 Issue: 2 Article Number: e31407 DOI: 10.1371/journal.pone.0031407 Published: FEB 21 2012

Title: BROWNIAN COLLOIDAL PARTICLES: ITO, STRATONOVICH, OR A DIFFERENT STOCHASTIC INTERPRETATION
Author(s): Sancho, J. M.
Source: PHYSICAL REVIEW E

Title: CAPILLARY RISE IN HE LE-SHAW MODELS OF DISORDERED MEDIA

Activity Report 2011/12 IN2UB
APPENDIX 2 _ LIST OF PUBLICATIONS

Title: EXPERIMENTS ON THE LAMINAR OSCILLATORY FLOW OF WORMLIKE MICELLAR SOLUTIONS
Author(s): Casanellas, Laura; Ortin, Jordi Source: RHEOLOGICA ACTA Volume: 51 Issue: 6 Pages: 545-557 DOI: 10.1007/s00397-012-0620-3 Published: JUN 2012

Title: LAMINAR OSCILLATORY FLOW OF MAXWELL AND OLDROYD-B FLUIDS: THEORETICAL ANALYSIS

Title: IMPACT OF STOCHASTIC ACCELERATIONS ON DOPANT SEGREGATION IN MICROGRAVITY SEMICONDUCTOR CRYSTAL GROWTH
Author(s): Ruiz, X.; Bitlloch, P.; Ramirez-Piscina, L.; et al. Source: JOURNAL OF CRYSTAL GROWTH Volume: 355 Issue: 1 Pages: 88-100 DOI: 10.1016/j.jcrysgro.2012.06.027 Published: SEP 15 2012

Title: GEMINI IMIDAZOLIUM AMPHIPHILES FOR THE SYNTHESIS, STABILIZATION, AND DRUG DELIVERY FROM GOLD NANOPARTICLES
Author(s): Casal-Dujat, Lucia; Rodrigues, Mafalda; Yaguee, Alex; et al. Source: LANGMUIR Volume: 28 Issue: 5 Pages: 2368-2381 DOI: 10.1021/la203601n Published: FEB 7 2012

Title: MACROCYCLIC IONIC LIQUID CRYSTALS
Author(s): Casal-Dujat, Lucia; Penon, Oriol; Rodriguez-Abreu, Carlos; et al. Source: NEW JOURNAL OF CHEMISTRY Volume: 36 Issue: 3 Pages: 558-561 DOI: 10.1039/c2nj20934a Published: 2012

Title: A SIMPLE HALIDE-TO-ANION EXCHANGE METHOD FOR HETEROAROMATIC SALTS AND IONIC LIQUIDS
Author(s): Alcalde, Ermitas; Dinares, Immaculada; Ibanez, Anna; et al. Source: MOLECULES Volume: 17 Issue: 4 Pages: 4007-4027 DOI: 10.3390/molecules17044007 Published: APR 2012

Title: A HALIDE-FOR-ANION SWAP USING AN ANION-EXCHANGE RESIN (A(-) FORM) METHOD: REVISITING IMIDAZOLIUM-BASED ANION RECEPTORS AND SENSORS
Author(s): Alcalde, Ermitas; Mesquida, Neus; Ibanez, Anna; et al. Source: EUROPEAN JOURNAL OF ORGANIC CHEMISTRY Issue: 2 Pages: 298-304 DOI: 10.1002/ejoc.201101355 Published: JAN 2012

Title: MODULAR GLUCURONOXylan-SPECIFIC XylanASE WITH A FAMILY CBM35 CARBOHYDRATE-BINDING MODULE
Title: **EXPRESSION OF NOVEL BETA-GLUCANASE Cel12A FROM STACHYBOTrys ATRA IN BACTERIAL AND FUNGAL HOSTS**  
**Author(s):** Picart, Pere; Goedegebuur, Fris; Díaz, Pilar; et al.  
**Source:** Fungal Biology  
**Volume:** 116  
**Issue:** 3  
**Pages:** 443-451  
**DOI:** 10.1016/j.funbio.2012.01.004  
**Published:** MAR 2012

Title: **RHODOCOCCUS sp STRAIN CR-53 LipR, THE FIRST MEMBER OF A NEW BACTERIAL LIPASE FAMILY (FAMILY X) DISPLAYING AN UNUSUAL Y-TYPE OXYANION HOLE, SIMILAR TO THE CANDIDA ANTARCTICA LIPASE CLAN**  
**Author(s):** Bassegoda, Arnau; Javier Pastor, F. I.; Díaz, Pilar  
**Source:** Applied and Environmental Microbiology  
**Volume:** 78  
**Issue:** 6  
**Pages:** 1724-1732  
**DOI:** 10.1128/AEM.06332-11  
**Published:** MAR 2012

Title: **ENZYMATIC GRAFTING OF NATURAL PHENOLS TO FLAX FIBRES: DEVELOPMENT OF ANTIMICROBIAL PROPERTIES**  
**Author(s):** Fillat, A.; Gallardo, O.; Vidal, T.; et al.  
**Source:** Carbohydrate Polymers  
**Volume:** 87  
**Issue:** 1  
**Pages:** 146-152  
**DOI:** 10.1016/j.carbpol.2011.07.030  
**Published:** JAN 4 2012

Title: **EFFICIENT EXPRESSION OF A PAENIBACILLUS BARCINONENSIS ENDOGLUCANASE IN SACCHAROMYCES CEREVISIAE**  
**Author(s):** Mormeneo, Maria; Javier Pastor, F. I.; Zueco, Jesus  
**Source:** Journal of Industrial Microbiology & Biotechnology  
**Volume:** 39  
**Issue:** 1  
**Pages:** 115-123  
**DOI:** 10.1007/s10295-011-1006-8  
**Published:** JAN 2012

Title: **INTEGRIN-SPECIFIC MECHANORESPOUNSES TO COMPRESSION AND EXTENSION PROBED BY CYLINDRICAL FLAT-ENDED AFM TIPS IN LUNG CELLS**  
**Author(s):** Acerbi, Irene; Luque, Tomas; Gimenez, Alicia; et al.  
**Source:** PLOS ONE  
**Volume:** 7  
**Issue:** 2  
**Article Number:** e32261  
**DOI:** 0.1371/journal.pone.0032261  
**Published:** FEB 23 2012

Title: **FINDING THE WEAKEST LINK - EXPLORING INTEGRIN-MEDIATED MECHANICAL MOLECULAR PATHWAYS**  
**Author(s):** Roca-Cusachs, Pere; Iskratsch, Thomas; Sheetz, Michael P.  
**Source:** Journal of Cell Science  
**Volume:** 125  
**Issue:** 13  
**Pages:** 3025-3038  
**DOI:** 10.1242/jcs.095794  
**Published:** JUL 1 2012

Title: **CELLS TEST SUBSTRATE RIGIDITY BY LOCAL CONTRACTIONS ON SUBMICROMETER PILLARS**  
**Author(s):** Ghassemi, Saba; Meacci, Giovanni; Liu, Shuaimin; et al.  
**Source:** Proceedings of the National Academy of Sciences of the United States of America  
**Volume:** 109  
**Issue:** 14  
**Pages:** 5328-5333  
**DOI:** 10.1073/pnas.1119886109  
**Published:** APR 3 2012

Title: **NEW APPROACH FOR MEASURING PROTRUSIVE FORCES IN CELLS**  
**Author(s):** Mathur, A.; Roca-Cusachs, P.; Rossier, O. M.; et al.  
**Source:** Journal of Vacuum Science & Technology B  
**Volume:** 29  
**Issue:** 6  
**Article Number:** 06FA02  
**DOI:** 10.1116/1.3655580  
**Published:** NOV 2011

Title: **DELIVERY OF GOLD NANOPARTICLES TO THE BRAIN BY CONJUGATION WITH A PEPTIDE THAT RECOGNIZES THE TRANSFERRIN RECEPTOR**  
**Author(s):** Prades, Roger; Guerrero, Simon; Araya, Eyleen; et al.  
**Source:** Biomaterials
Title: **GUIDELINES FOR THE USE AND INTERPRETATION OF ASSAYS FOR MONITORING AUTOPHAGY**  
Author(s): Klionsky, Daniel J.; Abdalla, Fabio C.; Abeliovich, Hagai; et al.  
Source: AUTOPHAGY  
Volume: 8 Issue: 4 Pages: 445-544 DOI: 10.4161/auto.19496 Published: APR 2012

Title: **ACTIVATING TRANSCRIPTION FACTOR 6 LIMITS INTRACELLULAR ACCUMULATION OF MUTANT ALPHA(1)-ANTITRYPSIN Z AND MITOCHONDRIAL DAMAGE IN HEPATOMA CELLS**  
Author(s): Smith, Steven E.; Granell, Susana; Salcedo-Sicilia, Laia; et al.  
Source: JOURNAL OF BIOLOGICAL CHEMISTRY  
Volume: 286 Issue: 48 Pages: 41563-41577 DOI: 10.1074/jbc.M111.280073 Published: DEC 2011

Title: **ETHANOL INCREASES p190RhoGAP ACTIVITY, LEADING TO ACTIN CYTOSKELETON REARRANGEMENTS**  
Author(s): Selva, Javier; Egea, Gustavo  
Source: JOURNAL OF NEUROCHEMISTRY  

Title: **EXPERIMENTAL FREE-ENERGY MEASUREMENTS OF KINETIC MOLECULAR STATES USING FLUCTUATION THEOREMS**  
Author(s): Alemany, Anna; Mossa, Alessandro; Junier, Ivan; et al.  
Source: NATURE PHYSICS  
Volume: 8 Issue: 9 Pages: 688-694 DOI: 10.1038/NPHYS2375 Published: SEP 2012

Title: **SINGLE-MOLECULE STOCHASTIC RESONANCE**  
Author(s): Hayashi, K.; de Lorenzo, S.; Manosas, M.; et al.  
Source: PHYSICAL REVIEW X  
Volume: 2 Issue: 3 Article Number: 031012 DOI: 10.1103/PhysRevX.2.031012 Published: AUG 24 2012

Title: **NON-SPECIFIC BINDING OF Na+ AND Mg2+ TO RNA DETERMINED BY FORCE SPECTROSCOPY METHODS**  
Author(s): Bizarro, C. V.; Alemany, A.; Ritort, F.  
Source: NUCLEIC ACIDS RESEARCH  
Volume: 40 Issue: 14 Pages: 6922-6935 DOI: 10.1093/nar/gks289 Published: AUG 2012

Title: **APOPTOSIS-INDUCING EFFECTS OF DISTICHAMINE AND NARCIPRIMINE, RARE ALKALOIDS OF THE PLANT FAMILY AMARYLLIDACEAE**  
Author(s): Nair, Jerald J.; Rarova, Lucie; Strnad, Miroslav; et al.  
Source: BIOORGANIC & MEDICINAL CHEMISTRY LETTERS  
Volume: 22 Issue: 19 Pages: 6195-6199 DOI: 10.1016/j.bmcl.2012.08.005 Published: OCT 1 2012

Title: **GC-MS OF AMARYLLIDACEOUS GALANTHAMINE-TYPE ALKALOIDS**  
Author(s): Berkov, Strahil; Vladasov, Francesc; Codina, Carles; et al.  
Source: JOURNAL OF MASS SPECTROMETRY  
Volume: 47 Issue: 8 Pages: 1065-1073 DOI: 10.1002/jms.3059 Published: AUG 2012

Title: **PRODUCTION OF GALANTHAMINE BY LEUCOJUM AESTIVUM SHOOTS GROWN**
IN DIFFERENT BIOREACTOR SYSTEMS

Title: ALKALOIDS FROM GALANTHUS RIZEHENSIS
Author(s): Schumann, Anika; Berkov, Strahil; Claus, Diana; et al. Source: APPLIED BIOCHEMISTRY AND BIOTECHNOLOGY Volume: 167 Issue: 7 Pages: 1907-1920 DOI: 10.1007/s12010-012-9743-3 Published: AUG 2012

Title: APOPTOTIC ACTIVITY OF THE MARINE DIATOM COCCONEIS SCUTELLUM AND EICOSAPENTAENOIC ACID IN BT20 CELLS
Author(s): Nappo, Michele; Berkov, Strahil; Massucco, Carlotta; et al. Source: APPLIED BIOCHEMISTRY AND BIOTECHNOLOGY Volume: 167 Issue: 7 Pages: 1907-1920 DOI: 10.1007/s12010-012-9743-3 Published: AUG 2012

Title: THE EFFECTS OF AROLYCORICIDINE AND NARCIPRIMINE ON TUMOR CELL KILLING AND TOPOISOMERASE ACTIVITY
Author(s): Sarikaya, Buket Bozkurt; Zencir, Sevil; Somer, Nehir Unver; et al. Source: APPLIED BIOCHEMISTRY AND BIOTECHNOLOGY Volume: 167 Issue: 7 Pages: 1907-1920 DOI: 10.1007/s12010-012-9743-3 Published: AUG 2012

Title: UTILIZATION OF AGRO-INDUSTRIAL RESIDUES FOR POLY(3-HYDROXYALKANOATE) PRODUCTION BY PSEUDOMONAS AERUGINOSA 42A2 (NCIMB 40045): OPTIMIZATION OF CULTURE MEDIUM

Title: ANALYSIS OF PHENOLIC COMPOUNDS BY HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY COUPLED TO ELECTROSPRAY IONIZATION TANDEM MASS SPECTROMETRY IN SENESECT AND WATER-STRESSED TOBACCO
Author(s): Torras-Claveria, Laura; Jauregui, Olga; Codina, Carles; et al. Source: PLANT SCIENCE Volume: 182 Special Issue: SI Pages: 71-78 DOI: 10.1016/j.plantsci.2011.02.009 Published: JAN 2012

Title: IN VITRO MICROPROPAGATION AND ALKALOIDS OF HIPPEASTRUM VITTATUM
Author(s): Zayed, Rawia; El-Sharny, H.; Berkov, Strahil; et al. Source: IN VITRO CELLULAR & DEVELOPMENTAL BIOLOGY-PLANT Volume: 47 Issue: 6 Pages: 695-701 DOI: 10.1007/s11627-011-9368-1 Published: DEC 2011

Title: ACETYLCHOLINESTERASE-INHIBITING ALKALOIDS FROM ZEPHYRANTHES CONCOLOR
Author(s): Reyes-Chilpa, Ricardo; Berkov, Strahil; Hernandez-Ortega, Simon; et al. Source: MOLECULES Volume: 16 Issue: 11 Pages: 9520-9533 DOI: 10.3390/molecules16119520 Published: NOV 2011

Title: ANTIPROLIFERATIVE ALKALOIDS FROM CRINUM ZEYLANICUM
Author(s): Berkov, Strahil; Romani, Stefania; Herrera, Maria; et al. Source: PHYTOTHERAPY
APPENDIX 2 _ LIST OF PUBLICATIONS

RESEARCH

**Volume:** 25  **Issue:** 11  **Pages:** 1686-1692  **DOI:** 10.1002/ptr.3468  **Published:** NOV 2011

- **Title:** ALKALOIDS FROM NARCISSUS SEROTINUS  
  **Author(s):** Pigni, Natalia B.; Rios-Ruiz, Segundo; Martinez-Frances, Vanessa; *et al.*  
  **Source:** JOURNAL OF NATURAL PRODUCTS  
  **Volume:** 75  **Issue:** 9  **Pages:** 1643-1647  **DOI:** 10.1002/np3003595  
  **Published:** SEP 2012

- **Title:** ABIOTIC STRESS TOLERANCE  
  **Author(s):** Fernandez Tiburcio, Antonio; Wollenweber, Bernd; Zilberstein, Aviah; *et al.*  
  **Source:** PLANT SCIENCE  
  **Volume:** 182  **Issue:** SI  **Pages:** 1-2  **DOI:** 10.1016/j.plantsci.2011.09.005  
  **Published:** JAN 2012

- **Title:** NEW INSIGHTS INTO THE ROLE OF SPERMINE IN ARABIDOPSIS THALIANA UNDER LONG-TERM SALT STRESS  
  **Author(s):** Alet, Analia I.; Sanchez, Diego H.; Cuevas, Juan C.; *et al.*  
  **Source:** PLANT SCIENCE  
  **Volume:** 182  **Issue:** SI  **Pages:** 94-100  **DOI:** 10.1016/j.plantsci.2011.03.013  
  **Published:** JAN 2012

- **Title:** SIDE CHAIN ANCHORING OF TRYPTOPHAN TO SOLID SUPPORTS USING A DIHYDROPYRANYL HANDLE: SYNTHESIS OF BREVIANAMIDE F  
  **Author(s):** Torres-Garcia, Carolina; Diaz, Mireia; Blasi, Daniel; *et al.*  
  **Source:** INTERNATIONAL JOURNAL OF PEPTIDE RESEARCH AND THERAPEUTICS  
  **Volume:** 18  **Issue:** 1  **Pages:** 7-19  **DOI:** 10.1007/s10989-011-9274-8  
  **Published:** MAR 2012

- **Title:** PHYSICOCHEMICAL CHARACTERIZATION OF GBV-C E1 PEPTIDES AS POTENTIAL INHIBITORS OF HIV-1 FUSION PEPTIDE: INTERACTION WITH MODEL MEMBRANES  
  **Author(s):** Jesus Sanchez-Martin, Maria; Cruz, Antonio; Antonia Busquets, M.; *et al.*  
  **Source:** INTERNATIONAL JOURNAL OF PHARMACEUTICS  
  **Volume:** 436  **Issue:** 1-2  **Pages:** 593-601  **DOI:** 10.1016/j.ijpharm.2012.07.051  
  **Published:** OCT 15 2012

- **Title:** PHOSPHOLIPID BILAYER-PERTURBING PROPERTIES UNDERLYING LYSIS INDUCED BY PH-SENSITIVE CATIONIC LYSINE-BASED SURFACTANTS IN BIOMEMBRANES  
  **Author(s):** Rubert Nogueira, Daniele; Mitjans, Montserrat; Antonia Busquets, M.; *et al.*  
  **Source:** LANGMUIR  
  **Volume:** 28  **Issue:** 32  **Pages:** 11687-11698  **DOI:** 10.1021/la303795t  
  **Published:** AUG 14 2012

- **Title:** MEMBRANE PROTEIN-LIPID SELECTIVITY: ENHANCING SENSITIVITY FOR MODELING FRET DATA  
  **Author(s):** Suarez-Germa, Carme; Loura, Luis M. S.; Prieto, Manuel; *et al.*  
  **Source:** JOURNAL OF PHYSICAL CHEMISTRY B  
  **Volume:** 116  **Issue:** 8  **Pages:** 2438-2445  **DOI:** 10.1021/jp2105665  
  **Published:** MAR 1 2012

- **Title:** MISCIBILITY BEHAVIOR AND NANOSTRUCTURE OF MONOLAYERS OF THE MAIN PHOSPHOLIPIDS OF ESCHERICHIA COLI INNER MEMBRANE  
  **Author(s):** Picas, Laura; Suarez-Germa, Carme; Teresa Montero, M.; *et al.*  
  **Source:** LANGMUIR  
  **Volume:** 28  **Issue:** 1  **Pages:** 701-706  **DOI:** 10.1021/la203795f  
  **Published:** JAN 10 2012
Title: ACYL CHAIN DIFFERENCES IN PHOSPHATIDYLETHANOLAMINE DETERMINE DOMAIN FORMATION AND LACY DISTRIBUTION IN BIOMIMETIC MODEL MEMBRANES  
Author(s): Suarez-Germa, Carme; Teresa Montero, M.; Ignes-Mullol, Jordi; et al.  
Source: JOURNAL OF PHYSICAL CHEMISTRY B Volume: 115 Issue: 44 Pages: 12778-12784 DOI: 10.1021/jp206369k Published: NOV 10 2011

Title: VERSATILE GRADIENTS OF COVALENTLY BOUND PROTEINS ON MICROSTRUCTURED SUBSTRATES  
Author(s): Comelles, Jordi; Hortigueela, Veronica; Samitier, Josep; et al.  
Source: LANGMUIR Volume: 28 Issue: 38 Pages: 13688-13697 DOI: 10.1021/la3025638 Published: SEP 25 2012

Title: IN VITRO STUDY OF MAGNETITE-AMYLOID BETA COMPLEX FORMATION  
Author(s): Mir, Monica; Bogachen Tahirbegi, Islam; Jose Valle-Deigado, Juan; et al.  
Source: NANO MEDICINE-NANOTECHNOLOGY BIOLOGY AND MEDICINE Volume: 8 Issue: 6 Pages: 974-980 DOI: 10.1016/j.nano.2011.11.010 Published: AUG 2012

Title: CELL ADHESION AND FOCAL CONTACT FORMATION ON LINEAR RGD MOLECULAR GRADIENTS: STUDY OF NON-LINEAR CONCENTRATION DEPENDENCE EFFECTS  
Author(s): Lagunas, Anna; Comelles, Jordi; Martinez, Elena; et al.  
Source: NANO MEDICINE-NANOTECHNOLOGY BIOLOGY AND MEDICINE Volume: 8 Issue: 4 Pages: 432-439 DOI: 10.1016/j.nano.2011.08.001 Published: MAY 2012

Title: PROPERTIES OF BILAYER CONTACTS TO POROUS SILICON  
Author(s): Gallach, D.; Torres-Costa, V.; Garcia-Pelayo, L.; et al.  
Source: APPLIED PHYSICS A-MATERIALS SCIENCE & PROCESSING Volume: 107 Issue: 2 Pages: 293-300 DOI: 10.1007/s00339-012-6851-4 Published: MAY 2012

Title: IMPEDIMETRIC IMMUNOSENSOR FOR HUMAN SERUM ALBUMIN DETECTION ON A DIRECT ALDEHYDE-FUNCTIONALIZED SILICON NITRIDE SURFACE  
Author(s): Caballero, David; Martinez, Elena; Bausells, Joan; et al.  
Source: ANALYTICA CHIMICA ACTA Volume: 720 Pages: 43-48 DOI: 10.1016/j.aca.2012.01.031 Published: MAR 30 2012

Title: MARKET CHALLENGES FACING ACADEMIC RESEARCH IN COMMERCIALIZING NANO-ENABLED IMPLANTABLE DEVICES FOR IN-VIVO BIOMEDICAL ANALYSIS  
Author(s): Juanola-Feliu, E.; Colomer-Farrarons, J.; Miribel-Catala, P.; et al.  
Source: TECHNOCATION Volume: 32 Issue: 3-4 Special Issue: SI Pages: 193-204 DOI: 10.1016/j.technovation.2011.09.007 Published: MAR-APR 2012

Title: FACILE MODIFICATION OF SILICA SUBSTRATES PROVIDES A PLATFORM FOR DIRECT-WRITING SURFACE CLICK CHEMISTRY  
Author(s): Oberhansl, Sabine; Hitz, Michael; Lagunas, Anna; et al.  
Source: SMALL Volume: 8 Issue: 4 Special Issue: SI Pages: 541-545 DOI: 10.1002/smll.201101875 Published: FEB 20 2012

Title: POLYMER-BASED TECHNOLOGY PLATFORM FOR ROBUST ELECTROCHEMICAL SENSING USING GOLD MICROELECTRODES  
Author(s): Kuphal, M.; Mills, C. A.; Korri-Youssoufi, H.; et al.  
Source: SENSORS AND ACTUATORS
Published: JAN 3 2012

- Title: DIFFUSION-CONTROLLED DEPOSITION OF NATURAL NANOVESICLES CONTAINING G-PROTEIN COUPLED RECEPTORS FOR BIOSENSING PLATFORMS  
  Author(s): Calo, Annalisa; Sanmarti-Espinal, Marta; Iavicoli, Patrizia; et al.  
  Source: SOFT MATTER  
  Volume: 8  Issue: 46  Pages: 11632-11643  DOI: 10.1039/c2sm25893e  
  Published: 2012

- Title: FUEL CELL-POWERED MICROFLUIDIC PLATFORM FOR LAB-ON-A-CHIP APPLICATIONS: INTEGRATION INTO AN AUTONOMOUS AMPEROMETRIC SENSING DEVICE  
  Author(s): Esquivel, J. P.; Colomer-Farrarons, J.; Castellarnau, M.; et al.  
  Source: LAB ON A CHIP  
  Volume: 12  Issue: 21  Pages: 4232-4235  DOI: 10.1039/c2lc40946a  
  Published: 2012

- Title: FUEL CELL-POWERED MICROFLUIDIC PLATFORM FOR LAB-ON-A-CHIP APPLICATIONS  
  Author(s): Pablo Esquivel, Juan; Castellarnau, Marc; Senn, Tobias; et al.  
  Source: LAB ON A CHIP  
  Volume: 12  Issue: 1  Pages: 74-79  DOI: 10.1039/c1lc20426b  
  Published: 2012

- Title: SELECTIVE IN SITU FUNCTIONALIZATION OF BIOSENSORS ON LOC DEVICES USING LAMINAR CO-FLOW  
  Author(s): Parra-Cabrera, C.; Sporer, C.; Rodriguez-Villareal, I.; et al.  
  Source: LAB ON A CHIP  
  Volume: 12  Issue: 20  Pages: 4143-4150  DOI: 10.1039/c2lc40107j  
  Published: 2012

- Title: DEPOSITION OF ITO THIN FILMS ONTO PMMA SUBSTRATES FOR WAVEGUIDE BASED BIOSENSING DEVICES  
  Author(s): Azevedo, S.; Dieguez, L.; Carvalho, P.; et al.  
  Source: JOURNAL OF NANO RESEARCH  
  Volume: 17  Pages: 75-83  DOI: 10.4028/www.scientific.net/JNanoR.17.75  
  Published: 2012

- Title: SELF-ASSEMBLY OF HUMAN AMYLIN-DERIVED PEPTIDES STUDIED BY ATOMIC FORCE MICROSCOPY AND SINGLE MOLECULE FORCE SPECTROSCOPY  
  Author(s): Jose Valle-Delgado, Juan; Liepina, Inta; Lapidus, Dmitrijs; et al.  
  Source: SOFT MATTER  
  Volume: 8  Issue: 4  Pages: 1234-1242  DOI: 10.1039/c1sm06764h  
  Published: 2012

- Title: TOWARDS A MAGIC BULLET AGAINST MALARIA: PAUL EHRlich REVISITED  
  Author(s): Fernandez-Busquets, X.; Urban, P.; Valle-Delgado, J. J.; et al.  
  Conference: 22nd IUBMB Congress/37th FEBS Congress  
  Location: Seville, SPAIN  
  Date: SEP 04-09, 2012  
  Sponsor(s): IUBMB; FEBS  
  Source: FEBS JOURNAL  
  Volume: 279 Special  Issue: SI  
  Supplement: 1  Pages: 329-329  
  Published: SEP 2012

- Title: THE EFFECT OF AMYLOIDOGENIC PEPTIDES ON BACTERIAL AGING CORRELATES WITH THEIR INTRINSIC AGGREGATION PROPENSITY  
  Author(s): Villar-Pique, Anna; de Groot, Natalia S.; Sabate, Raimon; et al.  
  Source: JOURNAL OF MOLECULAR BIOLOGY  
  Part: Part 1  
  Published: AUG 10 2012

- Title: NANOTOOLS FOR THE DELIVERY OF ANTIMICROBIAL PEPTIDES  
  Author(s): Urban, Patricia; Jose Valle-Delgado, Juan; Moles, Ernest; et al.  
  Source: CURRENT
DRUG TARGETS  
**Volume:** 13  **Issue:** 9  **Pages:** 1158-1172  **Published:** AUG 2012

- **Title:** STUDY OF THE EFFICACY OF ANTIMALARIAL DRUGS DELIVERED INSIDE TARGETED IMMUNOLIPOSOMAL NANOVECTORS  
  **Author(s):** Urban, Patricia; Estelrich, Joan; Adeva, Alberto; et al.  
  **Source:** NANO SCALE RESEARCH LETTERS  
  **Volume:** 6  **Article Number:** 620  **DOI:** 10.1186/1556-276X-6-620  **Published:** DEC 7 2011

- **Title:** ON THE CORRELATION BETWEEN DROPLET VOLUME AND IRRADIATION CONDITIONS IN THE LASER FORWARD TRANSFER OF LIQUIDS  
  **Author(s):** Duocastella, M.; Patrascioiu, A.; Fernandez-Pradas, J. M.; et al.  
  **Source:** APPLIED PHYSICS A-MATERIALS SCIENCE & PROCESSING  
  **Volume:** 109  **Issue:** 1  **Pages:** 5-14  **DOI:** 10.1007/s00339-012-7047-7  **Published:** OCT 2012

- **Title:** SURFACE MODIFICATION OF UHMWPE WITH INFRARED FEMTOSECOND LASER  
  **Author(s):** Fernandez-Pradas, J. M.; Naranjo-Leon, S.; Morenza, J. L.; et al.  
  **Source:** APPLIED SURFACE SCIENCE  
  **Volume:** 258  **Issue:** 23  **Pages:** 9256-9259  **DOI:** 10.1016/j.apsusc.2011.09.106  **Published:** SEP 15 2012

- **Title:** INFLUENCE OF SOLUTION PROPERTIES IN THE LASER FORWARD TRANSFER OF LIQUIDS  
  **Author(s):** Dinca, V.; Patrascioiu, A.; Fernandez-Pradas, J. M.; et al.  
  **Source:** APPLIED SURFACE SCIENCE  
  **Volume:** 258  **Issue:** 23  **Pages:** 9379-9384  **DOI:** 10.1016/j.apsusc.2012.02.007  **Published:** SEP 15 2012

- **Title:** MICRODROPLET DEPOSITION THROUGH A FILM-FREE LASER FORWARD PRINTING TECHNIQUE  
  **Author(s):** Patrascioiu, A.; Fernandez-Pradas, J. M.; Morenza, J. L.; et al.  
  **Source:** APPLIED SURFACE SCIENCE  
  **Volume:** 258  **Issue:** 23  **Pages:** 9412-9416  **DOI:** 10.1016/j.apsusc.2011.09.107  **Published:** SEP 15 2012

- **Title:** OPTIMIZATION OF LASER PRINTING OF NANOPARTICLE SUSPENSIONS FOR MICROELECTRONIC APPLICATIONS  
  **Author(s):** Duocastella, Marti; Kim, Heungsoc; Serra, Pere; et al.  
  **Source:** APPLIED PHYSICS A-MATERIALS SCIENCE & PROCESSING  
  **Volume:** 106  **Issue:** 3  **Pages:** 471-478  **DOI:** 10.1007/s00339-011-6751-z  **Published:** MAR 2012

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**NANOPHARMACOTHERAPY**

- **Title:** DIFFUSION IN HIGHLY CONCENTRATED EMULSIONS  
  **Author(s):** Caldero, Gabriela; Patti, Alessandro; Llinas, Meritxell; et al.  
  **Source:** CURRENT OPINION IN COLLOID & INTERFACE SCIENCE  
  **Volume:** 17  **Issue:** 5  **Pages:** 255-260  **DOI:** 10.1016/j.cocis.2012.07.001  **Published:** OCT 2012

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APPENDIX 2 _ LIST OF PUBLICATIONS

- Title: FORMATION OF PEGYLATED POLYURETHANE AND LYSINE-COATED POLYUREA NANOPARTICLES OBTAINED FROM O/W NANO-EMULSIONS
  Author(s): Morral-Ruiz, Genoveva; Solans, Conxita; Luisa Garcia, Maria; et al. Source: LANGMUIR
  Volume: 28 Issue: 15 Pages: 6256-6264 DOI: 10.1021/la204659y Published: APR 17 2012

- Title: DRUG DELIVERY PROPERTIES OF MACROPOUROUS POLYSTYRENE SOLID FOAMS
  Author(s): Canal, C.; Aparicio, R. M.; Vilchez, A.; et al. Source: JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES
  Volume: 15 Issue: 1 Pages: 197-207 Published: 2012

- Title: SKIN PERMEATION OF CACALOL, CACALONE AND 6-EPICACALONE SESQUI-TERPENES FROM A NANOEMULSION
  Author(s): Luisa Garduno-Ramirez, Maria; Clares, Beatriz; Dominguez-Villegas, Valeri; et al. Source: NATURAL PRODUCT COMMUNICATIONS
  Volume: 7 Issue: 7 Pages: 821-823 Published: JUL 2012

- Title: SOLID LIPID NANOPARTICLES (SLN)-BASED HYDROGELS AS POTENTIAL CARRIERS FOR ORAL TRANSMUCOSAL DELIVERY OF RISPERIDONE: PREPARATION AND CHARACTERIZATION STUDIES
  Author(s): Silva, A. C.; Amaral, M. H.; Gonzalez-Mira, E.; et al. Source: COLLOIDS AND SURFACES B-BIOINTERFACES
  Volume: 93 Pages: 241-248 DOI: 10.1016/j.colsurfb.2012.01.014 Published: MAY 1 2012

- Title: IMPROVED AND SAFE TRANSCORNEAL DELIVERY OF FLURBIPROFEN BY NLC AND NLC-BASED HYDROGELS
  Author(s): Gonzalez-Mira, Elisabet; Nikolic, Sasa; Calpeña, Ana C.; et al. Source: JOURNAL OF PHARMACEUTICAL SCIENCES
  Volume: 101 Issue: 2 Pages: 707-725 DOI: 10.1002/jps.22784 Published: FEB 2012

- Title: CATIONIC SOLID LIPID NANOPARTICLES (cSLN): STRUCTURE, STABILITY AND DNA BINDING CAPACITY CORRELATION STUDIES
  Author(s): Doktorovova, S.; Shegokar, R.; Rakovsky, E.; et al. Source: INTERNATIONAL JOURNAL OF PHARMACEUTICS

- Title: ROLE OF HYDROXYPROPIL-BETA-CYCLODEXTRIN ON FREEZE-DRIED AND GAMMA-IRRADIATED PLGA AND PLGA-PEG DIBLOCK COPOLYMER NANOSPHERES FOR OPHTHALMIC FLURBIPROFEN DELIVERY
  Author(s): Vega, Estefania; Antonia Egea, M.; Cristina Calpena, Ana; et al. Source: INTERNATIONAL JOURNAL OF NANOMEDICINE
  Volume: 7 Pages: 1357-1371 DOI: 10.2147/IJN.S28481 Published: 2012

- Title: RELEASE PROFILE AND TRANSSCLERAL PERMEATION OF TRIAMCINOLONE ACETONIDE LOADED NANOSTRUCTURED LIPID CARRIERS (TA-NLC): IN VITRO AND EX VIVO STUDIES
  Author(s): Araujo, Joana; Garcia, Maria L.; Mallandrich, Mireia; et al. Source: NANOMEDICINE-NANOTECHNOLOGY BIOLOGY AND MEDICINE
  Volume: 8 Issue: 6 Pages: 1034-1041 DOI: 10.1016/j.nano.2011.10.015 Published: AUG 2012
Title: External Magnetic Field-Induced Selective Biodistribution of Magnetoliposomes in Mice
Author(s): Garcia-Jimeno, Sonia; Escribano, Elvira; Queralt, Josep; et al. 
Source: Nanoscale Research Letters 
Volume: 7 
Article Number: 452 
DOI: 10.1186/1556-276X-7-452 
Published: AUG 10 2012

Title: External Magnetic Field-Induced Selective Biodistribution of Magnetoliposomes in Mice
Author(s): Garcia-Jimeno, Sonia; Escribano, Elvira; Queralt, Josep; et al. 
Source: Nanoscale Research Letters 
Volume: 7 
Article Number: 452 
DOI: 10.1186/1556-276X-7-452 
Published: AUG 10 2012

Title: Effect of the Surface Charge of Artificial Model Membranes on the Aggregation of Amyloid Beta-Peptide
Author(s): Sabate, Raimon; Espargaro, Alba; Barbosa-Barros, Lucyanna; et al. 
Source: Biochimie 
Volume: 94 
Issue: 8 
Pages: 1730-1738 
DOI: 10.1016/j.biochi.2012.03.027 
Published: AUG 2012

Title: Role of the Electrostatic Depletion Attraction on the Structure of Charged Liposome-Polymer Mixtures
Author(s): Pelaez-Fernandez, M.; Moncho-Jorda, A.; Garcia-Jimeno, S.; et al. 
Source: Physical Review E 
Volume: 85 
Issue: 5 
Article Number: 051405 
DOI: 10.1103/PhysRevE.85.051405 
Part: Part 1 
Published: MAY 29 2012

Title: Bicelles: Lipid Nanostructured Platforms with Potential Dermal Applications
Author(s): Barbosa-Barros, Lucyanna; Rodriguez, Gelen; Barba, Clara; et al. 
Source: Small 
Volume: 8 
Issue: 6 
Pages: 807-818 
DOI: 10.1002/smll.201101545 
Published: MAR 2012

Title: Improved Thermal Ablation Efficacy Using Magnetic Nanoparticles: A Study in Tumor Phantoms
Author(s): Garcia-Jimeno, S.; Ortega-Palacios, R.; Cepeda-Rubio, M. F. J.; et al. 
Source: Progress in Electromagnetics Research-Pier 
Volume: 128 
Pages: 229-248 
DOI: 10.2528/PIER12020108 
Published: 2012

Title: Liposomes Bearing Fibrinogen Could Potentially Interfere with Platelet Interaction and Procoagulant Activity
Author(s): Rosa Hernandez, M.; Urban, Patricia; Casals, Elisenda; et al. 
Source: International Journal of Nanomedicine 
Volume: 7 
Pages: 2339-2347 
DOI: 10.2147/IJM.S28542 
Published: 2012

Title: Study of the Efficacy of Antimalarial Drugs Delivered Inside Targeted Immunoliposomal Nanovectors
Author(s): Urban, Patricia; Estelrich, Joan; Adeva, Alberto; et al. 
Source: Nanoscale Research Letters 
Volume: 6 
Article Number: 620 
DOI: 10.1186/1556-276X-6-620 
Published: DEC 7 2011
APPENDIX 2 _ LIST OF PUBLICATIONS

- **Title:** SINGLE-PASS INTESTINAL PERFUSION TO ESTABLISH THE INTESTINAL PERMEABILITY OF MODEL DRUGS IN MOUSE  
  **Author(s):** Escribano, Elvira; Garcia Sala, Xavier; Salamanca, Jorge; et al.  
  **Source:** INTERNATIONAL JOURNAL OF PHARMACEUTICS  
  **Volume:** 436  
  **Issue:** 1-2  
  **Pages:** 472-477  
  **DOI:** 10.1016/j.ijpharm.2012.07.010  
  **Published:** OCT 15 2012

- **Title:** EFFECT OF MAGNET IMPLANT ON IRON BIODISTRIBUTION OF FE@C NAPARTICLES IN THE MOUSE  
  **Author(s):** Escribano, Elvira; Fernandez-Pacheco, Rodrigo; Gabriel Valdivia, J.; et al.  
  **Source:** ARCHIVES OF PHARMACAL RESEARCH  
  **Volume:** 35  
  **Issue:** 1  
  **Pages:** 93-100  
  **DOI:** 10.1007/s12272-012-0109-8  
  **Published:** JAN 2012

NANOMAGNETISM, NANOELECTRONICS AND NANOPHOTONICS

- **Title:** POLYNUCLEAR CROCONATO-BRIDGED-COPPER(II) COMPLEXES DERIVED FROM TRI- AND TETRA-DENTATE AMINES  
  **Author(s):** Massoud, Salah S.; Vicente, Ramon; Fontenot, Patricia R.; et al.  
  **Source:** POLYHEDRON  
  **Volume:** 46  
  **Issue:** 1  
  **Pages:** 86-73  
  **DOI:** 10.1016/j.poly.2012.07.049  
  **Published:** OCT 9 2012

- **Title:** SYNTHESIS, STRUCTURAL AND MAGNETIC STUDY OF TWO NEW ALTERNATING 1D AZIDO-BRIDGED COBALT(II) COMPLEXES  
  **Author(s):** Mautner, Franz A.; Sudy, Beate; Berger, Christian; et al.  
  **Source:** POLYHEDRON  
  **Volume:** 42  
  **Issue:** 1  
  **Pages:** 95-101  
  **DOI:** 10.1016/j.poly.2012.04.039  
  **Published:** JUL 25 2012

- **Title:** [Mn-2(N-3(5))][n](n-): FOUR DIFFERENT AZIDE BRIDGING MODES AND DICUBANE SUBUNITS OBSERVED IN A NEW MN(II)-AZIDE ONLY 2D SYSTEM  
  **Author(s):** Mautner, Franz A.; Sudy, Beate; Egger, Andreas; et al.  
  **Source:** INORGANIC CHEMISTRY COMMUNICATIONS  
  **Volume:** 21  
  **Pages:** 4-7  
  **DOI:** 10.1016/j.inocche.2012.03.028  
  **Published:** JUL 2012

- **Title:** HEXANUCLEAR COPPER(II) CAGES BUILT ON A CENTRAL {MU(3)-O CENTER DOT CENTER DOT CENTER DOT H CENTER DOT CENTER DOT CENTER DOT MU(3)-O} MOIETY, 1,3-BIS(DIMETHYLAMINO)-2-PROANOLATO AND CAPPING R-PHOSPHONATES: CRYSTAL STRUCTURES, MAGNETIC BEHAVIOR, AND DFT STUDIES  
  **Author(s):** Speed, Saskia; Vicente, Ramon; Aravena, Daniel; et al.  
  **Source:** INORGANIC CHEMISTRY  
  **Volume:** 51  
  **Issue:** 12  
  **Pages:** 6842-6850  
  **DOI:** 10.1021/ic300589h  
  **Published:** JUN 18 2012

- **Title:** DICYANAMIDO-METAL(II) COMPLEXES. PART 6: 1D POLYMERIC COPPER(II) COMPLEXES BRIDGING BY DICYANAMIDE. EFFECT OF COPPER(II) SALT ON THE NATURE OF THE POLYMERIC PRODUCT  
  **Author(s):** Massoud, Salah S.; Lemieux, Marcie M.; Le Quan, Lucie; et al.  
  **Source:** INORGANICA CHIMICA ACTA  
  **Volume:** 388  
  **Pages:** 71-77  
  **DOI:** 10.1016/j.ica.2012.03.009  
  **Published:** JUN 15 2012
APPENDIX 2 _ LIST OF PUBLICATIONS

- **Title**: A NEW PENTADECANUCLEAR MANGANESE(II,III) TERT-BUTYLPHOSPHONATE CLUSTER: CRYSTAL STRUCTURE AND MAGNETIC BEHAVIOUR  
  **Author(s)**: Mautner, Franz A.; Fischer, Roland C.; El Fallah, M. Salah; et al.  
  **Source**: POLYHEDRON  
  **Volume**: 36  
  **Issue**: 1  
  **Pages**: 92-96  
  **DOI**: 10.1016/j.poly.2012.01.029  
  **Published**: APR 4 2012

- **Title**: THREE NEW DINUCLEAR MANGANESE(II) COMPLEXES WITH bis(mu-PHOSPHINATO)-BRIDGES  
  **Author(s)**: Mautner, Franz A.; Speed, Saskia; El Fallah, M. Salah; et al.  
  **Conference**: 12th International Conference on Molecule-Based Magnets (ICMM)  
  **Location**: Beijing, PEOPLES R CHINA  
  **Date**: OCT 08-12, 2010  
  **Source**: POLYHEDRON  
  **Volume**: 30  
  **Issue**: 18 Special Issue: SI  
  **Pages**: 3067-3072  
  **DOI**: 10.1016/j.poly.2011.02.034  
  **Published**: NOV 28 2011

- **Title**: SINGLE-STRAND MOLECULAR WHEELS AND COORDINATION POLYMERS IN COPPER(II) BENZOATE CHEMISTRY BY THE EMPLOYMENT OF A-BENZOIN OXIME AND AZIDES: SYNTHESIS, STRUCTURES, AND MAGNETIC CHARACTERIZATION  
  **Author(s)**: Stamatatos, Theocharis C.; Vlahopoulou, Gina; Raptopoulou, Catherine P.; et al.  
  **Source**: EUROPEAN JOURNAL OF INORGANIC CHEMISTRY  
  **Volume**: 19  
  **Pages**: 3121-3131  
  **DOI**: 10.1002/ejic.201101292  
  **Published**: JUL 2012

- **Title**: A NOVEL FERROMAGNETICALLY-COUPLED TRINUCLEAR NICKEL(II) COMPLEX CONSTRUCTED FROM THE NEW 1,2-DI(PYRIDIN-2-YL)ETHANONE LIGAND IN ITS ENOLATE FORM  
  **Author(s)**: Guo, Wei; Chen, Xu-Dong; Du, Miao; et al.  
  **Source**: INORGANIC CHEMISTRY COMMUNICATIONS  
  **Volume**: 20  
  **Pages**: 184-187  
  **DOI**: 10.1016/j.inoche.2012.03.004  
  **Published**: JUN 2012

- **Title**: HIGH NUCLEARITY IN AZIDO/OXIMATE CHEMISTRY: Ni-14 AND Ni-13 CLUSTERS WITH S=6 AND 9 GROUND STATES  
  **Author(s)**: Esteban, Jordi; Alcazar, Laura; Torres-Molina, Maria; et al.  
  **Source**: INORGANIC CHEMISTRY  
  **Volume**: 10  
  **Pages**: 5503-5505  
  **DOI**: 10.1021/ic3004036  
  **Published**: MAY 21 2012

- **Title**: TRIANGULAR NICKEL COMPLEXES DERIVED FROM 2-PYRIDYLICYANOXIME: AN APPROACH TO THE MAGNETIC PROPERTIES OF THE [Ni3(mu3-OH){pyC(R)NO}3]2+ CORE  
  **Author(s)**: Esteban, Jordi; Ruiz, Eliseo; Font-Bardia, Merce; et al.  
  **Source**: CHEMISTRY-A EUROPEAN JOURNAL  
  **Volume**: 18  
  **Issue**: 12  
  **Pages**: 3637-3648  
  **DOI**: 10.1002/chem.201102987  
  **Published**: MAR 2012

- **Title**: SYNTHESIS AND CHARACTERIZATION OF Co-3(III) INVERSE METALLACROWNS VIA USE OF 6-METHYL-2-PYRIDYALDOXIME  
  **Author(s)**: Vlahopoulou, Gina; Escuer, Albert; Font-Bardia, Merce; et al.  
  **Source**: INORGANIC CHEMISTRY COMMUNICATIONS  
  **Volume**: 16  
  **Pages**: 78-80  
  **DOI**: 10.1016/j.inoche.2011.11.037  
  **Published**: FEB 2012

- **Title**: EMPLOYMENT OF METHYL 2-PYRIDYL KETONE OXIME IN 3D/4F-METAL CHEMISTRY: DINUCLEAR NICKEL(II)/LANTHANIDE(III) SPECIES AND COMPLEXES CONTAINING THE METALS IN SEPARATE IONS  
  **Author(s)**: Polyzou, Christina D.; Nikolau, Helen; Papatriantafyllopoulou, Constantina; et al.  
  **Source**: DALTON TRANSACTIONS  
  **Volume**: 41  
  **Issue**: 48  
  **Pages**: 14712-14712  
  **Published**: 2012
Title: EMPLOYMENT OF METHYL 2-PYRIDYL KETONE OXIME IN 3D/4F-METAL CHEMISTRY: DINUCLEAR NICKEL(II)/LANTHANIDE(III) SPECIES AND COMPLEXES CONTAINING THE METALS IN SEPARATE IONS
Author(s): Polyzou, Christina D.; Nikolaou, Helen; Papatriantafyllopoulou, Constantina; et al.
Source: DALTON TRANSACTIONS
Volume: 41
Issue: 44
Pages: 13755-13764
DOI: 10.1039/c2dt31928d
Published: 2012

Title: ANION COORDINATION BY METALLAMACROCYCLES: A CRYPTAND-LIKE CAVITY
Author(s): Escuer, Albert; Esteban, Jordi; Font-Bardia, Merce
Source: CHEMICAL COMMUNICATIONS
Volume: 48
Issue: 78
Pages: 9777-9779
DOI: 10.1039/c2cc34061e
Published: 2012

Title: THE “PERIODIC TABLE” OF DI-2-PYRIDYL KETONE: VANADIUM COMPLEXES
Author(s): Sartzi, Harikleia; Stoumpos, Constantinos C.; Giouli, Maria; et al.
Source: DALTON TRANSACTIONS
Volume: 41
Issue: 39
Pages: 11984-11988
DOI: 10.1039/c2dt30710c
Published: 2012

Title: TRIANGULAR Ni(2)(II)Ln(III) AND (Ni2YIII)-Y-II COMPLEXES DERIVED FROM DI-2-PYRIDYL KETONE: SYNTHESIS, STRUCTURES AND MAGNETIC PROPERTIES
Author(s): Georgopoulou, Anastasia N.; Efthymiou, Constantinos G.; Papatriantafyllopoulou, Constantina; et al.
Conference: 12th International Conference on Molecule-Based Magnets (ICMM)
Location: Beijing, PEOPLES R CHINA
Date: OCT 08-12, 2010
Source: POLYHEDRON
Volume: 30
Issue: 18 Special Issue: SI
Pages: 2978-2986
DOI: 10.1016/j.poly.2011.02.010
Published: NOV 28 2011

Title: LAYERED DOUBLE HYDROXIDES AS CARRIERS FOR QUANTUM DOTS@SILICA NANOSPHERES
Author(s): Stoica, Georgiana; Castello Serrano, Ivan; Figuerola, Albert; et al.
Source: NANOLETTERS
Volume: 4
Issue: 17
Pages: 5409-5419
DOI: 10.1039/c2nr31550e
Published: 2012

Title: SIZE-TUNABLE, HEXAGONAL PLATE-LIKE Cu3P AND JANUS-LIKE Cu-Cu3P NANCRYSTALS
Author(s): De Trizio, Luca; Figuerola, Albert; Manna, Liberato; et al.
Source: ACS NANO
Volume: 6
Issue: 1
Pages: 32-41
DOI: 10.1021/nn203702r
Published: JAN 2012

Title: CHEMICAL TRANSFORMATION OF Au-TIPPED CdS NANORODS INTO AuS/Cd CORE/SHELL PARTICLES BY ELECTRON BEAM IRRADIATION
Author(s): van Huis, Marijn A.; Figuerola, Albert; Fang, Changming; et al.
Source: NANO LETTERS
Volume: 11
Issue: 11
Pages: 4555-4561
DOI: 10.1021/nn2030823
Published: NOV 2011

Title: LOCAL COORDINATION GEOMETRY AND SPIN STATE IN NOVEL FEII COMPLEXES WITH 2,6-Bis(PYRAZOL-3-YL)PYRIDINE-TYPE LIGANDS AS CONTROLLED BY PACKING FORCES: STRUCTURAL CORRELATIONS
Author(s): Craig, Gavin A.; Sanchez Costa, Jose; Roubeau, Olivier; et al.
Source: CHEMISTRY-A EUROPEAN JOURNAL
Volume: 18
Issue: 37
Pages: 11703-11715
DOI: 10.1002/chem.201200820
Published: SEP 2012

Title: SYNTHESIS, CRYSTAL STRUCTURES, MAGNETIC PROPERTIES AND CATECHOLASE ACTIVITY OF DOUBLE PHENOXIDO-BRIDGED PENTA-COORDINATED
DINUCLEAR NICKEL(II) COMPLEXES DERIVED FROM REDUCED SCHIFF-BASE LIGANDS: MECHANISTIC INFERENCE OF CATECHOLASE ACTIVITY

Author(s): Biswas, Apurba; Das, Lakshmi Kanta; Drew, Michael G. B.; et al. Source: INORGANIC CHEMISTRY Volume: 51 Issue: 15 Pages: 7993-8001 DOI: 10.1021/ic202748m Published: AUG 6 2012

Title: MOLECULAR [(Fe-3)-(Fe-3)] AND [(Fe-4)-(Fe-4)] COORDINATION CLUSTER PAIRS AS SINGLE OR COMPOSITE ARRAYS

Author(s): Carolina Sanudo, E.; Salinas Uber, Jorge; Pons Balague, Alba; et al. Source: INORGANIC CHEMISTRY Volume: 51 Issue: 15 Pages: 8441-8446 DOI: 10.1021/ic300995g Published: AUG 6 2012

Title: A MOLECULAR [Mn-14] COORDINATION CLUSTER FEATURING TWO SLOWLY RELAXING NANOMAGNETS

Author(s): Sanchez Costa, Jose; Barrios, Leoni A.; Craig, Gavin A.; et al. Source: CHEMICAL COMMUNICATIONS Volume: 48 Issue: 10 Pages: 1413-1415 DOI: 10.1039/c1cc15682a Published: 2012

Title: DESIGN OF MAGNETIC COORDINATION COMPLEXES FOR QUANTUM COMPUTING

Author(s): Aromi, Guillem; Aguilá, David; Gamez, Patrick; et al. Source: CHEMICAL SOCIETY REVIEWS Volume: 41 Issue: 2 Pages: 537-546 DOI: 10.1039/c1cs15115k Published: 2012

Title: A Ni-II CUBANE WITH A LIGAND DERIVED FROM A UNIQUE METAL ION-PROMOTED, CROSSED-ALDOL REACTION OF ACETONE WITH DI-2-PYRIDYL KETONE

Author(s): Efthymiou, Constantinos G.; Papatriantafyllopoulou, Constantina; Aromi, Guillem; et al. Conference: 12th International Conference on Molecule-Based Magnets (ICMM) Location: Beijing, PEOPLES R CHINA Date: OCT 08-12, 2010 Source: POLYHEDRON Volume: 30 Issue: 18 Special Issue: SI Pages: 3022-3025 DOI: 10.1016/j.poly.2011.02.024 Published: NOV 28 2011

Title: ENHANCEMENT OF THE SUPERCONDUCTING CRITICAL TEMPERATURE IN Nb/Py/Nb TRILAYERS


Title: MAGNETOIMPEDANCE SPECTROSCOPY OF EPITAXIAL MULTIFERROIC THIN FILMS

Author(s): Schmidt, Rainer; Ventura, Jofre; Langenberg, Eric; et al. Source: PHYSICAL REVIEW B Volume: 86 Issue: 3 Article Number: 035113 DOI: 10.1103/PhysRevB.86.035113 Published: JUL 10 2012

Title: QUANTUM DEPINNING OF THE MAGNETIC VORTEX CORE IN MICRON-SIZE PERMALLOY DISKS

Author(s): Zarzuela, Ricardo; Velez, Saül; Manel Hernandez, Joan; et al. Source: PHYSICAL REVIEW B Volume: 85 Issue: 18 Article Number: 180401 DOI: 10.1103/PhysRevB.85.180401 Published: MAY 3 2012
Title: ANISOTROPIC MAGNETIC DEFLAGRATION IN SINGLE CRYSTALS OF Gd5Ge4  
Author(s): Velez, S.; Hernandez, J. M.; Garcia-Santiago, A.; et al.  
Source: PHYSICAL REVIEW B  
Volume: 85  Issue: 5  Article Number: 054432  DOI: 10.1103/PhysRevB.85.054432  Published: FEB 28 2012

Title: MAGNETIC FIELD DEPENDENCE OF THE QUANTUM TUNNELING OF NORMAL-SUPERCONDUCTOR INTERFACES IN A TYPE-I Pb SUPERCONDUCTOR  
Author(s): Velez, Saúl; Zarzuela, Ricardo; Garcia-Santiago, Antoni; et al.  
Source: PHYSICAL REVIEW B  
Volume: 85  Issue: 6  Article Number: 064506  DOI: 10.1103/PhysRevB.85.064506  Published: FEB 7 2012

Title: DISSIPATIVE MACROSCOPIC QUANTUM TUNNELING IN TYPE-I SUPERCONDUCTORS  
Author(s): Zarzuela, R.; Chudnovsky, E. M.; Tejada, J.  
Source: PHYSICAL REVIEW B  
Volume: 84  Issue: 18  Article Number: 184525  DOI: 10.1103/PhysRevB.84.184525  Published: NOV 28 2011

Title: TRANSPORT IN QUANTUM DOT STACKS USING THE TRANSFER HAMILTONIAN METHOD IN SELF-CONSISTENT FIELD REGIME  
Author(s): Illera, S.; Prades, J. D.; Cirera, A.; et al.  
Source: EPL  
Volume: 98  Issue: 1  Article Number: 17003  DOI: 10.1209/0295-5075/98/17003  Published: APR 2012

Title: STRUCTURAL FACTORS IMPACTING CARRIER TRANSPORT AND ELECTROLUMINESCENCE FROM Si NANocluster-SENSITIZED Er IONS  
Author(s): Cueff, Sebastien; Labbe, Christophe; Jambois, Olivier; et al.  
Source: OPTICS EXPRESS  
Volume: 20  Issue: 20  Pages: 22490-22502  Published: SEP 24 2012

Title: LIMIT TO THE ERBIUM IONS EMISSION IN SILICON-RICH OXIDE FILMS BY ERBIUM ION CLUSTERING  
Author(s): Prtljaga, Nikola; Navarro-Urrios, Daniel; Tengattini, Andrea; et al.  
Source: OPTICAL MATERIALS EXPRESS  
Volume: 2  Issue: 9  Pages: 1278-1285  Published: SEP 1 2012

Title: CORRELATION BETWEEN CHARGE TRANSPORT AND ELECTROLUMINESCENCE PROPERTIES OF Si-RICH OXIDE/NITRIDE/OXIDE-BASED LIGHT EMITTING CAPACITORS  
Author(s): Berencen, Y.; Ramirez, J. M.; Jambois, O.; et al.  
Source: JOURNAL OF APPLIED PHYSICS  
Volume: 112  Issue: 3  Article Number: 033114  DOI: 10.1063/1.4742054  Published: AUG 1 2012

Title: SILICON-RICH OXYNITRIDE HOSTS FOR 1.5 mu M Er3+ EMISSION FABRICATED BY REACTIVE AND STANDARD RF MAGNETRON SPUTTERING  
Author(s): Cueff, S.; Labbe, C.; Khomenkova, L.; et al.  
Source: MATERIALS SCIENCE AND ENGINEERING B-ADVANCED FUNCTIONAL SOLID-STATE MATERIALS  
Volume: 177  Issue: 10 Special Issue: SI  Pages: 725-728  DOI: 10.1016/j.mseb.2011.12.007  Published: JUN 5 2012

Title: POLARIZATION STRATEGIES TO IMPROVE THE EMISSION OF SI-BASED LIGHT SOURCES EMITTING AT 1.55 mu M

Title: SILICON NANOCLUSTER SENSITIZATION OF ERBIUM IONS UNDER LOW-ENERGY OPTICAL EXCITATION
Author(s): Prtljaga, Nikola; Navarro-Urrios, Daniel; Pitanti, Alessandro; et al. Source: JOURNAL OF APPLIED PHYSICS Volume: 111 Issue: 9 Article Number: 094314 DOI: 10.1063/1.4712626 Published: MAY 1 2012

Title: ERBIUM EMISSION IN MOS LIGHT EMITTING DEVICES: FROM ENERGY TRANSFER TO DIRECT IMPACT EXCITATION
Author(s): Ramirez, J. M.; Ferrarese Lupi, F.; Jambois, O.; et al. Source: NANO-TECHNOLOGY Volume: 23 Issue: 12 Article Number: 125203 DOI: 10.1088/0957-4484/23/12/125203 Published: MAR 30 2012

Title: BIPOLAR PULSED EXCITATION OF ERBIUM-DOPED NANOSILICON LIGHT EMITTING DIODES

Title: EFFECT OF THE ANNEALING TREATMENTS ON THE ELECTROLUMINESCENCE EFFICIENCY OF SIO2 LAYERS DOPED WITH SI AND Er

Title: VISIBLE LIGHT EMITTING Si-RICH Si3N4 mu-DISK RESONATORS FOR SENSORISTIC APPLICATIONS
Author(s): Ferrarese Lupi, Federico; Navarro-Urrios, Daniel; Rubio-Garcia, Javier; et al. Source: JOURNAL OF LIGHTWAVE TECHNOLOGY Volume: 30 Issue: 1 Pages: 169-174 DOI: 10.1109/JLT.2011.2179286 Published: JAN 1 2012

Title: COPROPAGATING PUMP AND PROBE EXPERIMENTS ON Si-nc IN SiO2 RIB WAVEGUIDES DOPED WITH Er: THE OPTICAL ROLE OF NON-EMITTING IONS

Title: OPTOELECTRONIC PROPERTIES OF InAlN/GaN DISTRIBUTED BRAGG REFLECTOR HETEROSTRUCTURE EXAMINED BY VALENCE ELECTRON ENERGY LOSS SPECTROSCOPY
Author(s): Eljarrat, A.; Estrade, S.; Gacevic, Z.; et al. Source: MICROSCOPY AND MICROANALYSIS Volume: 18 Issue: 8 Pages: 1143-1154 DOI: 10.1017/S1431927612001328 Published: OCT 2012

Title: SELECTIVE AREA GROWTH OF A- AND C-PLANE GaN NANOCOLUMNS BY MOLECULAR BEAM EPITAXY USING COLLOIDAL NANOLITHOGRAPHY
APPENDIX 2 _ LIST OF PUBLICATIONS


Title: ASSESSMENT OF MISORIENTATION IN METALLIC AND SEMICONDUCTING NANOWIRES USING PRECESSION ELECTRON DIFFRACTION
Author(s): Estrade, Sonia; Portillo, Joaquim; Mendoza, Joan; et al. Source: JOURNAL OF CRYSTAL GROWTH Volume: 353 Issue: 1 Pages: 1-4 DOI: 10.1016/j.jcrysgro.2011.11.069 Published: AUG 15 2012

Title: SURFACE REACTIVITY OF IRON OXIDE NANOPARTICLES BY MICROWAVE-ASSISTED SYNTHESIS; COMPARISON WITH THE THERMAL DECOMPOSITION ROUTE
Author(s): Pascu, Oana; Carenza, Elisa; Gich, Marti; et al. Source: JOURNAL OF PHYSICAL CHEMISTRY C Volume: 116 Issue: 28 Pages: 15108-15116 DOI: 10.1021/jp303204d Published: JUL 19 2012

Title: HETEROEPITAXIAL GROWTH OF MgO(111) THIN FILMS ON Al2O3(0001): EVIDENCE OF A WURTZITE TO ROCKSALT TRANSFORMATION
Author(s): Martinez-Boubeta, Carlos; Botana, Antia S.; Pardo, Victor; et al. Source: PHYSICAL REVIEW B Volume: 86 Issue: 4 Article Number: 041407 DOI: 10.1103/PhysRevB.86.041407 Published: JUL 19 2012

Title: EELS SIGNAL ENHANCEMENT BY MEANS OF BEAM PRECESSION IN THE TEM
Author(s): Estrade, Sonia; Portillo, Joaquim; Yedra, Lluis; et al. Source: ULTRAMICROSCOPY Volume: 116 Pages: 135-137 DOI: 10.1016/j.ultramic.2012.03.018 Published: MAY 2012

Title: STRONGLY EXCHANGE COUPLED INVERSE FERRIMAGNETIC SOFT/HARD, MnxFex3-xO4/FexMn3-xO4, CORE/ SHELL HETEROSTRUCTURED NANOPARTICLES

Title: ELECTRIC TRANSPORT THROUGH NANOMETRIC CoFe2O4 THIN FILMS INVESTIGATED BY CONDUCTING ATOMIC FORCE MICROSCOPY
Author(s): Foerster, M.; Gutierrez, D. F.; Rebled, J. M.; et al. Source: JOURNAL OF APPLIED PHYSICS Volume: 111 Issue: 1 Article Number: 013904 DOI: 10.1063/1.3672839 Published: JAN 1 2012

Title: DISTINGUISHING THE CORE FROM THE SHELL IN MnOx/MnOy AND FeOx/MnOx CORE/SHELL NANOPARTICLES THROUGH QUANTITATIVE ELECTRON ENERGY LOSS SPECTROSCOPY (EELS) ANALYSIS

Title: SYNTHESIS AND MAGNETIC CHARACTERIZATION OF COAXIAL Ge1-xMnx/a-Si HETEROSTRUCTURES
Author(s): Barth, Sven; Kazakova, Olga; Estrade, Sonia; et al. Source: CRYSTAL GROWTH & DESIGN Volume: 11 Issue: 12 Pages: 5253-5259 DOI: 10.1021/cg200667r Published: DEC 2011
Title: EFFECT OF THE CAPPING ON THE LOCAL MN OXIDATION STATE IN BURIED (001) AND (110) SrTiO3/La2/3Ca1/3MnO3 INTERFACES  
Author(s): Estrade, S.; Rebled, J. M.; Wallis, M. G.; et al.  
Source: JOURNAL OF APPLIED PHYSICS  
Volume: 110  Issue: 10  Article Number: 103903  DOI: 10.1063/1.3660786  Published: NOV 15 2011

Title: LOCALIZED GROWTH AND IN SITU INTEGRATION OF NANOWIRES FOR DEVICE APPLICATIONS  
Author(s): Barth, Sven; Jimenez-Diaz, Roman; Sarna, Jordi; et al.  
Source: CHEMICAL COMMUNICATIONS  
Volume: 48  Issue: 39  Pages: 4734-4736  DOI: 10.1039/c2cc30920c  Published: 2012

Title: STABILITY MODEL OF SILICON NANOWIRE POLYMORPHS AND FIRST-PRINCIPLE CONDUCTIVITY OF BULK SILICON  
Author(s): Garcia-Castelo, Nuria; Prades, J. Daniel; Orlando, Roberto; et al.  
Source: JOURNAL OF PHYSICAL CHEMISTRY C  
Volume: 116  Issue: 41  Pages: 22078-22085  DOI: 10.1021/jp307449y  Published: OCT 18 2012

Title: HIGH TEMPERATURE PHASE STABILITY AND CHEMICAL ANALYSIS OF THE HIGHLY DOPED YTTRIA STABILIZED ZIRCONIA WITH ALUMINA  
Author(s): Nazarpour, S.; Lopez-Gandara, C.; Ramos, F. M.; et al.  
Source: CERAMICS INTERNATIONAL  

Title: FASTEST THERMAL ISOMERIZATION OF AN AZOBENZENE FOR NANOSECOND PHOTOSWITCHING APPLICATIONS UNDER PHYSIOLOGICAL CONDITIONS  
Author(s): Garcia-Amoros, Jaume; Diaz-Lobo, Mireia; Nonell, Santi; et al.  
Source: ANGEWANDTE CHEMIE-INTERNATIONAL EDITION  
Volume: 51  Issue: 51  Pages: 12820-12823  DOI: 10.1002/anie.201207602  Published: 2012

Title: PHOTO-CONTROLLABLE ELECTRONIC SWITCHES BASED ON AZOPYRIDINE DERIVATIVES  
Author(s): Garcia-Amoros, Jaume; Gomez, Elvira; Valles, Elisa; et al.  
Source: CHEMICAL COMMUNICATIONS  
Volume: 48  Issue: 72  Pages: 9080-9082  DOI: 10.1039/c2cc34457b  Published: 2012

Title: LIGHT-CONTROLLED REAL TIME INFORMATION TRANSMITTING SYSTEMS BASED ON NANOSECOND THERMALLY-ISOMERISING AMINO-AZOPYRIDINIUM SALTS  
Author(s): Garcia-Amoros, Jaume; Nonell, Santi; Velasco, Dolores  
Source: CHEMICAL COMMUNICATIONS  

Title: SURFACTANT ORGANIC MOLECULES RESTORE MAGNETISM IN METAL-OXIDE NANO PARTICLE SURFACES  
Author(s): Salafranca, Juan; Gazquez, Jaume; Perez, Nicolas; et al.  
Source: NANO LETTERS  
Volume: 12  Issue: 5  Pages: 2499-2503  DOI: 10.1021/nl300665z  Published: MAY 2012
APPENDIX 2 _ LIST OF PUBLICATIONS

Title: GLASSY MAGNETIC PHASE DRIVEN BY SHORT-RANGE CHARGE AND MAGNETIC ORDERING IN NANOCRYSTALLINE La1/3Sr2/3FeO3-DELTA: MAGNETIZATION, MOSSBAUER, AND POLARIZED NEUTRON STUDIES
Author(s): Sabyasachi, Sk.; Patra, M.; Majumdar, S.; et al. Source: PHYSICAL REVIEW B Volume: 86 Issue: 10 Article Number: 104416 DOI: 10.1103/PhysRevB.86.104416 Published: SEP 12 2012

NANOSTRUCTURED MATERIALS

Title: MEASUREMENT OF THE GIANT MAGNETORESISTANCE EFFECT IN COBALT-SILVER MAGNETIC NANOSTRUCTURES: NANOPARTICLES
Author(s): Garcia-Torres, Jose; Valles, Elisa; Gomez, Elvira Source: NANOTECHNOLOGY Volume: 23 Issue: 40 Article Number: 405701 DOI: 10.1088/0957-4484/23/40/405701 Published: OCT 12 2012

Title: DESIGN AND ELECTROCHEMICAL PREPARATION OF INDUCTIVE COPPER COILS FOR MAGNETIC PARTICLES DETECTION

Title: ELECTRODEPOSITED CoPt FILMS FROM A DEEP EUTECTIC SOLVENT

Title: MEASUREMENT OF THE GIANT MAGNETORESISTANCE EFFECT IN COBALT-SILVER MAGNETIC NANOSTRUCTURES: NANOWIRES
Author(s): Garcia-Torres, Jose; Gomez, Elvira; Valles, Elisa Source: JOURNAL OF PHYSICAL CHEMISTRY C Volume: 116 Issue: 22 Pages: 12250-12257 DOI: 10.1021/jp300119w Published: JUN 7 2012

Title: MAGNETIC CoPt (60-70 wt%Pt) MICROSTRUCTURES FABRICATED BY THE ELECTROCHEMICAL METHOD
Author(s): Cortes, M.; Gomez, E.; Valles, E. Source: JOURNAL OF MICROMECHANICS AND MICROENGINEERING Volume: 22 Issue: 5 Article Number: 055016 DOI: 10.1088/0960-1317/22/5/055016 Published: MAY 2012

Title: DEVELOPING PLATING BATHS FOR THE PRODUCTION OF REFLECTIVE Ni-Cu FILMS

Title: USING DEEP EUTECTIC SOLVENTS TO ELECTRODEPOSIT CoSm FILMS AND NANOWIRES
APPENDIX 2 _ LIST OF PUBLICATIONS


Title: PULSE PLATED CoP ALLOY AS SUBSTITUTE FOR HARD CHROMIUM ELECTRODEPOSITS
Author(s): Kosta, I.; Imaz, N.; Cinca, N.; et al. Source: TRANSACTIONS OF THE INSTITUTE OF METAL FINISHING Volume: 90 Issue: 5 Pages: 252-258 DOI: 10.1179/0020296712Z.0000000047 Published: SEP 2012

Title: MIXED AMORPHOUS-NANOCRYSTALLINE COBALT PHOSPHOROUS BY PULSE PLATING

Title: MECHANICAL PROPERTIES AT NANOMETRIC SCALE OF ALUMINA LAYERS FORMED IN SULPHURIC ACID ANODIZING UNDER BURNING CONDITIONS

Title: SULPHURIC ACID ANODISING OF EN AC-46500 CAST ALUMINIUM ALLOY
Author(s): Gaston-Garcia, B.; Garcia-Lecina, E.; Diaz-Fuentes, M.; et al. Source: TRANSACTIONS OF THE INSTITUTE OF METAL FINISHING Volume: 89 Issue: 6 Pages: 312-319 DOI: 10.1179/174591911X13167804921037 Published: NOV 2011 Times Cited: 0 (from Web of Science)

Title: NEUTRAL P-CYMENE RUTHENIUM COMPLEXES WITH P-STEROGENIC MONOPHOSPHINES. NEW CATALYTIC PRECURSORS IN ENANTIOSELECTIVE TRANSFER HYDROGENATION AND CYCLOPROPANATION
Author(s): Grabulosa, Arnald; Mannu, Alberto; Mezzetti, Antonio; et al. Source: JOURNAL OF ORGANOMETALLIC CHEMISTRY Volume: 696 Issue: 26 Pages: 4221-4228 DOI: 10.1016/j.jorganchem.2011.09.015 Published: JAN 1 2012

Title: ANISOTROPIC SURFACE PROPERTIES OF MICRO/NANOSTRUCTURED A-C:H:F THIN FILMS WITH SELF-ASSEMBLY APPLICATIONS

Title: STRUCTURE AND PHYSICAL PROPERTIES OF COLLOIDAL CRYSTALS MADE OF SILICA PARTICLES
Author(s): Portal-Marco, Sabine; Angels Valle, Ma; Arteaga, Oriol; et al. Source: COLLOIDS AND SURFACES A-PHYSICOCHEMICAL AND ENGINEERING ASPECTS Volume: 401 Pages: 38-47 DOI: 10.1016/j.colsurfa.2012.03.007 Published: MAY 5 2012

Title: NANOPARTICLES IN SiH4-Ar PLASMA: MODELLING AND COMPARISON WITH EXPERIMENTAL DATA
APPENDIX 2 _ LIST OF PUBLICATIONS

Published: NOV 15 2011 Times Cited: 0 (from Web of Science)

▶ Title: FUNCTIONALIZATION OF CARBON NANOTUBES BY WATER PLASMA

▶ Title: VERTICALLY ALIGNED CARBON NANOTUBES FOR MICROELECTRODE ARRAYS APPLICATIONS

▶ Title: KINETIC CONTROL OF THE SUPRAMOLECULAR CHIRALITY OF PORPHYRIN J-AGGREGATES
Author(s): Sorrenti, Alessandro; El-Hachemi, Zoubir; Arteaga, Oriol; et al. Source: CHEMISTRY-A EUROPEAN JOURNAL Volume: 18 Issue: 28 Pages: 8820-8826 DOI: 10.1002/chem.201200881 Published: JUL 9 2012

▶ Title: FLOW EFFECTS IN SUPRAMOLECULAR CHIRALITY
Author(s): Arteaga, Oriol; Canillas, Adolf; Crusats, Joaquim; et al. Source: ISRAEL JOURNAL OF CHEMISTRY Volume: 51 Issue: 10 Special Issue: SI Pages: 1007-1016 DOI: 10.1002/ijch.201100043 Published: NOV 2011

▶ Title: MICRO-, MESO-, AND MACROPOROUS MATERIALS OBTAINED FROM A HIGHLY CONCENTRATED EMULSION OF DECANE/BRIJ 35/WATER AND DECANE/BRIJ 700/WATER
Author(s): Santamaria, Esther; Cortes, Marta; Maestro, Alicia; et al. Source: CHEMISTRY LETTERS Volume: 41 Issue: 10 Special Issue: SI Pages: 1041-1043 DOI: 10.1246/cl.2012.1041 Published: OCT 5 2012

▶ Title: STUDY OF NANO-EMULSION FORMATION BY DILUTION OF MICROEMULSIONS

▶ Title: TAILORED JEFFAMINE MOLECULAR TOOLS FOR ORDERING MESOPOROUS SILICA

▶ Title: EFFECT OF THE BIAS VOLTAGE ON THE STRUCTURE OF nc-CrC/a-C:H COATINGS WITH HIGH CARBON CONTENT

▶ Title: IMPROVEMENT OF MECHANICAL AND TRIBOLOGICAL PROPERTIES IN
STEEL SURFACES BY USING TITANIUM-ALUMINUM/TITANIUM-ALUMINUM NITRIDE MULTILAYERED SYSTEM

Title: PREDICTING EFFECTS OF STRUCTURAL STRESS IN A GENOME-REDUCED MODEL BACTERIAL METABOLISM
Author(s): Guell, Oriol; Sagues, Francesc; Angeles Serrano, M. Source: SCIENTIFIC REPORTS Volume: 2 Article Number: 621 DOI: 10.1038/srep00621 Published: AUG 29 2012

Title: ANTI-PERSISTENT RANDOM WALK IN A TWO STATE FLASHING MAGNETIC POTENTIAL
Author(s): Tierno, Pietro; Sagues, Francesc; Johansen, Tom H.; et al. Source: PHYSICAL REVIEW LETTERS Volume: 109 Issue: 7 Article Number: 070601 DOI: 10.1103/PhysRevLett.109.070601 Published: AUG 16 2012

Title: STEERING TRAJECTORIES IN MAGNETICALLY ACTUATED COLLOIDAL PROPELLERS
Author(s): Tierno, P.; Sagues, F. Source: EUROPEAN PHYSICAL JOURNAL E Volume: 35 Issue: 8 Article Number: 71 DOI: 10.1140/epje/i2012-12071-4 Published: AUG 2012

Title: STIRRING COMPETES WITH CHEMICAL INDUCTION IN CHIRAL SELECTION OF SOFT MATTER AGGREGATES
Author(s): Petit-Garrido, Nuria; Claret, Josep; Ignes-Mullol, Jordi; et al. Source: NATURE COMMUNICATIONS Volume: 3 Article Number: 1001 DOI: 10.1038/ncomms1987 Published: AUG 2012

Title: ROLE OF ANISOTROPY IN ELECTRODYNAMICALLY INDUCED COLLOIDAL AGGREGATES
Author(s): Hernandez-Navarro, Sergi; Ignes-Mullol, Jordi; Sagues, Francesc; et al. Source: LANGMUIR Volume: 28 Issue: 14 Pages: 5981-5986 DOI: 10.1021/la3002493 Published: APR 10 2012

Title: CHIRAL-SYMMETRY SELECTION IN SOFT MONOLAYERS UNDER VORTICAL FLOW
Author(s): Petit-Garrido, Nuria; Claret, Josep; Ignes-Mullol, Jordi; et al. Source: CHEMISTRY-A EUROPEAN JOURNAL Volume: 18 Issue: 13 Pages: 3975-3980 DOI: 10.1002/chem.201102358 Published: MAR 2012

Title: UNCOVERING THE HIDDEN GEOMETRY BEHIND METABOLIC NETWORKS
Author(s): Angeles Serrano, M.; Boguna, Marian; Sagues, Francesc Source: MOLECULAR BIOSYSTEMS Volume: 8 Issue: 3 Pages: 843-850 DOI: 10.1039/c2mb05306c Published: 2012

Title: MAGNETICALLY RECONFIGURABLE COLLOIDAL PATTERNS ARRANGED FROM ARRAYS OF SELF-ASSEMBLED MICROSCOPIC DIMERS
Author(s): Tierno, Pietro Source: SOFT MATTER Volume: 8 Issue: 45 Pages: 11443-11446 DOI: 10.1039/c2sm26735g Published: 2012
Title: PERFORMANCE AND SHORT-TERM STABILITY OF SINGLE-CHAMBER SOLID OXIDE FUEL CELLS BASED ON La$_{0.9}$Sr$_{0.1}$Ga$_{0.8}$Mg$_{0.2}$O$_{3}$-DELTA ELECTROLYTE

Title: PROCESSING OF GRADED ANODE-SUPPORTED MICRO-TUBULAR SOFCs BASED ON SAMARIA-DOPED CERIA VIA GEL-CASTING AND SPRAY-COATING

Title: CONTACT MECHANICS AT NANOMETRIC SCALE USING NANOINDENTATION TECHNIQUE FOR BRITTLE AND DUCTILE MATERIALS
Author(s): Roa, J. J.; Rayon, E.; Morales, M.; et al. Source: RECENT PATENTS ON NANOTECHNOLOGY Volume: 6 Issue: 2 Pages: 142-152 Published: JUN 2012

Title: CORROSION INDUCED DEGRADATION OF TEXTURED YBCO UNDER OPERATION IN HIGH HUMIDITY CONDITIONS

Title: NANOINDENTATION OF BRIDGMAN YBCO SAMPLES

Title: MANUFACTURING OF ANODE-SUPPORTED TUBULAR SOLID OXIDE FUEL CELLS BY A NEW SHAPING TECHNIQUE USING AQUEOUS GEL-CASTING

Title: OXYGENATION KINETICS OF YBCO-TSMG SAMPLES USING THE NANOINDENTATION TECHNIQUE

Title: MECHANICAL PROPERTIES OF HIGHLY TEXTURED POROUS Ni-YSZ AND Co-YSZ CERMETS PRODUCED FROM DIRECTIONALLY SOLIDIFIED EUTECTICS
Author(s): Roa, J. J.; Laguna-Bercero, M. A.; Larrea, A.; et al. Source: CERAMICS INTERNATIONAL Volume: 37 Issue: 8 Pages: 3123-3131 DOI: 10.1016/j.ceramint.2011.05.051 Published:
DEC 2011

- **Title:** HYDROTHERMAL ASSISTED SYNTHESIS OF IRON OXIDE-BASED MAGNETIC SILICA SPHERES AND THEIR PERFORMANCE IN MAGNETOPHORETIC WATER PURIFICATION
  
  **Author(s):** Caparros, C.; Benelmekki, M.; Martins, P. M.; et al.
  **Source:** MATERIALS CHEMISTRY AND PHYSICS
  **Volume:** 135
  **Issue:** 2-3
  **Pages:** 510-517
  **DOI:** 10.1016/j.matchemphys.2012.05.016
  **Published:** AUG 15 2012

- **Title:** EFFECT OF HOT-FILAMENT ANNEALING IN A HYDROGEN ATMOSPHERE ON THE ELECTRICAL AND STRUCTURAL PROPERTIES OF Nb-DOPED TiO2 SPUTTERED THIN FILMS
  
  **Author(s):** Tavares, C. J.; Castro, M. V.; Marins, E. S.; et al.
  **Source:** THIN SOLID FILMS
  **Volume:** 520
  **Issue:** 7
  **Pages:** 2514-2519
  **DOI:** 10.1016/j.tsf.2011.10.031
  **Published:** JAN 31 2012

- **Title:** STRUCTURE AND PROPERTIES OF SILVER CLUSTERS IMPLANTED IN PET BY PVD SPUTTERING FOR ACTIVE PACKAGING APPLICATIONS
  
  **Author(s):** Benelmekki, M.; Torrell, M.; Xuriguera, E.; et al.
  **Source:** JOURNAL OF NANO RESEARCH
  **Volume:** 18-19
  **Pages:** 105-116
  **DOI:** 10.4028/www.scientific.net/JNanoR.18-19.105
  **Published:** 2012

- **Title:** DESIGN AND CHARACTERIZATION OF Ni2+ AND Co2+ DECORATED POROUS MAGNETIC SILICA SPHERES SYNTHESIZED BY HYDROTHERMAL-ASSISTED MODIFIED-STOBER METHOD FOR HIS-TAGGED PROTEINS SEPARATION
  
  **Author(s):** Benelmekki, M.; Xuriguera, E.; Caparros, C.; et al.
  **Source:** JOURNAL OF COLLOID AND INTERFACE SCIENCE
  **Volume:** 365
  **Issue:** 1
  **Pages:** 156-162
  **DOI:** 10.1016/j.jcis.2011.09.051
  **Published:** JAN 1 2012

- **Title:** VIBRATIONAL PROPERTIES OF STANNITE AND KESTERITE TYPE COMPOUNDS: RAMAN SCATTERING ANALYSIS OF Cu-2(Fe,Zn)SnS4
  
  **Author(s):** Fontane, X.; Izquierdo-Roca, V.; Saucedo, E.; et al.
  **Source:** JOURNAL OF ALLOYS AND COMPOUNDS
  **Volume:** 539
  **Pages:** 190-194
  **DOI:** 10.1016/j.jallcom.2012.06.042
  **Published:** OCT 25 2012

- **Title:** SOLUTION-GROWTH AND OPTOELECTRONIC PERFORMANCE OF ZnO:Cl/ TiO2 AND ZnO:Cl/ZnxTiOy/TiO2 CORE-SHELL NANOWIRES WITH TUNABLE SHELL THICKNESS
  
  **Author(s):** Fan, Jiandong; Zamani, Reza; Fabrega, Cristian; et al.
  **Source:** JOURNAL OF PHYSICS D: APPLIED PHYSICS
  **Volume:** 45
  **Issue:** 41
  **Article Number:** 415301
  **DOI:** 10.1088/0022-3727/45/41/415301
  **Published:** OCT 17 2012

- **Title:** SOLUTION-GROWTH AND OPTOELECTRONIC PERFORMANCE OF ZnO:Cl/ TiO2 AND ZnO:Cl/ZnxTiOy/TiO2 CORE-SHELL NANOWIRES WITH TUNABLE SHELL THICKNESS
  
  **Author(s):** Fan, Jiandong; Zamani, Reza; Fabrega, Cristian; et al.
  **Source:** JOURNAL OF PHYSICS D: APPLIED PHYSICS
  **Volume:** 45
  **Issue:** 41
  **Article Number:** 415301
  **DOI:** 10.1088/0022-3727/45/41/415301
  **Published:** OCT 17 2012
Title: VISIBLE PHOTOLUMINESCENCE COMPONENTS OF SOLUTION-GROWN ZnO NANOWIRES: INFLUENCE OF THE SURFACE DEPLETION LAYER
Author(s): Fan, Jiandong; Gueell, Frank; Fabrega, Cristian; et al. Source: JOURNAL OF PHYSICAL CHEMISTRY C Volume: 116 Issue: 36 Pages: 19496-19502 DOI: 10.1021/jp302443n Published: SEP 13 2012

Title: SYNTHESIS OF CERIA-ZIRCONIA NANOCRYSTALS WITH IMPROVED MICROSTRUCTURAL HOMOGENEITY AND OXYGEN STORAGE CAPACITY BY HYDROLYTIC SOL-GEL PROCESS IN COORDINATING ENVIRONMENT
Author(s): Epifani, Mauro; Andreu, Teresa; Abdollahzadeh-Ghom, Sara; et al. Source: ADVANCED FUNCTIONAL MATERIALS Volume: 22 Issue: 13 Pages: 2867-2875 DOI: 10.1002/adfm.201200380 Published: JUL 10 2012

Title: SURFACE MODIFICATION OF METAL OXIDE NANOCRYSTALS FOR IMPROVED SUPERCAPACITORS
Author(s): Epifani, Mauro; Chavez-Capilla, Teresa; Andreu, Teresa; et al. Source: ENERGY & ENVIRONMENTAL SCIENCE Volume: 5 Issue: 6 Pages: 7555-7558 DOI: 10.1039/c2ee00013j Published: JUN 2012

Title: CATALYST SIZE LIMITATION IN VAPOR-LIQUID-SOLID ZnO NANOWIRE GROWTH USING PULSED LASER DEPOSITION

Title: SELF-ASSEMBLED GaN NANOWIRES ON DIAMOND
Author(s): Schuster, Fabian; Furtmayr, Florian; Zamani, Reza; et al. Source: NANO LETTERS Volume: 12 Issue: 5 Pages: 2199-2204 DOI: 10.1021/nl203872q Published: MAY 2012

Title: POLARITY ASSIGNMENT IN ZnTe, GaAs, ZnO, AND GaN-AIN NANOWIRES FROM DIRECT DUMBBELL ANALYSIS
Author(s): de la Mata, Maria; Magen, Cesar; Gazquez, Jaume; et al. Source: NANO LETTERS Volume: 12 Issue: 5 Pages: 2579-2586 DOI: 10.1021/nl300840q Published: MAY 2012

Title: ACTIVE NANO-CuPi3 ELECTROCATALYST SUPPORTED ON GRAPHENE FOR ENHANCING REACTIONS AT THE CATHODE IN ALL-VANADIUM REDOX FLOW BATTERIES
Author(s): Flox, Cristina; Rubio-Garcia, Javier; Nafria, Raquel; et al. Source: CARBON Volume: 50 Issue: 6 Pages: 2372-2374 DOI: 10.1016/j.carbon.2012.01.060 Published: MAY 2012

Title: Cu2ZnGeSe4 NANOCRYSTALS: SYNTHESIS AND THERMOELECTRIC PROPERTIES
Author(s): Ibanez, Maria; Zamani, Reza; LaLonde, Aaron; et al. Source: JOURNAL OF THE AMERICAN CHEMICAL SOCIETY Volume: 134 Issue: 9 Pages: 4060-4063 DOI: 10.1021/ja2119522 Published: MAR 7 2012

Title: EXTENDING THE NANOCRYSTAL SYNTHESIS CONTROL TO QUATERNARY COMPOSITIONS
**APPENDIX 2 _ LIST OF PUBLICATIONS**

**Author(s):** Ibanez, Maria; Zamani, Reza; Li, Wenhua; et al. **Source:** CRYSTAL GROWTH & DESIGN  
**Volume:** 12 Issue: 3 Pages: 1085-1090 DOI: 10.1021/cg201709c Published: MAR 2012

**Title:** COMPOSITION CONTROL AND THERMOELECTRIC PROPERTIES OF QUATERNARY CHALCOGENIDE NANOCRYSTALS: THE CASE OF STANNITE Cu₂CdSnSe₄  
**Author(s):** Ibanez, Maria; Cadavid, Doris; Zamani, Reza; et al. **Source:** CHEMISTRY OF MATERIALS Volume: 24 Issue: 3 Pages: 562-570 DOI: 10.1021/cm2031812 Published: FEB 14 2012

**Title:** TAILORED GRAPHENE MATERIALS BY CHEMICAL REDUCTION OF GRAPHENE OXIDES OF DIFFERENT ATOMIC STRUCTURE  
**Author(s):** Botas, Cristina; Alvarez, Patricia; Blanco, Clara; et al. **Source:** RSC ADVANCES Volume: 2 Issue: 25 Pages: 9643-9650 DOI: 10.1039/c2ra21447d Published: 2012

**Title:** Pt DOPING TRIGGERS GROWTH OF TiO₂ NANORODS: NANOCOMPOSITE SYNTHESIS AND GAS-SENSING PROPERTIES  
**Author(s):** Epifani, Mauro; Andreu, Teresa; Zamani, Reza; et al. **Source:** CRISTENGCOMM Volume: 14 Issue: 11 Pages: 3882-3887 DOI: 10.1039/c2ce06690d Published: 2012

**Title:** SUPPRESSION OF THREE DIMENSIONAL TWINNING FOR A 100% YIELD OF VERTICAL GaAs NANOWIRES ON SILICON  
**Author(s):** Russo-Averchi, Eleonora; Heiss, Martin; Michelet, Lionel; et al. **Source:** NANO SCALE Volume: 4 Issue: 5 Pages: 1486-1490 DOI: 10.1039/c2nr11799a Published: 2012

**Title:** Pt DOPING TRIGGERS GROWTH OF TiO₂ NANORODS: NANOCOMPOSITE SYNTHESIS AND GAS-SENSING PROPERTIES  
**Author(s):** Botas, Cristina; Alvarez, Patricia; Blanco, Clara; et al. **Source:** RSC ADVANCES Volume: 2 Issue: 25 Pages: 9643-9650 DOI: 10.1039/c2ra21447d Published: 2012

**Title:** Pt DOPING TRIGGERS GROWTH OF TiO₂ NANORODS: NANOCOMPOSITE SYNTHESIS AND GAS-SENSING PROPERTIES  
**Author(s):** Epifani, Mauro; Andreu, Teresa; Zamani, Reza; et al. **Source:** CRISTENGCOMM Volume: 14 Issue: 11 Pages: 3882-3887 DOI: 10.1039/c2ce06690d Published: 2012

**Title:** RETRIEVING THE SPATIAL DISTRIBUTION OF CAVITY MODES IN DIELECTRIC RESONATORS BY NEAR-FIELD IMAGING AND ELECTRODYNAMICS SIMULATIONS  
**Author(s):** Goni, Alejandro R.; Güell, Frank; Perez, Luis A.; et al. **Source:** NANO SCALE Volume: 4 Issue: 5 Pages: 1620-1626 DOI: 10.1039/c2nr11693f Published: 2012

**Title:** ENHANCEMENT OF THE PHOTOELECTROCHEMICAL PROPERTIES OF Cl-DOPED ZnO NANOWIRES BY TUNING THEIR COAXIAL DOPING PROFILE  
**Author(s):** Fan, Jiandong; Güell, Frank; Fabrega, Cristian; et al. **Source:** APPLIED PHYSICS LETTERS Volume: 99 Issue: 26 Article Number: 262102 DOI: 10.1063/1.3673287 Published: DEC 26 2011

**Title:** ROLE OF Ga2O3-In2O3-ZnO CHANNEL COMPOSITION ON THE ELECTRICAL PERFORMANCE OF THIN-FILM TRANSISTORS  
**Author(s):** Olziersky, A.; Barquinha, P.; Vila, A.; et al. **Source:** MATERIALS CHEMISTRY AND PHYSICS Volume: 131 Issue: 1-2 Pages: 512-518 DOI: 10.1016/j.matchemphys.2011.10.013 Published: DEC 15 2011

**Title:** MULTICOMPONENT OXIDE THIN-FILM TRANSISTORS FABRICATED BY A DOUBLE-LAYER INKJET PRINTING PROCESS  
**Author(s):** Olziersky, Antonis; Vila, Anna; Morante, Juan Ramon **Conference:** Symposium on Transparent Conductive Materials (TCM) **Location:** Hersonissos, GREECE **Date:** OCT 17-21,
APPENDIX 2 _ LIST OF PUBLICATIONS


Title: TWO STEP, HYDROLYTIC-SOLVOTHERMAL SYNTHESIS OF REDISPERSIBLE TITANIA NANOCRYSTALS AND THEIR GAS-SENSING PROPERTIES
Author(s): Epifani, Mauro; Cornini, Elisabetta; Faglia, Guido; et al. Source: JOURNAL OF SOL-GEL SCIENCE AND TECHNOLOGY Volume: 60 Issue: 3 Pages: 254-259 DOI: 10.1007/s10971-011-2485-9 Published: DEC 2011

Title: CARRIER CONFINEMENT IN GaN/AlxGa1-xN NANOWIRE HETEROSTRUCTURES (0 < X <= 1)
Author(s): Furtmayr, Florian; Teubert, Joerg; Becker, Pascal; et al. Source: PHYSICAL REVIEW B Volume: 84 Issue: 20 Article Number: 205303 DOI: 10.1103/PhysRevB.84.205303 Published: NOV 10 2011

Title: LOW DARK COUNT GEIGER MODE AVALANCHE PHOTODIODES FABRICATED IN CONVENTIONAL CMOS TECHNOLOGIES

Title: CHARACTERIZATION AND SIMULATION OF AVALANCHE PHOTODIODES FOR NEXT-GENERATION COLLIDERS
Author(s): Vila, A.; Trenado, J.; Arbat, A.; et al. Source: SENSORS AND ACTUATORS A-PHYSICAL Volume: 172 Issue: 1 Special Issue: SI Pages: 181-188 DOI: 10.1016/j.sna.2011.05.011 Published: DEC 2011

Title: RAMAN SCATTERING INVESTIGATION OF MnxFe1-xIn2S4 SOLID SOLUTIONS
Author(s): Guc, M.; Ursaki, V. V.; Bodnar, I. V.; et al. Source: MATERIALS CHEMISTRY AND PHYSICS Volume: 136 Issue: 2-3 Pages: 883-888 DOI: 10.1016/j.matchemphys.2012.07.061 Published: OCT 15 2012

Title: DEVELOPMENT OF A SELECTIVE CHEMICAL ETCH TO IMPROVE THE CONVERSION EFFICIENCY OF Zn-RICH Cu2ZnSnS4 SOLAR CELLS
Author(s): Fairbrother, Andrew; Garcia-Hemme, Eric; Izquierdo-Roca, Victor; et al. Source: JOURNAL OF THE AMERICAN CHEMICAL SOCIETY Volume: 134 Issue: 19 Pages: 8018-8021 DOI: 10.1021/ja301373e Published: MAY 16 2012

Title: RAMAN ANALYSIS OF MONOCLINIC Cu2SnS3 THIN FILMS
Author(s): Berg, Dominik M.; Djemour, Rabie; Guetay, Levent; et al. Source: APPLIED PHYSICS LETTERS Volume: 100 Issue: 19 Article Number: 192103 DOI: 10.1063/1.4712623 Published: MAY 7 2012

Title: ELECTRICAL AND OPTICAL PROPERTIES OF Zn-In-Sn-O TRANSPARENT CONDUCTING THIN FILMS
Author(s): Carreras, Paz; Antony, Aldrin; Rojas, Fredy; et al. Conference: Symposium on Transparent Conductive Materials (TCM) Location: Hersonissos, GREECE Date: OCT 17-21, 2010 Source: THIN SOLID FILMS Volume: 520 Issue: 4 Pages: 1223-1227 DOI: 10.1016/j.tsf.2011.06.078 Published: DEC 1 2011
Title: RESISTANCE SWITCHING IN TRANSPARENT MAGNETIC MGO FILMS  
Author(s): Jambois, O.; Carreras, P.; Antony, A.; et al.  
Source: SOLID STATE COMMUNICATIONS  
Volume: 151  Issue: 24  Pages: 1856-1859  DOI: 10.1016/j.ssc.2011.10.009  Published: DEC 2011

Title: HYDROGEN PRODUCTION FROM OXIDATIVE STEAM-REFORMING OF N-PROPANOL OVER Ni/Y2O3-ZrO2 CATALYSTS  
Author(s): Yerman, Luis; Homs, Narcis; Ramirez de la Piscina, Pilar  
Source: INTERNATIONAL JOURNAL OF HYDROGEN ENERGY  
Volume: 37  Issue: 8  Pages: 7094-7100  DOI: 10.1016/j.ijhydene.2011.11.045  Published: APR 2012

Title: HYDROGEN PRODUCTION FROM THE STEAM REFORMING OF BIO-BUTANOL OVER NOVEL SUPPORTED Co-BASED BIMETALLIC CATALYSTS  
Author(s): Cai, Weijie; Ramirez de la Piscina, Pilar; Homs, Narcis  
Source: BIORESOURCE TECHNOLOGY  

Title: EFFICIENT HYDROGEN PRODUCTION FROM BIO-BUTANOL OXIDATIVE STEAM REFORMING OVER BIMETALLIC Co-Ir/ZnO CATALYSTS  
Author(s): Cai, Weijie; Homs, Narcis; Ramirez de la Piscina, Pilar  
Source: GREEN CHEMISTRY  
APPENDIX 3

LIST OF PATENTS
LIST OF PATENTS

Authors: Frigeri, P.A.; Nos, O.; Bertomeu, J.
Title: Aparato y método para depósito químico en fase vapor con hilo caliente
2011

Authors: Bertran, E.; Aguiló, N.; Inestrosa, M.J.
Title: Método y reactor para la producción de nanopartículas recubiertas de carbono
2011

Authors: Esteve Tintó, J.; Acero Leal, M.C.; Fondevilla Sala, N.; Pérez Rodríguez, A.; Serre, C.
Title: Device for generating electric power from small movements
2012

Title: Method and system for improving characteristic peak signals in analytical electron microscopy
2012

Authors: Alcalde, E.; Díaz, J.L.; Mesquida, N.; Paloma, L.
Title: Imidazo[2,1-b]thiazole derivatives, their preparation and use as medicaments
2012

Authors: Alcalde, E.; Almansa, C.; Díaz, J.L.; Mesquida, N.; Paloma, L.
Title: New indene derivatives, their preparation ans use as medicaments
2012

Authors: Alcalde, E.; Mesquida, N.; Paloma, L.
Title: Derivados de dihidroindeno, su preparación y su uso como medicamentos
2012
APPENDIX 4

LIST OF MEMBERS
### List of Members

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APPENDIX 4 _ LIST OF MEMBERS

GARCIA LOPEZ, MARIA LUISA
GARCIA SANTIAGO, ANTONI
GARCIA-CUENCA VARONA, Mª VICTORIA
GARCÍA GÜELL, ALEIX
GARRIDO FERNANDEZ, BLAS
GIRONA BRUMOS, MA. VICTORIA
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GOMEZ VALENTIN, ELVIRA
GOMILA LLUCH, GABRIEL
GORDO VILLOSLADA, SUSANA
GUILLEUMAS MORELL, MONTSERRAT
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HERNANDEZ FERRAS, JOAN MANEL
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HERNANDEZ MARQUEZ, SERGIO
HERNANDEZ RAMIREZ, FRANCISCO DE P.
HERRERA COROMINAS, JULIA
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HUGUET CASADES, JOSEP MARIA
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IGLESIAS CLOTAS, OSCAR
IGNES MULLOL, JORDI
IMPERIAL RODENAS, SANTIAGO
IZQUIERDO ROCA, VICTOR
KOVYLINA, MIROSLAVNA
LABARTA RODRIGUEZ, AMILCAR RAMON
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MAÑOSA CARRERA, LLUIS
MAÑOSAS CASTEJON, MARIA
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MONTERO BARRIENTOS, M. TERESA
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MORENZA GIL, JOSE LUIS
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MULLER JEVENOIS, GUILLERMO
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MUÑOZ JUNCOSA, M. MONTSERRAT
NAVAJAS NAVARRO, DANIEL
OLIVA GIMENO, JOSE IGNACIO
OLIVA HERRERA, MIREIA
OLIVA HERRERA, MIREIA
ONCINS MARCO, GERARD
ORTIN RULL, JORDI
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PELLERINO, PAOLO
PEREZ GARCIA, M. LUISA
PEREZ RODRIGUEZ, ALEJANDRO
PI PERICAY, MARTI
PICART FAIGET, PEDRO
PLANES VILA, ANTONI
POLO TRASANCOS, M. DEL CARMEN
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**APPENDIX 5 _ LIST OF TRAINEES & POSTDOCS**