NALS 2024

Nanomaterials Applied to Life Sciences

Granada (Spain), 14-16 February 2024

Scientific Program

UNIVERSIDAD DE GRANADA

Facultad de Ciencias

NanoMag

Wednesday 14th February 2024

8:30-9:00	**Opening ceremony**			
Session: Magnetic materials I. Chair: M.T. López-López AULA MAGNA				
9:00-9:30	R. Ibarra	**Plenary:** Thermal and ultrasonic effects due to the interaction of electromagnetic radiation with magnetic nanoparticles		
9:30-9:45	J. Alonso	Tuning the Magnetic Response of Magnetotactic Bacteria via Culture Medium for Enhanced Hyperthermia Efficiency		
9:45-10:00	S. Caspani	Magnetic nanostructures for biomedical applications		
10:00-10:15	C. Moya	Unveiling the crystal and magnetic texture of iron oxide nanoflowers		
10:15-10:30	Z. Shaterabadi	Magnetite nanorods as high-performance magnetic hyperthermia agents		
10:30-10:45	D. Villanueva-Álvaro	Navigation control of magnetotactic bacteria under rotating and linear magnetic fields		
10:45-11:15	Coffee break (Hall Facultad de Ciencias)			
	Session: Nanotechnology and Nanodevices I. Chair: AULA MAGNA		**Session: Cancer therapy and diagnosis I. Chair: Salón de Grados**	
11:15-11:35	M. Fanarraga	**Keynote:** Designing Fully Customizable Nanorobot for Biocompatible Navigation and Restoration of Amyloid Proteins	R.M. Sánchez-Martín	**Keynote:** Development of Active-Targeting Nanoplatforms for Cancer Diagnosis
11:35-11:50	V. Milkova	Controlled aggregation of amyloid β peptide in the presence of homotaurine-loaded nanoliposomes	G. Salas	Multicore magnetic nanoparticles for magnetic hyperthermia and combination therapy against cancer
11:50-12:05	E. Berganza	Biofunctionalization of 3D microstructures via dip-pen nanolithography	N. Daviu	Induction of Oxidative Stress by DMSA-coated IONPs trigger mitochondrial dynamic changes in breast cancer cells affecting proliferation and migration capacity
12.05-12:20	H. Shabbir	Carbon dots, precursor and property relation with focus on toxicity	A. Cruz	Targeting ovarian cancer nanoradiotheranostics with ligand-free 99mTc-polyurea dendrimer complexes
12.20-12:35	P. Duel	Bio-inspired Suface Modification as a new Ultra-fast method for the Killing of common Nosocomial Bacteria	V. Paganini	Development of a thermosensitive gel containing Curcumin-loaded nanomicelles for skin cancer treatment
12:35-12:50	N. Gallucci	Cerium Oxide Superlattices: How Geometric Parameters Induce Self-assembly and Amplify the Optical Properties	A. Cepero	LGR5 in colorectal cancer therapy, a therapeutic target for antibody-functionalized biomimetic magnetoliposomes
12:50-13:05	L. Rodríguez-Arco	Design and construction of bioinspired microcompartments	L. García-Hevia	Inhibition of Melanoma Metastasis through Precision Targeting Carbon Nanotubes to the tumor neovasculature
13:30-15:00	Lunch (Hall Facultad de Ciencias)			
Session: Magnetic materials II. Chair: AULA MAGNA				
15:00-15:30	Q.A. Pankhurst	**Plenary**: Some recent developments in magnetic field hyperthermia: from standards and metrology to clinical studies		
15:30-15:45	G.F. Goya	Synthetic Magnetosomes for Dual Therapeutic Approach: Chemotherapy and Magnetic Hyperthermia		
15:45-16:00	K. Simeonidis	An automated system for fast and sustainable synthesis of magnetic nanoparticles		
16:00-16:15	V. Salgueiriño	Magnetically induced Thermal Effects on Tobacco Mosaic Virus-based Nanocomposites for a Programmed Disassembly of Protein Cages		
16:15-16:30	A. Asenjo	Characterization of individual chains of magnetosomes by Magnetic Force Microscopy		
16:30:16:45	F.J. López	Characterization techniques for nanoparticles: size distribution, concentration and interactions		
16:45-17:10	Coffee break (Hall Facultad de Ciencias)			
17:10-17:30	C. Jiménez-López	**Keynote:** Learning from nature: Biomimetic magnetic nanoparticles as platforms to combine directed chemotherapy and hyperthermia		
17:30-19:00	**Poster pitch**			
19:00-20:30	**Poster and Beer Session**			

Thursday 15th February 2024

Session: Cancer therapy and diagnosis II. Chair: AULA MAGNA				
9:00-9:30	C. Dufès	**Plenary:** Designing tumour-targeted nanomedicines for cancer therapy		
9:30-9:50	S. Soenen	**Keynote:** On the use of bio-engineering for enhanced material properties in cancer therapy		
9:50-10:05	M.C. Ortega-Liébana	Stimuli-Responsive Tumor-Targeting Nanocarrier for Multimodal Cancer Therapy		
10:05-10:20	J. Ruiz-Torres	Optical studies on anisotropic Bi2S3 and hybrid Bi2S3@Au nanocomposite		
10:20-10:35	F.C. Giacomelli	Permeability and Responsiveness Drive Performance: Linking Structural Features with Antitumor Effectiveness of Doxorubicin-Loaded Stimuli-Triggered Polymersomes		
10:35-10:50	M.C. Morán	Active Targeting and Therapeutical Applications of Gelatin-based Nanoparticles		
10:50-11:15	Coffee break (Hall Facultad de Ciencias)			
	Session: Sensors I. Chair: AULA MAGNA		**Session: Magnetic materials III. Chair: F. Terán Salón de Grados**	
11:15-11:35	F. Wiekhorst	**Keynote**: Detecting magnetic micro- and nanoparticles by widefield magnetometry with NV centers	M.T. López - López	**Keynote:** Magnetic hydrogels: from synthesis to biocompatibility characterization
11:35-11:50	M.A. Fattouh	Designing Granzyme-B Activity Nanoprobes for Immunotherapy Response Evaluation	A. Gallo-Cordova	Exploring the Microwave-assisted Synthesis of Iron Oxide Nanoparticles
11:50-12:05	M.C. Blanco López	Nanomaterials for sensitive pathogenic bacteria determination with electrochemical biosensors	M. Jaafar	Magnetic Force Microscopy: a tool to analyze magnetic properties of multi-shell nanoparticles
12.05-12:20	L. Ming	Neural networks push the limits of luminescence lifetime nanosensing	A. Jaufenthaler	Human-sized quantitative imaging of magnetic nanoparticles with magnetorelaxometry and optically pumped magnetometers
12.20-12:35	P. Marín	Magnetoelastic contactless gas sensor for real-time monitoring of breath biomarkers. A proof of concept	M. Jiménez-Carretero	Combination of biomimetic magnetic nanoparticles and qPCR to magnetically concentrate and detect bacteria in liquids
12:35-12:50	F. Zhang	A reliable ratiometric fluorescent nanothermometer for live cells	P. Palacios Alonso	Exploiting the potential of AC magnetometry to display thermal conformational changes of proteins
12:50-13:05	C. Guati	Development of an innovative Non-Enzymatic Microelectrode with Bimetallic Combination for Glucose Detection in Neutral Media	V. Pilati	Superparamagnetic Mn Ferrite Nanoparticles for Highly Sensitive Lateral Flow Assays
13:30-15:00	Lunch (Hall Facultad de Ciencias)			

Thursday 15th February 2024

	Session: Drug Delivery I Chair: AULA MAGNA		Session: Nanotechnology and Nanodevices II Chair: Salón de Grados	
15:00-15:15	I. Clemente	Lipid-based nanoparticles as carriers for treatment of infectious and degenerative eye pathologies	A. González-Paredes	Bimetallic nanoparticles for the treatment of bacterial infections associated with biofilms
15:15-15:30	A.I. Barbosa	A sea of nano-possibilities: marine hybrid hydrogels combined with nanoparticles to treat Atopic Dermatitis	L.L. Hernández-Cubas	Laser-Induced Graphene: Innovative Fabrication and Advanced Characterization for Biomedical Applications
15:30-15:45	K. López	Design and optimization of an innovative lipid nanosystem for the encapsulation of a novel FXa inhibitory molecule using Green Chemistry strategies	M. Bramini	Graphene-based materials interaction with the Central Nervous System
15:45-16:00	A. Ramos-Valle	DNA@SiO2 spheres for versatile and efficient delivery of different DNA forms in mammalian cells	A. Rubio-Andrés	Polyoxometalate ionic specificity effects for tuning microgel swelling and 2D interfacial self-assembly
16:00-16:15	A. Lafuente	Multifunctional Drug-Loaded Metallic Nanodomes as a Platform for Obtaining Synergistic Therapeutic Biological Activities	F.J. Vázquez-Pérez	Soft magnetic actuators with fast and complex motion obtained by mold casting process
16:15-16:30	F.A. Soares	On the CD44 Express: A Journey into Precision Delivery through Engineered Milk Extracellular Vesicles		
16:30-17:00	Coffee break (Hall Facultad de Ciencias)			
	Session: Environmental. Chair: S. Ahualli AULA MAGNA			
17:00-17:20	M. Ferrari	**Keynote:** Superhydrophobic materials in environmental and underwater applications		
17:20-17:35	M. Fadel	Harnessing Ultrathin Carbon-Coated Nickel Nanoparticles for Efficient Purification of Chromium and Methylene Blue from Aqueous Solutions		
17:35-17:50	E. Herrera	Fe3O4-TiO2 nanostructures as reusable photocatalysts for water purification treatments		
17:50-18:05	T. Asimakidou	Implementing Fe3O4-biochar based adsorbents for Cr(VI) uptake		
18:05-18:20	S. Suárez-García	A mussel-inspired nanocoating for cost-effective and environmentally friendly CO2 capture		
18:30-20:30	**City Tour**			
20:30-	**CONFERENCE DINNER (Santa Paula Palace)**			

Friday 16th February 2024

Session: Nanotechnology and Nanodevices III. Chair:		**AULA MAGNA**		
9:00-9:30	E. Souto	**Plenary:** Key features of lipid nanoparticles for safe use in acute and chronic diseases		
9:30-9:45	I. Adroher-Benítez	Diffusion and interaction effects on molecular release kinetics from collapsed microgels		
9:45-10:00	B. Pepió-Tárrega	New mussel-inspired nanomaterials with antimicrobial properties		
10:00-10:15	P. Graván	Exploring the Impact of Nanoparticle Stealth Coatings in Cancer Models: From PEGylation to Cell Membrane Coating Nanotechnology		
10:15-10:30	A. Escribano-Huesca	Immobilization of Artificial Cell-Inspired Micro-compartments for Biological Applications		
10:30-10:45	D. Maestro	CTPR390, an Hsp90-inhibiting nanoparticle, reverses fibrotic phenotype in a human model of cardiac fibrosis		
10:45-11:15	Coffee break (Hall Facultad de Ciencias)			
	Session: Drug Delivery II. Chair:	**AULA MAGNA**	**Session: Sensors II. Chair:**	**SALÓN DE GRADOS**
11:15-11:35	B. B. Manshian	**Keynote:** Optimized 3D human and/or animal explants for ex vivo precision cut tissue slices.	S. Thompson	**Keynote:** Intracellular and Extracellular Temperature
11:35-11:50	D. Lesta-Alfeirán	Bioadhesive and antibacterial catechol-based membranes and their applications in wound-healing and tissue regeneration	J. Rodríguez-Álvarez	Anti-ferroelectric dark modes in plasmonic lattices
11:50-12:05	C. Tavares de Sousa	The key parameters in phototherapy with gold nanorods combined with targeted solid lipid nanoparticles for controlled drug delivery	A. Piper	The Cleanroom free, Cheap and Rapid Fabrication of Nanoelectrodes for Single Molecule Detection
12.05-12:20	F. Oltolina	Innovative drug delivery system based on hyaluronic acid-functionalized biomimetic-magnetoliposomes	I. Zabala Gutiérrez	Neural networks push the limits of luminescence lifetime nanosensing
12.20-12:35	M.A. Lirio	Kinetics of methotrexate release from magnetic activated carbon under external stimuli	R.A. Rica	Quantifying the temperature increase in optically trapped absorbing particles
12:35-12:50	A. Moreno-Revuelta	Maslinic acid solid lipid nanoparticles as hydrophobic anticancer drug carriers: Formulation, in vitro activity and in vivo biodistribution	M.A. Fernández-Rodríguez	Microgel-laden thermoresponsive surfaces for biomedical applications
13:00-13:30	**Closing and awards ceremony:**	**AULA MAGNA**		
13:30	**Farewell beer**			

POSTER PRESENTATIONS

No.	Author	Title
P1	J.L.Arias	Biocompatible magnetopolymeric nanoparticles for antitumor hyperthermia and photothermia therapies
P2	J.L.Arias	Reproducible formulation of poly(butylcyanoacrylate)-coated iron oxide nanostructures for biomedical applications
P3	M. Barczak	Synthesis and characterization of supramolecular peptide-based magnetic hydrogels for biomedical applications
P4	A.B.Becerro	Effect of nanoparticles architecture on their performance as multimodal contrast agents for T1-T2 dual mode MRI and luminescent bioimaging
P5	A.B.Bonhome	Designing the internal microarchitecture for self-heating droplets via gold and magnetite nanoparticle compartmentalization
P6	A. Bruno	Fabrication and Sensing Applications of Laser-Engraved rGO Electrodes Decorated with Metal Nanoparticles
P7	L. Cabeza	The application of magnetic nanoparticle-mediated hyperthermia as a therapeutic approach to gastrointestinal cancers.
P8	S.Calogero	Avoiding undesired effects in the interaction of nanostructures with immune cells: the Role of Oxyresveratrol
P9	M.Cano	Mass Cytometry Nanodiagnostic Assay for Cancer Biomarker Recognition
P10	M.Carrasco	Conditioning of black mass of disused LIB's for the separation of its components by flotation process
P11	A.Casillas-Rubio	Upconversion luminescence lifetime modulation by excitation control
P12	B.B Colaço	Surface-enhanced Raman scattering (SERS) for dissolved carbon dioxide detection using porphyrin-coated gold nanostars
P13	A.Danana	Synthesis and functionalization of gold nanoparticles with superior x-ray attenuation properties compared to clinically used iodinated small molecular contrast agent
P14	L. De Castro	Magnetic hybrid biomaterials for cyanotoxins removal from water
P15	M. del Puerto	Magnetic hydrogels and primary neural cells under high-frequency magnetic stimulation
P16	M. Dhanjani	Controlled synthesis of magnetoplasmonic aggregate nanoparticles for biomedicine
P17	S.Domingo	Covalent Organic Frameworks (COF) nanoparticles with optical properties as contrast agents for photoacoustic imaging
P18	S. Domingo	Light-activated nanomedicines for selective intracellular delivery of camptothecin
P19	D. Egea	Magnetic Hyperthermia Therapy mediated by Nanoparticles: search for candidates, selection of operating conditions and in vitro experiments
P20	L.Encabo	Development of a targeted PLGA-PEG nanoplatform for β-CFN volatile cannabinoid
P21	A. Fernández	Coating Techniques for the Obtention of Cell Membrane-Coated Nanoparticles for Tissue-Specific Therapeutics
P22	L. Fernández	Combined systems of magnetic photo and biocatalysts for the tertiary treatment of emerging contaminants in wastewater
P23	M-L- Fernández-Gubieda	Solar-driven antibacterial activity of Zn-Co ferrites
P24	L. Fernández-Huarte1	Development of a platform for novel gene therapy vectors with renal tropism
P25	S.C. Freitas	Multifunctional Fe-Au nanostructures for biomedical applications
P26	G. García	Functionalized magnetopolymeric nanocomposites for antitumour magnetic hyperthermia therapy
P27	G. García	Magnetic core/shell nanoparticles as antitumoral agents for magnetic and photothermal therapy
P28	J. García	Addressing Osteoarthritis with Senolytic Peptide-loaded Nanopharmaceuticals
P29	M.Mar Gil	Nanoscale zero valent iron increases iron availability in agricultural soils
P30	D.M. Gómez	Evaluation of the immunomodulatory potential of silica nanoparticles against respiratory syncytial virus infection in primary human cells
P31	D. Jiménez	Biomimetic Cell Membrane-Coated Nanoparticles for the Targeting and Potential Treatment of Glioblastoma

P32	M. Lázaro	Crucial role of cellular uptake in photothermal treatments using BMNPs
P33	A. León	Magnetic Semi-interpenetrating Hydrogels Based on Natural Biopolymers for Sensing and Actuating
P34	A. Márquez	Design of chemotherapeutic nanoparticles to target Tumor Endothelial Marker 8 receptor in solid tumors
P35	A. Medina	Formulation of (maghemite/poli(ε-caprolactone))/polyethylenimine (core/shell)/shell nanoparticles with potential application in hyperthermia against cancer
P36	A. Medina	Design of stable polyethylenimine-decorated magnetopolymeric nanoparticles for antitumor drug delivery
P38	C.M.Montero	Synthesis of Magnetic Nanoparticles by the Recycling of Industrial Steel Waste and its application on CPWO
P39	D.Morán	Synthesis of starch-silver hybrid nanoparticles and their use as antimicrobial agents
P40	A. Morjane	Theoretical Investigation of the Role of Dipole-Dipole Interaction on the Efficiency of Magnetic Hyperthermia
P41	S. Orozco	Soft carbon electrodes in Capacitive Energy Extraction: exploring geometry and operational parameters in Capacitive Mixing systems
P42	K. Pansegrau	Temperature Influence on the Relaxation Behavior of Immobilized Mangetic Nanoparticles
P43	M. Pedrosa	Real cell membranes in Langmuir monolayers for anticancer drug studies and model validation
P44	M. Perduca	Superparamagnetic Nanoparticles coupled with silver and copper: growth inhibition of bacterial pathogens
P45	V.Pestana Neiva	SERS detection of saxitoxin using covalent organic polymer/gold nanoparticles composite
P46	T. Pozo Gualda	Trapping heavy metals by bone bioresidues
P47	T. Pozo Gualda	Bones as bacterial bioadsorbant
P48	J.G. Ramos	Proposed mechanisms of reaction for coating maghemite nanoparticles with alkylcyanoacrylates
P49	J.G. Ramos	Optimized formulation of maghemite/poly (n) Butylcyanoacrylate “core/shell” nanospheres with promising characteristics for antitumor magnetic hyperthermia
P50	A. Robles	Tunable Lipid Nanoparticles as Effective Carriers for Enhanced Brain Penetration
P51	J. Rodriguez	Coupled optical modes in twisted triskelia nanostructures for enantiomer detection
P52	A. Rodríguez	Superparamagnetic nanoprobes for magneto-inductive sensin
P53	P.A. Rodriguez-Jimenez	Physical switches to enhance the antitumoral action of magnetic nanoparticles
P54	P.A. Rodriguez-Jimenez	Magnetic-induced bacterial death mediated by magnetic nanoparticles
P55	A. Rubio-Andrés	Synthesis of Multiresponsive Plasmonic Microgels
P56	C. Saweres-Argüelles	Tailored starch-based nanocolloids for bioapplications
P57	Z. Shaterabadi	Uniformed-sized Fe3O4 NRs for application in thermal treatment
P58	A. Sola-Leyva	Enhanced Cancer Treatment through Triple Modality Therapy: Chemotherapy, Magnetic Hyperthermia, and Photothermia Using BMNPs Conjugated with ChoKa1 Inhibitor
P59	H. Soto	Engineering small extracellular vesicles as targeted nanocarriers for antifibrotic therapies
P60	J. Tavacoli	Wagging Magnetic Microswimmers
P61	M. Vassallo	Dual-responsive magnetic nanodroplets for controlled oxygen release via ultrasound and magnetic stimulation
P62	M. Vassallo	From synthesis to in vitro hyperthermia application of magnetite nanoparticles with different surface coating
P63	C. Wenck	Design, development and characterization of magnetic nanoparticle systems for advanced theranostics
P64	G. Zanella	Effects of Magnetic Nanoparticles on the Functional Activity of Human Monocytes and Dendritic Cells