



Universidade do Minho
Escola de Ciências

Centre of Physics of the Universities of Minho and Porto (CF-UM-UP) Minho Pole

Annual Report 2025



CF-UM-UP

Contents

Executive Summary.....	3
Mission and Objectives.....	4
Organization structure	5
<i>Management Entities</i>	<i>5</i>
<i>Strategic Research Lines</i>	<i>5</i>
<i>Advisory Board.....</i>	<i>5</i>
Scientific Activity	6
<i>Description of the Main Activities by Research Line</i>	<i>6</i>
Physics of Quantum Materials and Bionanostructures (Line 2)	8
CFUM in numbers	16
<i>Members (as of December 31, 2025)</i>	<i>16</i>
<i>Number and type of Publications</i>	<i>17</i>
<i>Scientific Supervision Numbers.....</i>	<i>18</i>
<i>Funding Summary.....</i>	<i>18</i>
Members (as of December 31, 2025)	20
Member Engagements and Achievements	21
Outreach Activity.....	22
Research Laboratories	25
Supervision of Research Students	26
<i>PhD completions in 2025</i>	<i>26</i>
<i>PhD projects in progress at December 31, 2025.....</i>	<i>27</i>
<i>Master theses completed in 2025</i>	<i>32</i>
Externally funded projects	35
<i>Projects finished in 2025.....</i>	<i>35</i>
<i>Projects in progress at December 31, 2025</i>	<i>36</i>
2025 Affiliated Publications.....	37

Executive Summary

The Strategic Project (PE) of the Centre of Physics of the Universities of Minho and Porto (CF-UM-UP) was extended to 2025 to cover all CF-UM-UP expenses, still based on previous estimates from year 2024, due to the absence of an official FCT funding decision, which came later during the year. The allocation of these funds, still suffered from the usual delays for the numerous CF-UM-UP projects, challenging the acquisition of the necessary goods, services, and personnel, a persistent and chronicle problem that affected the scientific progress of several projects. The Human Resources hiring saw an important boost, since many years already, with the FCT-Tenure program. Several contracts of Assistant Researcher (3) and Auxiliar Professor (5) positions were officially signed at the University of Minho, making the CF-UM-UP one of the few Research Centers with a 100% success rate in this program. Despite this success, Human Resources remain a central concern for CF-UM-UP, given the rate of retirements expected in the coming years. A plan is under way to mitigate this effect. The resilience, the determination, and adaptability of researchers have thus become increasingly of utmost importance, over time. As of December 31st, 2025, the Center of Physics at the University of Minho (CFUM) comprised 62 fully Integrated Members holding a PhD, along with 38 Post-Docs and PhD-holding collaborators, in addition to the current 83 PhD students affiliated with CFUM.

CFUM research has been based on three fundamental core scientific activities: (i) theoretical research in the Physics of 2D materials, (graphene, plasmonics, nonlinear phenomena, materials electronic and optical properties, orbitronics, quantum algorithms, etc.); (ii) research in new materials targeting new technologies and applications (chiral plasmonic thin films, nanofibers, ferroelectric devices for low-power nanoelectronics, sensing, thin-filmed-based multiferroic systems with magnetic-electric-optical responses, etc.); (iii) and research in Optometry and Vision Science, with cutting edge optical equipment and modelling techniques, a natural development of the research pioneered at UM some 25 years ago in Applied Optics. The CFUM 2025 scientific output diversity and international visibility can be better appreciated when looking into the 198 publications in

journals with peer review (available through Clarivate Web of Science/Scopus), 4 books and 21 book chapters, 3 international patents and 113 oral presentations in international meetings, Conferences and Workshops.

In 2025, there was a significant increase of the received funding (1.9M€) with respect to 2024 (0.8M€), lead by the ANI/PRR/CCDRN Projects. The total number of projects remained essentially constant (37) most of them from FCT (18). The funding contracted in 2025 with international projects and projects with the industry as also increased by more than a factor 2, when compared to 2024. This could signify a trajectory of recovery, suggesting the need for further efforts to sustain this upward trend in the future. This entails implementing suitable measures to bolster applications from CFUM members, especially for European funding opportunities, once a significant fraction (77.6%) of the CFUM contracted funding in 2025 came still from FCT and ANI/PRR/CCDRN projects, as mentioned previously. International and H2020 contracted funding, although higher than in 2024, was only at the level of 13.2%, a number that can be improved given the level of expertise of CFUM members in several scientific areas of research. With the new PRR and Equipar+2 programmes that allowed the acquisition of new equipments, new opportunities will appear to strengthen the scientific impact of CFUM research.

The global results show a consolidated scientific production which resulted in the hundreds of scientific publications in peer reviewed journals during 2025, only possible due to the resilience associated with a strong determination, dedication and effort of the Centre's researchers, which is to be acknowledged here.

Finally, I would like to thank the executive team Mikhail Vasilevsky, Madalena Lira, Paulo Coutinho and Carlos Tavares for their support and collaboration, the administrative support Vitor Pacheco and Fernanda Costa, and the help of the technical staff who collaborated in various ways in the operation of the Centre.

António Onofre
Director, CF-UM-UP

Mission and Objectives

Our Mission

The main goal of the CF-UM-UP as a whole is to perform internationally competitive research in several areas of Physics, fundamental and applied, linked to other disciplines of natural sciences and engineering, with strong international links and relevant, as far as possible, at the local level. CF-UM-UP has a critical mass of highly qualified researchers and aims at keeping equilibrium between applied and fundamental research and being the base for advanced training in Physics and adjacent areas, in the North of Portugal.

Organization structure

Management Entities

Director:

António J. Onofre Abreu Ribeiro Gonçalves

Deputy Director:

Mikhail Igorevich Vasilevskiy

Executive Committee Members:

Maria Madalena Cunha Faria Lira (Line 1)

Paulo José Gomes Coutinho (Line 2)

Carlos José de Macedo Tavares (Line 3)

Strategic Research Lines

The research at the CF-UM-UP is conducted along the following Strategic Research Lines:

(i) Line 1: Assessment and Enhancing Visual Performance

Coordinator: Madalena Lira

(ii) Line 2: Physics of Quantum Materials and Bionanostructures

Coordinator: Paulo Coutinho

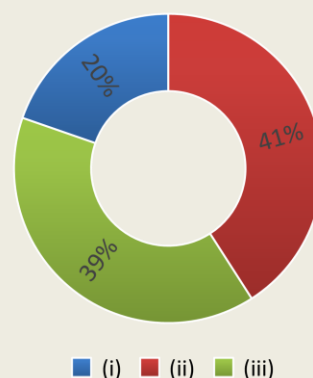
(iii) Line 3: Functional and Smart Materials and Surfaces for Advanced Applications

Coordinator: Carlos Tavares

(iv) Line 4: Quantum Physics and Fields in High Energy and Condensed Matter Theory

Coordinator: Eduardo Castro

Research Line Members at December 31, 2025



Advisory Board

- Prof. Sir Konstantin Novoselov, School of Physics & Astronomy, University of Manchester, Manchester, United Kingdom.
- Prof. Antti-Pekka Jauho, Department of Micro- and Nanotechnology, Technical University of Denmark, Denmark.
- Prof. Emeritus Denis Weaire, School of Physics, Trinity College, Dublin.
- Prof. Norberto López-Gil, Department of Physics, University of Murcia, Spain.

Scientific Activity

Description of the Main Activities by Research Line

Assessment and Enhancing Visual Performance (Line 1)



Research Line Coordinator
Madalena Lira

The research performed at Line 1, advanced key areas of vision science through a multidisciplinary portfolio in 2025. The group addressed fundamental and applied challenges related to ocular surface health, contact lens performance, myopia management, visual optics, and color and imaging sciences.

A strong emphasis was placed on tear film dynamics and ocular surface assessment, with studies examining tear film stability across age groups, methodologies for meibomian gland analysis, and ocular symptoms associated with contact lens wear. Research also focused on dry eye symptoms in specific populations, such as professional musicians, and on intrinsic factors influencing central corneal thickness. Complementing this clinical work, innovative studies on nanoparticle-loaded contact lenses highlighted new strategies for ocular drug delivery.

In the area of contact lenses and myopia control, the team investigated physicochemical changes in myopia control lenses, peripheral defocus in orthokeratology, and retinal image quality in advanced optical designs. Environmental sustainability was addressed through research on the persistence of contact lenses in wastewater treatment systems.

Additional contributions were made in visual optics and ophthalmic instrumentation, including accommodation dynamics, wavefront sensing, optical aberrations, and scleral and intraocular lens performance. In parallel, work in color science and imaging explored color

preferences, daylight illumination, hyperspectral imaging, and chromatic representation of natural scenes and cultural heritage.

Overall, the 2025 output reflects a solid body of peer-reviewed publications and active international collaboration, reinforcing the group's commitment to advancing visual science and improving visual health and performance.

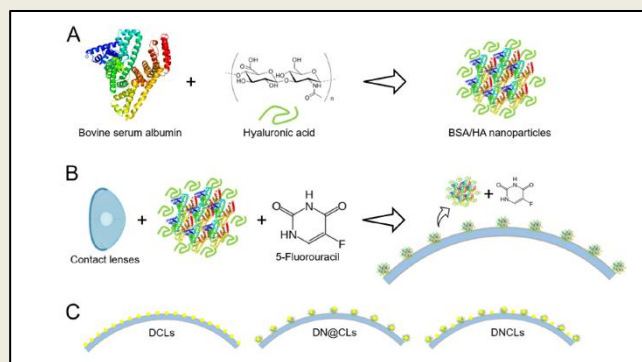
Research Highlight

Nanoparticle-Loaded Contact Lenses for Ocular Drug Delivery

This study developed and characterized soft contact lenses incorporating albumin/hyaluronic acid nanoparticles for the controlled ocular delivery of 5-fluorouracil. The work combined material science, pharmaceutical formulation, and ocular biomaterials to create a novel drug-eluting contact lens platform.

The results demonstrated successful nanoparticle incorporation within the lens matrix without compromising optical transparency or material integrity. Controlled and sustained drug release profiles were achieved, as illustrated through physicochemical characterization and release kinetics analyses. These findings highlight the potential of nanoparticle-laden contact lenses to enhance drug bioavailability at the ocular surface while reducing the need for frequent topical administration.

Overall, this research supports the use of advanced contact lens-based drug delivery systems as a promising strategy for improving therapeutic efficacy and patient compliance in ocular treatments, reinforcing the translational potential of biomaterial-driven ophthalmic innovations.

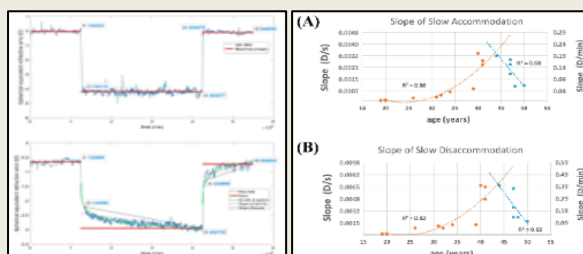


<https://doi.org/10.1002/jbm.a.37839>

Research Highlight

Opto-biomechanical crystalline lens properties revealed during sustained near vision effort.

This study examined age-related changes in accommodation and disaccommodation during sustained digital reading in young and pre-presbyopic subjects. Results show significant age dependence, with incipient presbyopes exhibiting both fast and slow accommodative responses. Lens viscoelastic hysteresis may delay relaxation after near tasks, providing additional accommodative support during sustained reading.



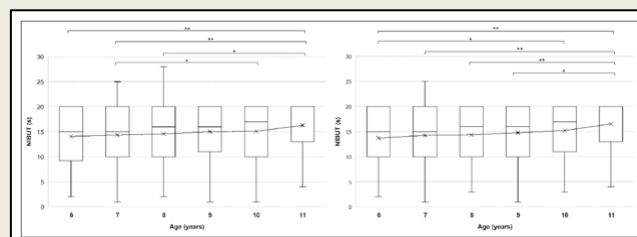
<https://doi.org/10.3390/jcm14041107>

Research Highlight

Age- and Sex-Related Differences in Tear Film Stability in Children

This study investigated tear film stability in a pediatric population using non-invasive tear break-up time (NIBUT), aiming to clarify the influence of age and sex on ocular surface integrity during childhood. Objective tear film measurements were obtained and analyzed across different age groups, allowing a detailed characterization of developmental trends.

The results demonstrated significant age- and sex-related differences in tear film stability, which were clearly illustrated through graphical analyses. These findings suggest that tear film parameters evolve during childhood and adolescence and may differ between boys and girls, even in the absence of overt ocular surface disease.

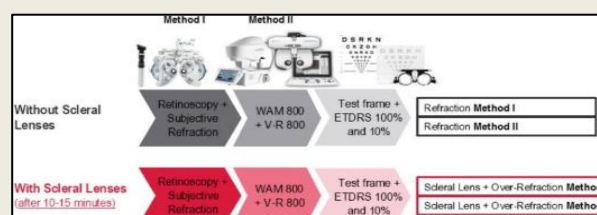


Overall, this work provides normative data for tear film stability in children and highlights the importance of considering demographic factors when interpreting pediatric ocular surface assessments. The findings have direct implications for early screening, clinical follow-up, and the management of pediatric patients, particularly in the context of increasing digital device use.

Research Highlight

Improvements in semi-automatic refraction assist the treatment of complex eye conditions.

This study evaluated digital, algorithm-based refraction versus conventional methods in patients with irregular corneas, with and without scleral lenses. Digitalized wavefront-guided refraction delivered comparable visual acuity and more convex prescriptions, supporting the role of algorithm-assisted digital technologies in improving consistency and efficiency of refraction in complex eye care.



<https://doi.org/10.1016/j.clae.2025.102485>

Physics of Quantum Materials and Bionanostructures (Line 2)



Research Line Coordinator
Paulo J. G. Coutinho

The focus of the overall research performed in the strategic Line 2 is the development, both at theoretical and fabrication levels, of quantum materials and (bio)nanosystems and their applications in nowadays society, including biomedical, optical, environmental and sensing applications.

The 'berry' software, which was developed at the Physics Center, has undergone significant development, expanding its capabilities to materials with non-collinear spin in one, two, or three dimensions. A theoretical examination of second-harmonic generation (SHG) in a graphene monolayer integrated within an attenuated total internal reflection (ATR) configuration has been performed.

In the field of mathematical physics, the necessary conditions of optimality for optimal control problems with impacts and their application to systems with backlash were addressed.

In biomedical applications, a straightforward approach was developed to prepare magnetic gels based on natural polymers, exhibiting tunable mechanical properties, excellent magnetic hyperthermia and stimuli-induced drug release. Albumin /hyaluronic acid (BSA/HA) nanoparticles were developed and successfully applied in soft contact lenses for ocular drug delivery. Monoolein/phytantriol-enriched lipid nanocarriers loaded with resveratrol were developed as topical ophthalmic vehicles.

BSA/HA nanoparticles have shown to be efficient nanocarriers for a novel highly potent antitumor drug against resistant cancers. Liposomal formulations were also exploited as carriers for poorly water-soluble anticancer drugs, demonstrating superior activity in triple-negative breast cancer (TNBC) and colorectal cancer (CRC) cells. Innovative plasmonic lipogels were

prepared, either based on chitosan/alginate or peptide-based hydrogels, containing liposomes entrapping gold nanorods or silver nanoprisms. Novel nanographene oxide conjugates were also developed as stimuli-responsive theranostic tools for cancer.

In the environmental and sensing applications, research focused on the preparation of nanoparticles (mixed zinc/copper ferrites or $\text{BiOX}_n\text{Y}_{1-n}$, with X,Y = Cl, Br, I) for efficient effluent cleaning by photocatalysis using visible light, with complete degradation of several dyes, toxic drugs and PFAS. A label-free LSPR biosensor, based on Au-Ag nanoparticles embedded in a TiO_2 matrix, was developed for specific detection of Ochratoxin-A (OTA) in wine.

Flexible and multifunctional polymer/BT-BMT composite films were synthesized. The BT-BMT addition has been shown to strongly improve the piezoelectric and electrocaloric responses, being competitive for energy applications.

Research Highlight

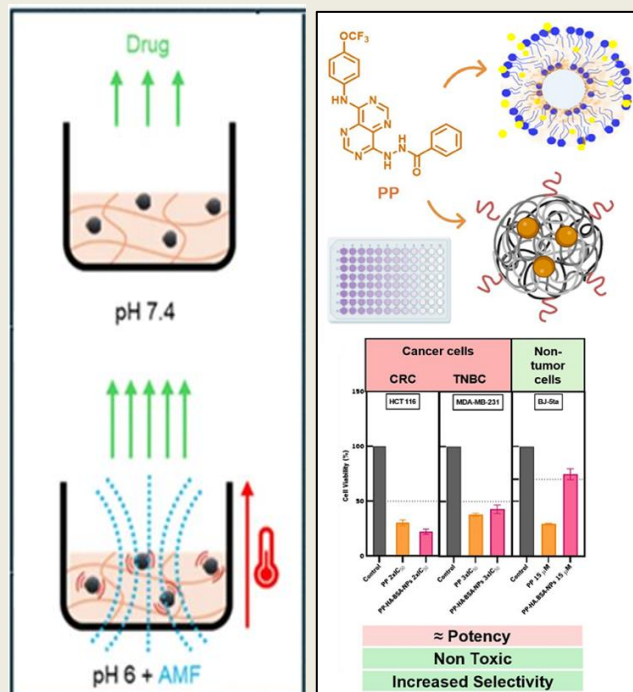
Magnetic gels based on natural polymers with tunable mechanical properties for controlled drug release

A straightforward approach was developed to prepare hydrogels from natural polymers (chitosan and alginate) with tunable mechanical properties, without extensive chemical modification. The incorporation of magnetic nanoparticles, synthesized via an amino acid-assisted oxidative hydrothermal method, endowed the composite gels with excellent magnetic hyperthermia performance. The composite nanosystem was successfully tested for the stimuli-induced and controlled release of the chemotherapeutic drug 5-fluorouracil (5-FU). An outstanding nanoarchitectonics was achieved, exhibiting:

- Tunable mechanical properties;
- High magnetic hyperthermia performance;
- Sustained release of 5-FU under physiological mimetic conditions;

- Synergistic release enhancement under acidic pH and magnetic hyperthermia.

This work was published in ACS Applied Materials & Interfaces.



Research Highlight

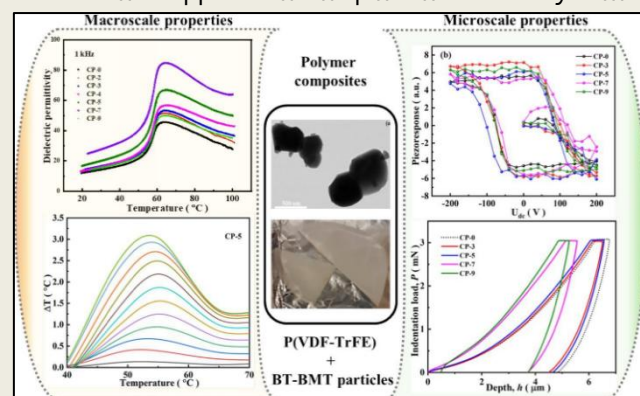
Albumin-based and liposomal nanocarriers for a novel highly potent drug against resistant and metastatic cancers

Liposomal nanoformulations for a novel pyrimidine-based highly potent anticancer drug (PP) were developed. The liposomes have shown to be efficient as carriers for this poorly water-soluble drug, with high encapsulation efficiency, long-term stability and efficient internalization in colorectal cancer (CRC) cells and triple negative breast cancer (TNBC) cells. Drug-loaded albumin/hyaluronic acid nanoparticles (PP-HA-BSA-NPs) were even more effective for this purpose, with very low inhibitory concentrations for both resistant cancer cells, due to the target of CD44 receptors overexpressed in these tumor cells. The BSA/HA nanoparticles allow a high loading cargo, excellent stability and an exceptional safety profile. These results pave the way for preclinical studies using these drug-loaded nanocarriers.

Research Highlight

Novel nanofibers and thin film piezo, pyro and magnetic composite systems for energy harvesting and spintronics

Novel chiral and cyclic dipeptides were synthesized. Their electric, dielectric, piezoelectric and non-linear optical properties were characterized. Hybrid electrospun nanofiber mats with the dipeptides included inside biocompatible polymers were shown to exhibit strong piezoelectric properties under a periodic mechanical force, functioning as energy harvesting sources. Flexible and multifunctional polymer/BT-BMT composite films were synthesized, and their dielectric, piezoelectric and electrocaloric properties were determined. The BT-BMT addition has been shown to strongly improve the piezoelectric and electrocaloric responses, being competitive for energy applications. The AC and DC electric conductivity and non-linear optical characteristics of ferroelectric-ferromagnetic multiferroic BaTiO₃-CoFe₂O₄ bilayer thin films have been characterized. They have given insight into the transport mechanisms in these bilayer systems, towards their applications in spintronic device systems.



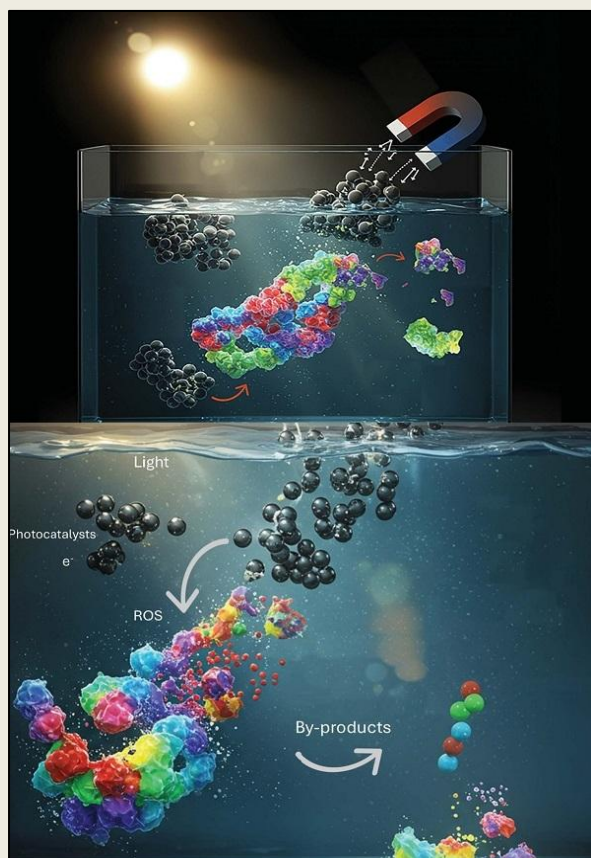
Research Highlight

Silver-doped mixed ferrite nanoparticles for efficient photocatalysis using visible light

Water pollution from synthetic dyes poses serious ecological and health risks due to their toxicity, persistence, and resistance to conventional treatment. Addressing this challenge requires efficient, reusable, and sunlight-responsive materials. Magnetic Zn_{0.5}Cu_{0.5}Fe₂O₄ nanoparticles doped with silver,

synthesized via a rapid, low-energy process, were developed as visible-light active photocatalysts. The silver-enhanced sol-gel-derived nanomaterials have shown strong photocatalytic and adsorption capacities, enabling dye removal even in low-light or dark conditions. Their superparamagnetic behavior ensures easy recovery and reuse, minimizing secondary contamination. These findings support the design of safe, effective, and scalable photocatalysts for the treatment of dye-laden effluents, particularly in the final stages of wastewater treatment, aligning with circular economy principles and advancing sustainable water management strategies.

The work was highlighted in the front cover of the journal *Environmental Science: Advances*.

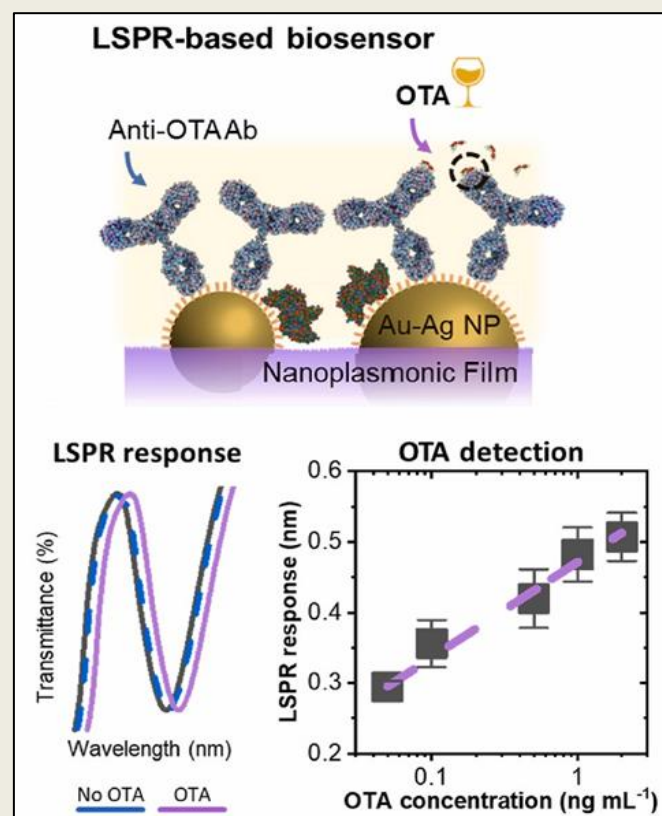


Research Highlight

Label-free localized surface plasmon resonance (LSPR) biosensor, based on Au-Ag NPs embedded in TiO₂ matrix, for detection of Ochratoxin-A (OTA) in wine

A novel and quantitative label-free LSPR-based biosensor was specifically designed for Ochratoxin-A

(OTA) detection, employing a portable LSPR spectroscopy sensing system. This biosensor is comprised of monoclonal anti-OTA antibodies immobilized on the surface of Au-Ag/TiO₂ plasmonic thin film. Under optimized conditions, the LSPR-based biosensor demonstrated a linear dynamic response from 0.05 to 2 ng mL⁻¹, with an estimated limit of detection at 7 pg mL⁻¹. The robustness and feasibility of the presented LSPR-based biosensing was tested using spiked white wine, exhibiting a satisfactory recovery of 93% – 113%, confirming its efficacy in a complex matrix.

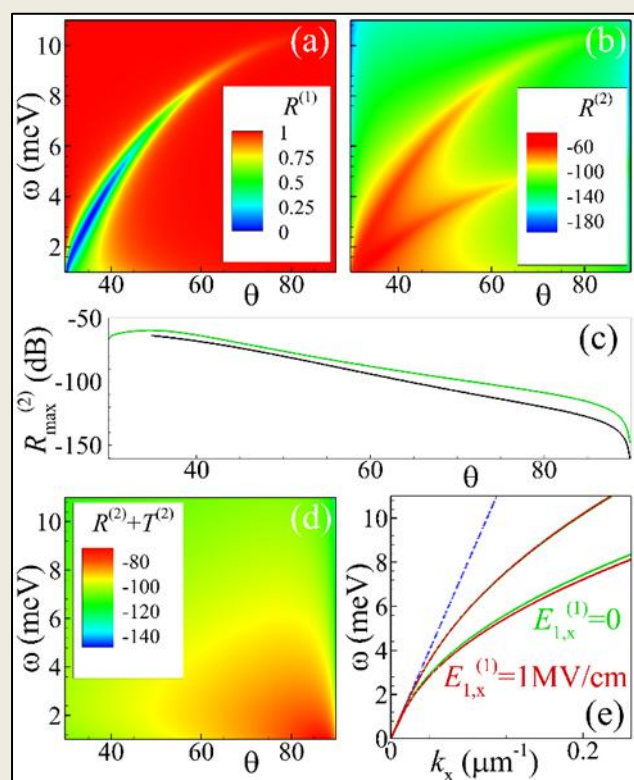


Research Highlight

Theoretical study of Second-Harmonic Generation (SHG) in a graphene monolayer integrated within an ATR configuration

A theoretical examination of second-harmonic generation (SHG) in a graphene monolayer integrated within an attenuated total internal reflection (ATR) configuration has been performed. By embedding graphene in this optical setup, we explore the

enhancement in the nonlinear optical response, particularly focusing on the efficiency of SHG. Our analysis reveals that the excitation of surface plasmon-polaritons (SPPs) plays a central role in significantly boosting the efficiency of SHG. This enhancement is attributed to the strong field confinement and the resonant nature of SPPs, which effectively increase the interaction between the incident light and the graphene monolayer. Furthermore, we analyze the underlying mechanisms that govern this process, providing a comprehensive theoretical framework that elucidates the interplay between graphene's electronic structure and the optical fields. Our findings suggest that the ATR scheme not only facilitates the excitation of SPPs but also optimizes the conditions for SHG.



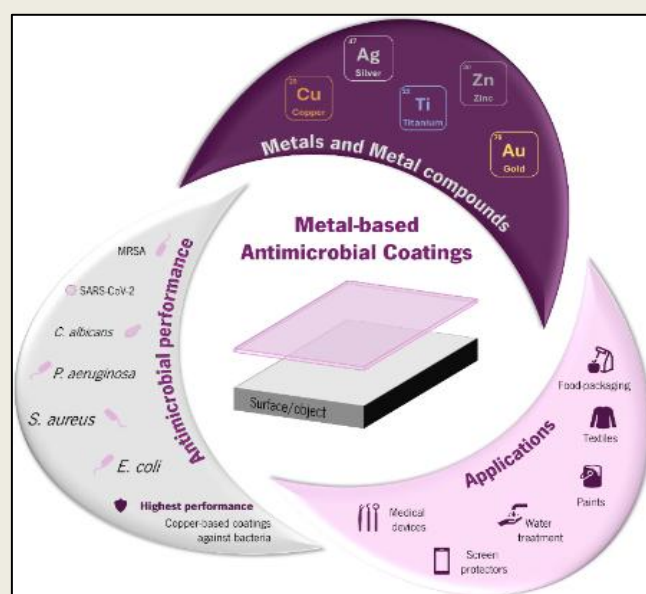
Research Highlight

Recent advances in metal-based antimicrobial coatings
Metal-based antimicrobial coatings have garnered significant attention due to their potential to mitigate microbial contamination across various industries. This systematic review, published in the journal "Advances in Colloid and Interface Science" (IF: 19.3), examines

the advancements in metal-and metal compound-based coatings from 2021 to 2023, synthesizing findings from 43 relevant studies. A key novelty of this review lies in the comparative analysis of the antimicrobial performance of the materials and coatings studied in the publications selected for this review, complemented by insights from the top-ten patents and eight commercially available products.

Silver-based antimicrobial coatings are still the most studied and commercially available, yet copper-based coatings exhibit the highest antimicrobial performance, clearly emerging as an alternative material. These coatings are usually tested against bacteria (*E. coli*, *S. aureus*, and *P. aeruginosa*), with fewer studies focusing on fungi and viruses. Although the molecular mechanisms of action remain insufficiently explored, available data suggests the involvement of multiple simultaneous pathways in microbial inactivation. Despite their practical potential, relatively few studies assess the effectiveness of these coatings under real-world conditions.

This review aims offers insights into the current state of metal-based antimicrobial coatings, identifying both technological advances and existing knowledge gaps, and emphasizing the need for further research to support their practical implementation.



Functional and smart materials and surfaces for advanced applications (Line 3)



Research Line Coordinator Carlos José Tavares

The focus of the overall research done in the strategic line Functional and smart materials and surfaces for advanced applications resides in the development of novel materials based on polymer composites, nano structures, alloy oxides and nitride films. The inherent studies involve the understanding of the electrical, magnetic, optical, mechanical, and other physical-chemical properties of these materials, having in mind applications in several types of devices, such as sensors, actuators, battery elements including novel separation membranes, transparent thermoelectric films, solar absorbers, information and energy storage, amongst other functional and smart materials. Energy considerations are essential in nowadays society and increasingly dependent on mobility and interconnectivity with the need to reduce the environmental impacts related to fossil fuels. The Centre of Physics of the University of Minho is undergoing competitive research in advanced materials for energy. The principal techniques for material development in the form of thin film deposition are magnetron sputtering and laser ablation. A low-cost technique by direct inkjet printing of material is also recurred, as other nano and micro structuring techniques to functionalize materials.

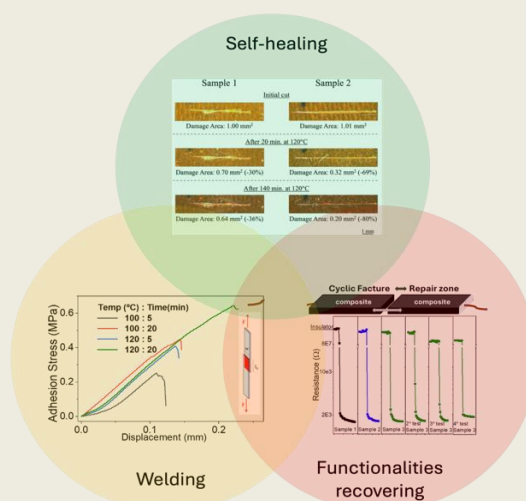
Research Highlight

Electroactive smart strategies for tissue regeneration

The challenge of organ and tissue loss within the healthcare system is not only prevalent but also immensely devastating and costly. Recognizing the profound impact on patients' well-being, there is a heightened focus on innovative strategies for tissue repair and regeneration. Tissue engineering research is at the forefront of this quest, tirelessly seeking alternatives to current treatments.

In this pursuit, the utilization of biomaterials capable of providing cell support and active stimuli is paramount. These materials aim to create permissive environments conducive to tissue regeneration, addressing the critical need for effective solutions in healthcare.

A noteworthy avenue within tissue engineering involves the exploration of electroactive polymers and their influence on various cell types such as cardiac and skeletal muscle, bone, and neural cells. Excitingly, research has already shown that electroactivity can significantly enhance cell adhesion, proliferation, and differentiation across these diverse cell types.



Research Highlight

Eco-friendly thermally activated vitrimer resin composites with self-healing mechanical and electrically conducting functional capabilities

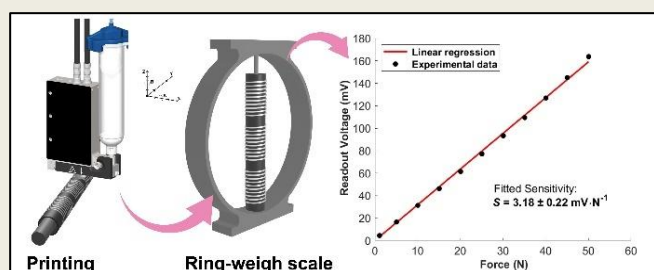
This work aims for developing ecological composites combining a bio-based epoxy resin with a vitrimeric hardener and carbon nanotube (CNT) reinforcement. The innovative aspect lies in creating materials that combine the mechanical robustness of thermosets with the reprocessability of thermoplastics, thanks to adaptable covalent networks (vitrimeres). The results indicate that a 2:1 ratio (vitrimer:resin) is ideal, demonstrating thermal self-healing capacity with 80% recovery of the damaged area. Additionally, the

conductive composite (with CNTs) allowed for ultra-fast repair through the Joule effect, recovering structural integrity and electrical conductivity. The revealed properties position the material as a sustainable solution for "soft robotics" and self-healing electronics in Industry 4.0.

Research Highlight

3D-Printed Linear Variable Differential Transformer (LVDT) for Cost-Effective Displacement Sensing

The growing demand for smart, wireless, customized, and sustainable sensors in industrial environments, driven by IoT and Industry 4.0, led to the development of a fully printed LVDT position/force sensor to solve the complex assembly and high-cost problems of traditional LVDTs. The sensor was fabricated using 3D printing for the structure and 5-axis piezojet printing to integrate conductive coils into curved surfaces. A commercial MnZn core and an FFF-printed PLA magnetic composite were evaluated. The MnZn core demonstrated a superior sensitivity of $1054 \pm 11 \mu\text{V}\cdot\text{mm}^{-1}$ compared to the significantly lower sensitivity of the printed core $3.86 \pm 0.07 \mu\text{V}\cdot\text{mm}^{-1}$. Implemented in a pressure detection application, the sensor demonstrated a linear response with a sensitivity of $3.18 \pm 0.22 \text{ mV}\cdot\text{N}^{-1}$, offering a versatile, scalable, and low-cost solution for the next generation of industrial sensors in IoT environments.



Research Highlight

Thermomagnetic thin films for energy harvesting and temperature sensing

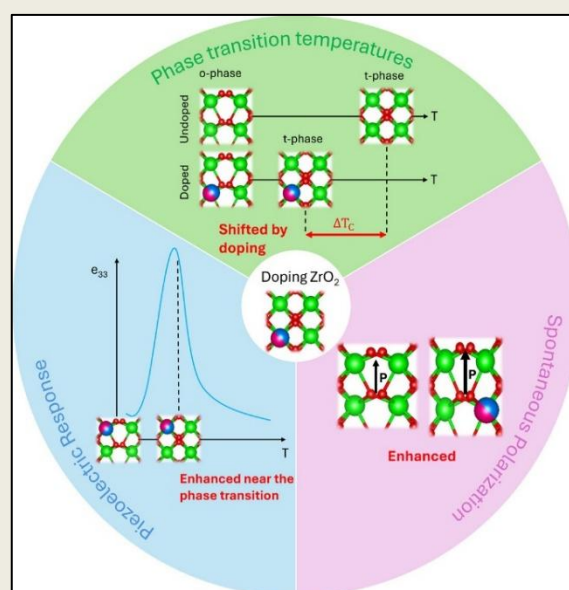
Ferromagnetic thin-film systems based on Co_2FeAl (CFA) Heusler alloys and Permalloy (NiFe) are nano-engineered to convert thermal gradients into electrical

signals using the Anomalous Nernst Effect (ANE). Deposited by advanced magnetron sputtering, including oblique and glancing-angle geometries, these films exhibit enhanced thermomagnetic coupling and strong in-plane anisotropy. When integrated onto compliant PVDF-TrFE substrates, they enable flexible ANE devices capable of simultaneous temperature sensing and local energy harvesting, supporting autonomous operation of distributed sensor nodes. These thermomagnetic modules are designed for real-time process control in industrial environments and for wearable systems, contributing to improved safety, reduced wiring complexity and increased sustainability through decentralized recovery of dissipated heat.

Research Highlight

Ferroelectrics for in-memory computing

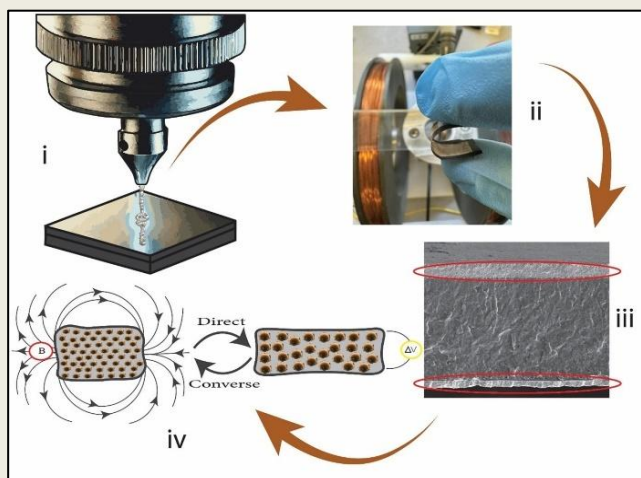
Ferroelectric binary oxides show great promise not only for application in energy storage and non-volatile memories, but also for in-memory computing devices. Researchers at CF-UM-UP revealed the role of doping in the phase stability, phase transition temperatures, ferroelectric polarization and piezoelectric properties of ZrO_2 . Consequently, this work highlights the most promising dopants capable of enhancing the ferroelectric and piezoelectric properties of ZrO_2 thin films.



Research Highlight

Revisiting De Magnete: Printed electrode engineering for tunable magnetoelectric coupling in energy-efficient functional devices

Inspired by Gilbert's De Magnete, the article shows how classical ideas can be reinterpreted by modern physical engineering. The authors reveal that the additive printing of electrodes, using techniques such as Aerosol Jet Printing and photonic sintering, optimizes magnetoelectric coupling in flexible polymer nanocomposites. The advance generates remarkable improvements: approximately 270% improvement in the generated magnetic field (up to 34 Oe) and an 80% increase in the inverse magnetoelectric coefficient, far exceeding the thresholds required for spin manipulation in spintronic devices. In addition to the scientific contribution, the study indicates applications in efficient devices, low-power spintronic systems (sustainable electronics), showing how old principles gain new technological functions.

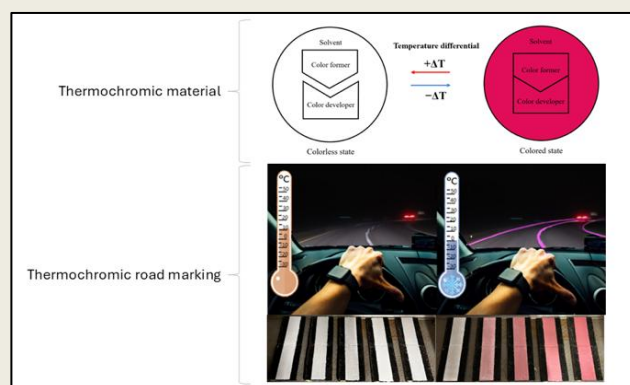


Research Highlight

Smart Road Markings

Smart road markings (RM) are being developed to enhance visibility, durability, and safety under adverse environmental conditions through new and advanced functionalities. The self-cleaning capability is achieved through the incorporation of a photocatalytic semiconductor into the RM, enabling the degradation of pollutants on their surface. This helps maintain long-

term visibility while reducing maintenance and renewal needs. The thermochromic capability is achieved through the incorporation of thermochromic microcapsules. These materials provide temperature-responsive color changes in the RM at a specific transition temperature (TT) of 0 °C. Below the TT, the thermochromic RM change color, acting as visual indicators of ice or snow and improving visibility under snowy conditions. This thermochromic response enables the RM to function as simple and reliable color-based sensors, contributing to safer driving environments. Together, these multifunctional materials represent a new generation of smart RM designed to support road safety, environmental resilience, and the evolution of smart mobility infrastructure.

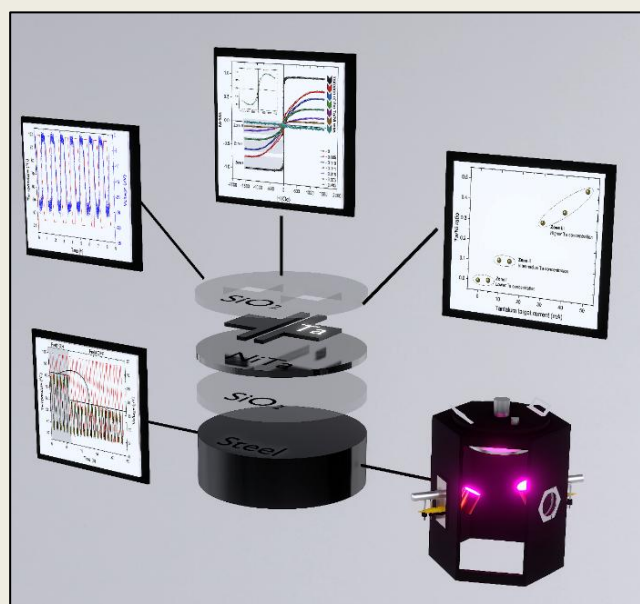


Research Highlight

Thin films for multi-sensing response

New sensors and electrodes, based on nano-designed thin film structures, are developed to provide efficient transduction of physical properties into electronic signals. To reach this target, nanostructured thin-film systems are deposited by magnetron sputtering, including oblique and glancing-angle deposition geometries, to tailor morphology, anisotropy, and transduction performance. The main idea is to obtain punctual or matrix-type tactile acquisition aligned with the intended applications. The optimized thin-film systems can scan shape, texture, friction, force, pain, temperature, and several other physical quantities. In addition, by enabling in-situ and real-time monitoring of

production variables such as temperature, pressure, humidity, and vibration, these technologies contribute to improved product quality, robust process development, and enhanced device/material sustainability. Within the Drivolution industrial co-promotion project, this multi-sensing approach strongly supports the digitalization and automation of advanced manufacturing systems. Working in a closed loop with automotive sector partners, the group is also engaged in the development of key hardware and software elements that are critical for reliable integration of sensors and sensor networks in highly demanding environments.



Research Highlight

Sustainable magnetoactive materials for energy harvesting, sensing, actuation, spintronics and biomedicine

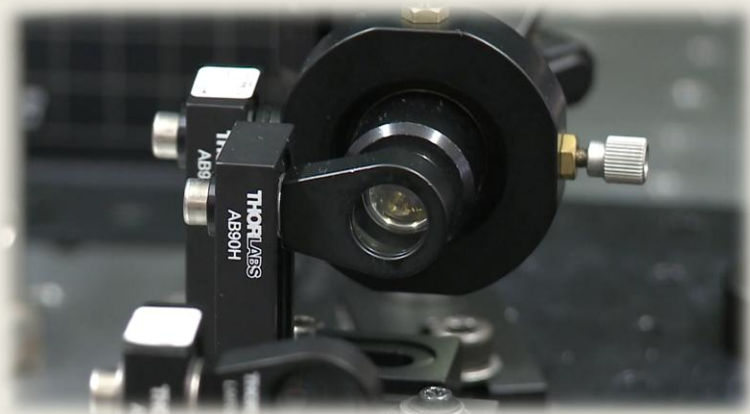
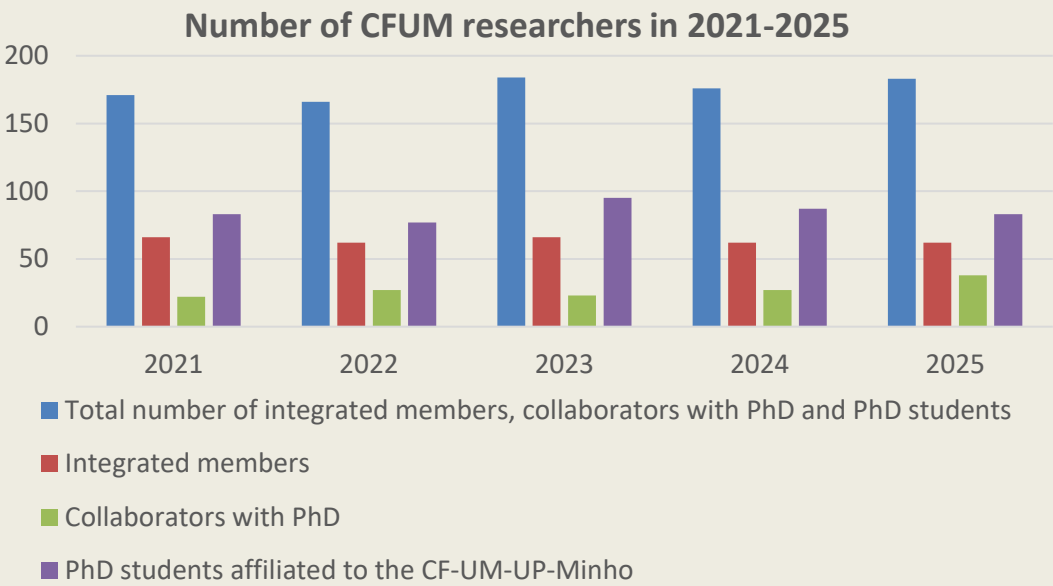
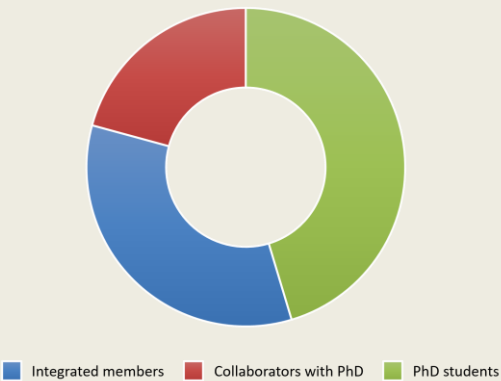
Sustainable magnetoactive material platforms are developed for multifunctional operation in energy harvesting, sensing, actuation, and magnetoelectric transduction, targeting applications where robustness, energy autonomy, and functional integration are critical. The systems combine piezoelectric P(VDF-TrFE), recycled magnetic materials derived from hazardous waste streams, and lightweight structural substrates, enabling high-performance functional responses with a reduced environmental footprint. The resulting materials exhibit a record-high magnetic energy product for sustainable magnetoactive systems, demonstrating that recycled magnetic resources can be transformed into technologically competitive components. This approach supports material circularity, reduces dependency on critical raw materials, and directly addresses European strategic autonomy and supply-chain resilience, which are essential under current geopolitical and defense-related constraints. Crucially, the strong magnetoelectric coupling enables voltage-controlled manipulation of magnetization, positioning these materials as enabling elements for spintronic technologies, including non-volatile memory, logic, and secure information processing. The combination of low-power operation, fast response, scalability, and environmental resilience makes these platforms particularly relevant for war-related and dual-use applications, such as autonomous sensing, resilient electronics, distributed energy systems, and next-generation secure hardware.

CFUM in numbers

Members (as of December 31, 2025)

Integrated Members with PhD	62
Post-Docs and Collaborators with PhD	38
PhD Students with CFUM affiliation	83

Members at December 31, 2025

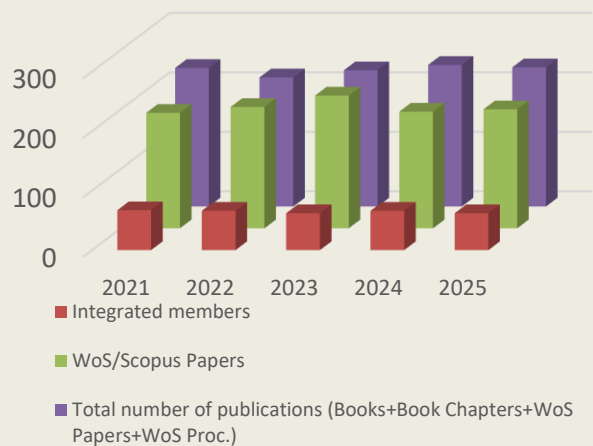


Number and type of Publications

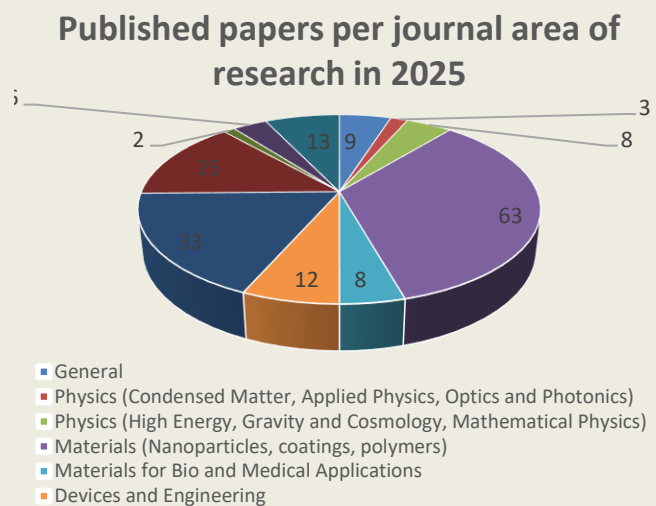
Publications in 2025

WoS/Scopus papers regular journal articles	198
Books (written/edited)	4
Book chapters	21
Patents (national /international)	0/3
Oral Presentations in International Conferences (total/by invitation)	113/20

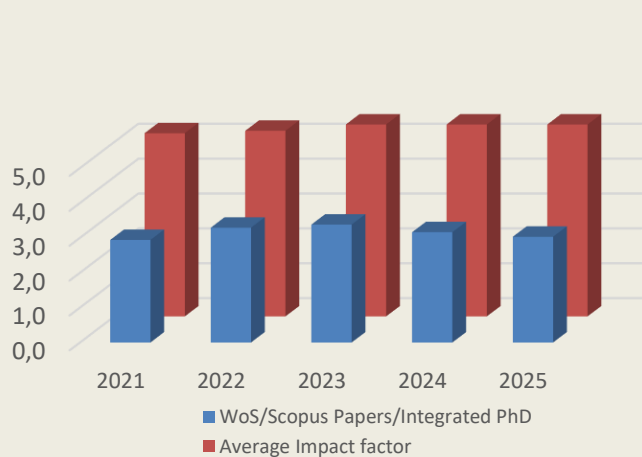
Publications in the period 2021-2025



Published papers per journal area of research in 2025



Number of ISI publications per integrated member and average impact factor of journals where the papers were published



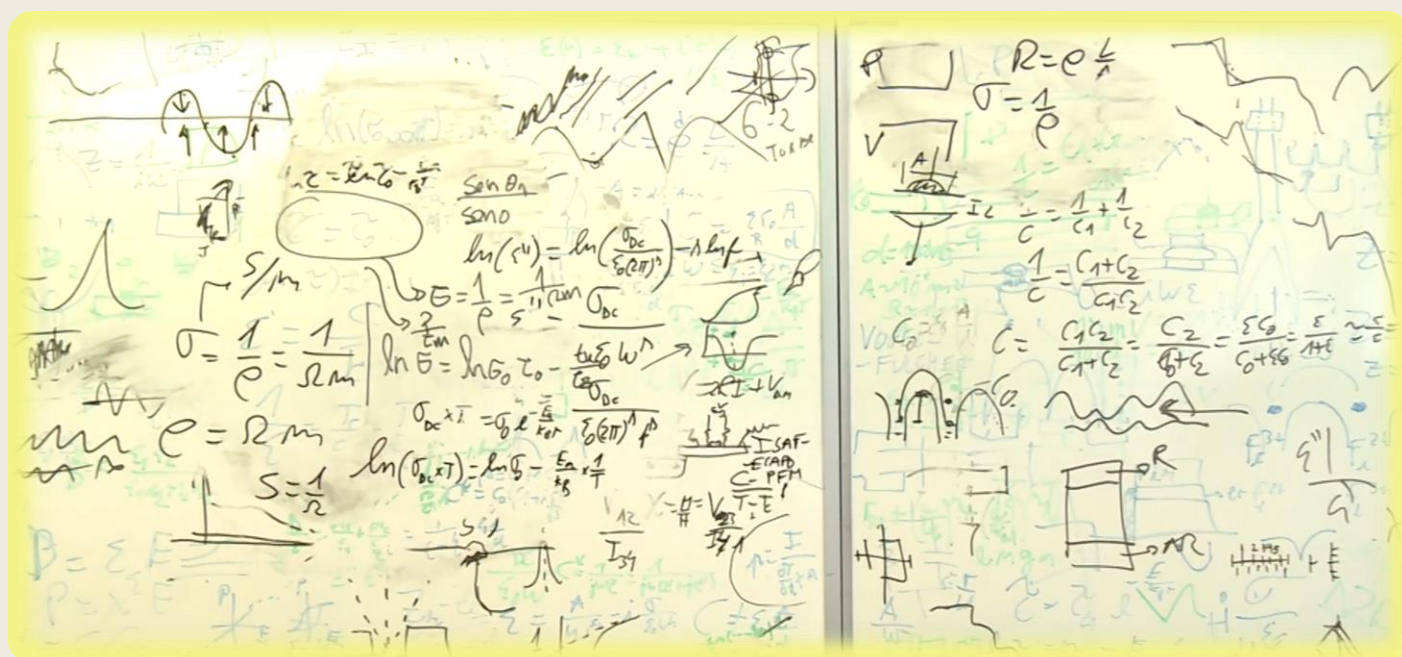
Scientific Supervision Numbers

		total
Master Theses	COMPLETED	47
PhD Theses affiliated to CFUM	ONGOING	83
	COMPLETED	22

Funding Summary

Funding in 2025

	Contracted in 2025	%	Received in 2025	%	Executed in 2025	%	Number of projects in 2025
Strategic Project (FCT)	160000	7,3%	110090,9	5,7%	70466,52	14,0%	1
FCT Projects	676390,18	30,7%	47813,4	2,5%	105922,59	21,1%	18
ANI/PRR/CCDRN Projects	1035147,17	46,9%	1229390	64,2%	191349,26	38,1%	8
Bilateral Projects	4000	0,2%	4000	0,2%	4076,87	0,8%	2
International Proj, (H2020)	290246,07	13,2%	502119	26,2%	9236,58	1,8%	3
Projects with Industry	39 331,56 €	1,8%	21525	1,1%	121302,73	24,1%	4
Total	2 205 114,98 €	100%	1 914 938,30 €	100%	502 354,55 €	100%	37



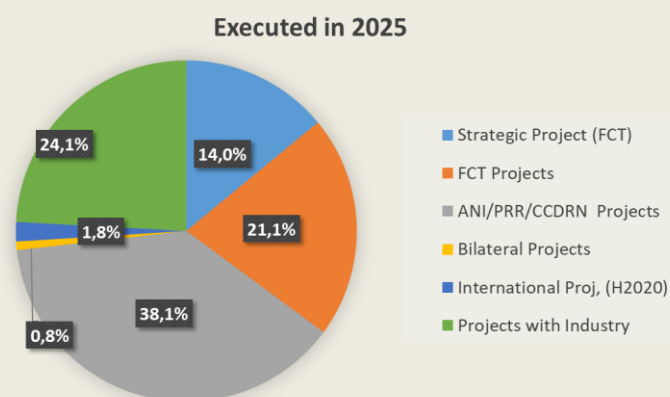
The contracted value includes overheads and the university's contribution to European projects with allocation of teacher's salaries. The amount received and the amount executed do not include overheads or the university's contribution. Thus, both the amount received and executed must be significantly smaller than the amount contracted.

The values of the contracted projects were obtained by dividing, in each project, its global financing equally throughout its duration.

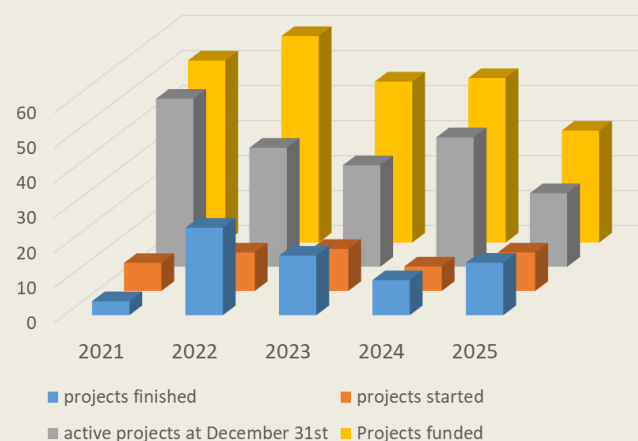
Funding contracted in 2025 according to projects' contracts



Funding executed in 2025



Active Projects (started and finished) in the period 2021-2025



The funding history from the period 2019-2025 is divided into European projects, FCT Strategic Project, individual FCT projects, as well as ANI/PRR/CCDRN projects. The contracted funding in 2025 is dominated by the ANI/PRR/CCDRN projects (46.9%) followed by the FCT projects (30.7%). The active projects attained a maximum number in 2021 followed by a decrease until 2023 and a recovery in 2024. In 2025 the number, again, decreased slightly with respect to 2024, despite the increase on the number of starting projects.

Members (as of December 31, 2025)

Integrated members

André Jorge Carvalho Chaves
António Filipe Teixeira Macedo
António Joaquim Onofre Abreu Ribeiro Gonçalves
António Manuel Gonçalves Baptista
António Manuel Marques Queirós Pereira
Armando José Barros Ferreira
Bernardo Gonçalves Almeida
Cacilda Maria Lima de Moura
Carlos José de Macedo Tavares
Carlos Miguel da Silva Costa
Clarisse Marta Oliveira Ribeiro
Claudia Jesus Ribeiro Lopes (left in 2025)
Daniela Patricia Lopes Ferreira
Elisabete Maria dos Santos Castanheira Coutinho
Francisco José Machado de Macedo
Gueorgui Vitalievitch Smirnov
Iran Gomes Rocha Segundo (left in 2025)
João Manuel Maciel Linhares
João Pedro Santos Hall Agorreta Alpuim
Joaquim Alexandre dos Santos A. de Oliveira Carneiro
Joel Nuno Pinto Borges
Jorge Manuel Martins Jorge
José Carlos Viana Gomes
José Filipe Vilela Vaz
José Manuel González Méijome
José Pedro Basto da Silva
Luís António Carvalho Gachineiro da Cunha
Luís Manuel Fernandes Rebouta
Luís Manuel Gomes Vieira
Luís Silvino Alves Marques
Manuel Filipe Pereira da Cunha Martins Costa
Manuel José Lima Ferreira Rodrigues
Maria de Fátima Guimarães Cerqueira
Maria de Jesus Matos Gomes (left in 2025)
Maria José Bastos Pires Lima (left in 2025)
Maria Madalena da Cunha Faria de Lira
Mário António Caixeiro de Castro Pereira
Mário Rui da Cunha Pereira
Marlene Susana Dionísio Lúcio
Marta Maria Duarte Ramos
Michael Scott Belsley
Miguel Faria Ribeiro
Mikhail Igorevich Vasilevskiy
Nuno Miguel Machado Reis Peres
Paulo José Gomes Coutinho
Paulo Rodrigues Botelho Fernandes
Pedro Libânio Abreu Martins
Pedro Costa
Ricardo Pedro Lopes Martins de Mendes Ribeiro
Rosa Maria Ferreira Batista
Rute Juliana Ferreira Macedo de Araujo
Sandra Maria de Braga Franco
Senen Lanceros-Mendez
Sérgio M. Cardoso Nascimento
Sylvie Oliveira Ribeiro
Stanislav Lazarov Ferdov
Tatiana Gabriela Rappoport (left in 2025)
Teresa Maria Santos Ribeiro Viseu
Vasco Manuel Pinto Teixeira
Yuliy Bludov
António Junior
Veniero Lenzy

Other affiliated members with PhD

Ana Rita Oliveira Rodrigues
Anabela Gomes Rolo
Anna Paula Safenraider Crema
António Mário Lourenço da Fonseca Almeida
Cristiana Filipa Almeida Alves
Diego Martinez Martinez
Eya Hergli
Filipe André Peixoto Oliveira
Flávia Vieira Barbosa
João Pedro Nunes Pereira
Jorge António Silva Mendes
Júlia Maria Simões Dias Barata de T. Ayres de Campos
Marcio Correa
Margarida Maria Macedo Francesko Fernandes
Maria Elisabete da Cunha Dias Real Oliveira
Maria Teresa Pitta de Lacerda-Arôso
Mário Jorge Dias Zamith Silva
Martin Andritschky
Nelson Miguel Macedo Silva Pereira
Pedro Filipe Ribeiro Costa
Peter Michael Schellenberg
Sandra Maria Fernandes Carvalho
Vasco Miguel Nina de Almeida
Kishor Sapkota

Member Engagements and Achievements

Conferences, Workshops and Seminars Organization

CIOCV25

22nd International Congress of Optometry and Vision Sciences
2025- Universidade do Minho; Espaço Vita, 24-25th May 2025

CONTACTUM2025

19ª Jornada Científico-técnica de Contactologia – february 6, 2025. On-line event with 400 participants, 1 international invited speaker and 7 industry sponsors.

DCE 2025 – Doctoral Congress in Engineering Physics, FEUP, Porto, Portugal, 30 June – 1 July 2025, Member of the Scientific Committee: Bernardo Almeida.

DCE 2025 – Doctoral Congress in Engineering Physics, FEUP, Porto, Portugal, 30 June – 1 July 2025, Member of the Evaluation Committee of Eng. Physics Symposium: Bernardo Almeida.

CIOCV2025 – 22th International Congress of Optometry and Vision Sciences 2025, Espaço Vita (Braga), 24-25 May 2025; <https://ciocv.fisica.uminho.pt/>

- Member of the Scientific Committee: Elisabete M.S. Castanheira

CMD31 - General Conference of the Condensed Matter Division of the European Physical Society, Braga, September 2–6, 2025; <https://cmd31.sci-meet.net/>

- Co-Chairman: Bernardo Almeida;

- Members of the Organising Committee: Rosa Baptista; Luís Rebouta; Bruna Silva; Anabela Rolo;

- Organization of “Quantum Plasmonics” session: Yu. Bludov;

Biophysics Festival – 4th Meeting of Young Biophysicists, Covilhã (Portugal), May 2025; <https://pybphy.wixsite.com/biophysics-festival>.

- Member of the Scientific Committee: Marlene Lúcio.

RICI X - 10th Iberian Meeting on Colloids and Interfaces, Coimbra (Portugal), June 2025; <https://rici10.events.chemistry.pt/>

- Member of the Scientific Committee: Marlene Lúcio.

- Organization of Minicolloquium “Environmental Nanomaterials for Energy production and Storage”: Bernardo Almeida, Rosa Baptista;

- Chairman of General Topics - Session I: Bernardo Almeida.

Awards and achievements

Madalena Lira. Nomeada pela Agência Nacional Ciência Viva para integrar o livro Mulheres na Ciência – 5.ª edição (2025), promovido pela Agência Nacional Ciência Viva.

Sérgio R. S. Veloso: Best PhD Thesis 2024 of School of Sciences, Distinction received at 50th Anniversary of School of Sciences, February 2025.

Best Poster Award: “Plasmonic nanolipogels for combined chemo/phototherapy of cancer”, Filipa Costa-e-Sá, A. Granja, Elisabete M. S. Castanheira, Sérgio R. S. Veloso, 18º Encontro de Investigação Jovem da U.Porto – IJUP 2025, University of Porto, 7-9 May 2025.

A. Valéria Gomes, Fulbright grant 2025 for a stay of 4 months at Brandeis University, USA;

<http://www.fulbright.pt/fulbrighters/bolseiros/ano-academico-2025-2025/valeria-gomes/>

Flavonoids and omega-3 fatty acid-loaded lipid nanocarriers as promising antimicrobial biofilm strategies; Ana Beatriz Pereira, Mariana Terroso, Marlene Lúcio, Carla M. Lopes, Maria P. Ferraz. Best poster prize at Biophysics Festival – 4th Meeting of Young Biophysicists, May 2025, Covilhã (Portugal).

Prémio Jovem Investigador/melhor artigo científico no XX International Conference of Building Patology and Constructions Repair (CINPAR), May 29-31, 2025, Fortaleza, Ceará, Brasil. “Assessment of self-cleaning properties on concrete façade panels”. Iran Rocha Segundo; Fabíula Lessa; Orlando Lima Júnior; Élda Margalho; Joaquim Carneiro.

Prémio ANPET de Produção Científica no 38º Congresso de Pesquisa e Ensino em Transportes - Associação Nacional de Pesquisa e Ensino em Transportes (ANPET), 8 de Novembro de 2025, Florianópolis, Santa Catarina, Brasil. “Análise da capacidade autolimpante de tintas de sinalização horizontal modificadas com nano-TiO₂”. Orlando Lima Jr., Iran Rocha Segundo; Laura Nascimento Mazzoni; Elisabete Freitas; Joaquim Carneiro.

Editorial board members

João M.M. Linhares - Optics Express Associate Editor (Optica, IF 3.3) , indexed in SCOPUS and Web of Science - Science Citation Index Expanded (SCIE).

Bernardo Almeida - Member of the Editorial Advisory Board of Europhysics News, from the European Physics Society.

Paulo J. G. Coutinho: Member of the Editorial Board of the journal Materials (MDPI), indexed in SCOPUS and Web of Science.

Outreach Activity

The Centre members participate in several science dissemination activities:

Demonstration of visual illusions, optical phenomena and visual perception (Science of Vision and Colour laboratory).

Public color vision assessment and classification, a permanent service from the Science of Vision and Colour Laboratory.

Universidade de Portas Abertas 2025. “Visão 3D: do sistema visual à realidade Virtual”, Campus de Gualtar, Braga (Sandra Franco)

Talk

“O olho humano: um sistema ótico (im)perfeito”. EB2,3 de Ponte da Barca (Sandra Franco)

Madalena Lira e Jorge Jorge. VISÃO SEM SEGREDOS: O IMPACTO DA VISÃO NO RENDIMENTO DOS ATLETAS. II Encontro Mais Ciência, Melhor Cidadania. 7 de maio de 2025. Centro Cultural Vila Flor. Anfitriã Catarina Lourereiro, comunicadora de ciência. Bernardo Almeida, “Eletromagnetismo e Campos na Matéria”, Workshop during students visits to Minho University, Students from Escola Secundária de Maximinos, 16 January 2025.

Bernardo Almeida, “Eletromagnetismo e Campos na Matéria”, Workshop during students visits to Minho University, Students from Escola Secundária de Carlos Amarante, 3 and 7 February 2025.

Bernardo Almeida, “Eletromagnetismo e Campos na Matéria”, Workshop during students visits to Minho University, Students from Escola Secundária de Felgueiras, 24 April 2025.

Elisabete M. S. Castanheira Coutinho, “Vem Experimentar Biofísica e Bionanossistemas!”, Workshops in the Summer Week “Verão no Campus 2025”, University of Minho, 24 July 2025.

UPA - Universidade do Minho de Portas Abertas: “Já ouviste falar em supercondutores? E em levitação? Anda aqui espreitar!”, Experimental demonstrations, 4 April 2025 (Bernardo Almeida and Bruna Silva)

VEM – Vamos Experimentar a UMinho 2025: “Ablação laser e electrospinning para preparação de nanoestruturas”, 17 – 19 december 2025 (Bernardo Almeida, Tiago Rodrigues and Daniela Santos)

Sérgio R. S. Veloso, “Composite gels for orthogonal drug release”, Seminars of the Master Course in Biophysics and Bionanosystems, University of Minho, 16 October 2025.

Noite Europeia dos Investigadores 2025: Geração de energia sustentável para dispositivos de baixo consumo utilizados no dia a dia

Noite Europeia dos Investigadores: “Combinarte: Magnetoelctricidade ao serviço da Saúde, Energia e Tecnologia”

Noite Europeia dos Investigadores 2025, 26/09/2025, Braga, Portugal, ‘Impressão de soluções para descontaminação de água’.

"Noite Europeia dos Investigadores" com o tema sobre: "Baterias de iões de lítio", 2025

NEI 2025: Curar o Futuro: Biomateriais Inteligentes para Engenharia de Tecidos”, at “Noite Europeia dos Investigadores – SCIGLO – Science for Global Challenges

European Researchers’ Night 2025: “Curar o Futuro: Biomateriais Inteligentes para Engenharia de Tecidos”.Braga, Portugal (26-09-2025).

"Materials derived from natural sources and their application in the field of sensors" - Summer on Campus 2025 (Verão no Campus 2025).

UPA- UMinho de Portas Abertas com a atividade Geração de Energia

Verão no Campus com a atividade: - Materiais inteligentes para uma sociedade digitalizada e sustentável

Verão no Campus 2025, 21/07/2025-25/07/2025, Braga, Portugal, Organização da atividade 'Supermateriais para purificar águas contaminadas'

Verão no Campus 2025, 21/07/2025-25/07/2025, Braga, Portugal. 'Supermateriais para purificar águas contaminadas'

Pedro Costa, VEM- Vamos Experimentar a Uminho com a atividade - Sensores piezoelétricos e sistemas de produção de energia

Rui Carvalho, VEM2025 (Vamos Experimentar a Uminho 2025): "Sensores magnéticos e magnetoelétricos"

Pedro Costa, Palestra realizada no CFUM para a alunos do secundário do Agrupamento de Escolas do Concelho de Caminha com o título: Sensores e geradores de energia sustentáveis para monitorizações quotidiana

Participação no curso Avançado Biopolymers based on renewable resources: from synthesis to applications, coordenado por Raul Machado; Pedro Martins ; Margarida Casal

Com a TP1- Propriedades mecânicas, por Pedro Costa e Luís Amorim a 18 de Junho de 2025.

Pedro Manuel Martins, À Conversa com – Pedro M. Martins, "Nova geração de materiais para a remoção de contaminantes emergentes na água", Águas do Norte, online, 05/12/2025.

Seminário, Mestrado em Biofísica e Bionanosistemas: "Physical-chemical characterisation of nanomaterials for advanced applications", Pedro Martins, Universidade do Minho, 09/12/2025.

Ciência ao almoço: " Multifunctional Materials for Water Purification: Advanced Solutions for a Cleaner Planet", Pedro M. Martins, 28/02/2025, Escola de Ciências, Universidade do Minho.

Rui Carvalho, Escola Ciência Viva de Braga – "Encontro com o cientista"; Exposição comemorativa dos 50 anos da ECUM: "Super Materiais: O Mundo Mágico do Magnetismo e da Energia Invisível"

Carlos J Tavares: Noite Europeia dos Investigadores 2025 (NEI2025), Materiais termoelétricos para a conversão de calor em eletricidade, FORUM BRAGA, 26 de setembro de 2025.

Lançamento de minifoguete experimental – actividade de campo realizada no âmbito das comemorações do DIA da EUROIPA, visando a disseminação científica dirigida aos estudantes do 11º e 12º ano de escolaridade. Parque da Devesa, Vila-Nova de Famalicão, 9 de Maio de 2025 (Joaquim Carneiro, Manuel Filipe Costa, Iran Segundo).

Manuel Filipe Costa, 13ª Feira de Ciências Hands-on Science, Braga, 7 de Março de 2025.

Ação de divulgação de ciência e tecnologia (responsável)

Manuel Filipe Costa, 9º Concurso "À Descoberta da Luz", Braga, 7 de Março de 2025.

Ação de divulgação de ciência e tecnologia (responsável)

Manuel Filipe Costa, 14ª Feira de Ciências Hands-on Science, Viana do Castelo, 6 de Maio de 2025.

Ação de divulgação de ciência e tecnologia (responsável)

Pedro Martins: Investigadores voltam à escola 2025, Materiais electro e magnetoáticos para sensores e energia para Materiais electro-magnetoativos, da alma da Terra ao pulso da vida: sensores, energia e aplicações biomédicas, Escola Básica e Secundária de Airões, Felgueiras, 29/10/2025

Pedro Martins: Encontro Com o Cientista, O Magnetismo: o que é? Onde está? Para que serve?, Planetário - Casa da Ciência de Braga, 25/3/2025

Pedro Martins: Encontro Com o Cientista, O Magnetismo: o que é? Onde está? Para que serve?, Conservatório de Música Calouste Gulbenkian, Braga, 24/3/2025

VAMOS EXPERIMENTAR A UMINHO, Sensores magnéticos e magnetoelétricos UMinho, 17-19/12/2025

Pedro Martins: Verão no Campus 2025, Escola de Ciências, Sensores magnéticos e magnetoelétricos, 21-25/7/2025

Pedro Martins: Noite Europeia dos Investigadores 2025, Altice Forum, Braga, 19/11/2025, CombinArte: Magnetolectricidade ao serviço da saúde, energia e tecnologia

Lectures in high schools and other research awareness activities

Carlos Costa: “Conversar com um Cientista” da Escola Ciência Viva de Braga, 2025

Carlos Costa, Investigadores voltam à escola, Escola Básica e Secundária de Cabeceiras de Basto_21-03-2024, Baterias sustentáveis de ião-lítio

Carlos Costa, DAS NECESSIDADES ENERGÉTICAS AOS PROBLEMAS AMBIENTAIS : ONDE ESTAMOS E PARA ONDE CAMINHAMOS, 24 de Janeiro de 2025, Agrupamento de Escolas de Real

Teresa Almeida, Estela Carvalho; Lecture for Escola Secundaria Rodrigues de Freitas' students on the topic "Nanotechnology: what it is, where we are and where we are heading", at the University of Minho, Braga (07-02-2025).

Teresa Almeida. Estela Carvalho; Lecture for Escola Secundária Henrique Medina's students on the topic “Nanotechnology: what it is, where we are and where we are heading”, at the University of Minho, Braga (29-01-2025).

Estela Carvalho- "Curar o Futuro: Biomateriais Inteligentes para Engenharia de Tecidos" at European Researcher's Night 2025 (2025/09/26 - 2025/09/26)

Sofia Castro, Two presentations on “Development of sustainable materials to remove pollutants from water” in Secondary school (Esposende and Lordelo, Portugal)- “Investigadores voltam à escola”

Clarisse Ribeiro

- Participation in the programme “Researchers Return to School”. Talk delivered at Escola Básica e Secundária de Airões (Felgueiras), as part of the national initiative connecting researchers with secondary schools. Presentation topic: Active

and multifunctional biomaterials for tissue engineering and cancer therapies.

- Educational outreach activity within the 50th Anniversary Exhibition of the School of Sciences, held at the Famacção Bus Station (1st grade, AECCB).

- Educational outreach activity for primary school students (3rd and 4th grades, EB1 Este S. Mamede).

Luis Amorim Curso Avançado - “Biopolymers based on renewable resources: from synthesis to applications”, TP1- Propriedades mecânicas, por Pedro Costa e Luís Amorim, com coordenação de Raul Machado, Pedro Martins e Margarida Casal, 18 de Junho de 2025.

Luis Amorim, “Super Materiais: O Mundo Mágico do Magnetismo e da Energia Invisível” (Escola Básica de 1.º CEB de Polvoreira - Guimarães)

Luis Amorim: Symposium – “Sustainable Composites Bio-resins, Natural Fibers, and Recycled Synthetics”, Blended Intensive Programme (BIP), Porto, Portugal, 15 de Maio, 2025

Carlos J Tavares: Nanomateriais para a Saúde, Energia e Meio Ambiente, palestra realizada na Escola Secundária Santos Simões, Guimarães, para estudantes do ensino secundário, 21 de novembro de 2025.

Pedro Martins: Lectures in high schools Super Materiais: O Mundo Mágico do Magnetismo e da Energia Invisível, Escola Básica da Polvoreira, Guimarães, 4/4/2025

Pedro Martins: Lectures in high schools Super Materiais: MATERIAIS MAGNÉTICOS E MAGNETOELÉTRICOS: DO ÍMAN AO HOSPITAL, Escola Básica da Polvoreira, Guimarães, 4/4/2025

Luís Cunha “Consegue um Físico despir o fato de Físico? A docência, a investigação, a interação, a gestão e ... os hobbies” Escola Secundária de Vila Nova de Cerveira

Research Laboratories

Laboratory – location	Line	Responsible
Biophysics – Gualtar	2	Paulo José Coutinho
Ceramics Research – Azurém	3	Mário António de Castro Pereira
Computational Physics – Gualtar	3	Luís Silvino Alves Marques
LMISE – Laboratório de Inovação em Materiais Inteligentes e Sustentáveis Emergentes– Azurém	3	Joaquim Carneiro
Crystal Growth – Gualtar	2	Bernardo Gonçalves Almeida
Dielectric Properties – Gualtar	2	Bernardo Gonçalves Almeida
Electromechanical properties of materials – Azurém	3	Senen Lanceros-Mendez/Filipe Vaz/Armando Ferreira
Femtosecond Laser Spectroscopy –Gualtar	2	Michael Scott Belsley
Fluorescence Lifetimes - Gualtar	2	Mário Rui da Cunha Pereira
Functional Coatings I – Azurém	3	Martin Andritschky
Functional Coatings II – Azurém	3	Luís Rebouta
Functional Coatings III – Azurém	3	José Filipe Vilela Vaz
Magnetic and Electromechanical Properties – Gualtar	2	Bernardo Gonçalves Almeida
Materials Processing – Azurém	3	Stanislav Lazarov Ferdov
Microtopography – Gualtar	3	Manuel Filipe Costa
Visual Optics and Ophthalmic Instrumentation – Gualtar	1	Sandra Maria Braga Franco
Optoelectronics – Azurem	3	Carlos José Tavares
Photoconductivity – Gualtar	2	Maria de Fátima Cerqueira
Photophysics I – Gualtar	2	Elisabete Coutinho
Photophysics II – Gualtar	2	Elisabete Coutinho
Preparation – Azurém	3	Stanislav Ferdov
Preparation I – Gualtar	2	Elisabete Coutinho
Preparation II – Gualtar	3	Bernado Almeida
Raman Spectroscopy and Photothermal Measurements – Gualtar	3	Francisco Macedo
Clinical and Experimental Optometry Research Lab (CEORLab) - Electrophysiology Research Lab - Gualtar	1	José González Meijome / Paulo Fernandes
Science of Vision and Colour – Gualtar	1	João Manuel Maciel Linhares
Surface analysis – Azurem	3	José Filipe Vilela Vaz
Thin Films I – Gualtar	3	José Pedro Basto Silva
Thin Films II – Gualtar	3	Mário António Castro Pereira
Visual Rehabilitation – Gualtar	1	António Manuel Baptista
Electrophysiology Research Lab	1	Paulo Fernandes / José González Meijome
Clinical and Experimental Optometry Research Lab (CEORLab) - Gualtar	1	José González Meijome / António Queirós
Clinical and Experimental Optometry Research Lab (CEORLab) - Famalicão	1	José González Meijome / António Queirós
Applied Optics Laboratory	2	Luis Rebouta
Raman Imaging and 2D Materials and Devices - INL	2	João Pedro Alpuim
Visual Rehabilitation – Gualtar	1	António Manuel Baptista

Supervision of Research Students

PhD completions in 2025

Name	Supervisor	Title	Doctoral Program
Jessica Rafaela Gomes	Supervised by Sandra Franco	Real-time measurement of ocular and internal wavefront aberrations of the eye during accommodation	Optometry and Vision Sciences
Iñaki Blanco Martinez	Supervised by Miguel António Faria Ribeiro, José M. González Méijome	From Optical Surface Characterization to Retinal Modelling: A Physical Theory of Central and Peripheral Ocular Refraction	PhD Program Optometry and Vision Sciences
Maria Mechó Garcia	Supervised by Paulo Fernandes, Rute J. Macedo de Araújo, Jos Rozema	Statistical wavefront model of accommodation: analysis and synthesis	PhD Program Optometry and Vision Sciences
Bruna Machado da Silva	Supervised by Bernardo G. Almeida, Armandina Lopes (IFIMUP), João Pedro Araújo (FCUP)	Naturally Layered Perovskite Heterostructures	PhD in Physics MAP-Fis
José Diogo da Costa Guimarães	Supervised by Mikhail Vasilevskiy, Luís S. Barbosa (DEI/EEUM), Martin B. Plenio (University of Ulm, Germany).	Simulation of open systems using near-term quantum computers with applications to the energy transport in photosynthetic systems	PhD in Physics MAP-Fis (co-orientador estrangeiro)
Marta Sofia Vilela Barreira Teixeira	Supervised by M. Alice Carvalho (CQUM), Elisabete M. S. Castanheira Coutinho (CFUM)	Development of a drug carrier nanosystem for a new anticancer drug and optimization of the new drug	PhD in Chemistry
Rafael Wagner	Supervised by Mikhail Vasilevskiy, Rui S. Barbosa (INL), Ernesto Galvão (INL)	Coherence and contextuality as quantum resources	PhD in Physics MAP-Fis
Yelko del Castillo Hernández	Supervised by Joaquín F. Rossier (INL), Nuno Peres	Theory of ESR-STM as a probe of surface-spin quantum magnetism	PhD in Physics MAP-Fis (co-orientador estrangeiro)
Henrique Emanuel Araújo Silva	Supervised by Andreia Gomes (CBMA), Marlene Lúcio (CFUM)	2G4CANCER – Green graphene/lipid nanosystems for cancer imaging and treatment PhD in Molecular and Environmental Biology	
Maria João Fernandes Faria	Marlene Lúcio (CFUM), M. Elisabete C.D. Real Oliveira, G. Carracedo (Univ. Complutense Madrid)	MeYeDEAR – Monoolein-based EYE DELivery systems for Age-related Retinopathies PhD in Optometry and Vision Sciences (co-orientador estrangeiro)	
Patrícia Alexandra Pereira da Silva	Supervised by Joel Borges, Ana Paula Sampaio Carvalho (CBMA)	ZnO-based thin films with antifungal properties to prevent surface cross-contamination PhD in Molecular and Environmental Biology	
Telma Campos Domingues	Supervised by João Pedro Alpuim, Bruno Costa (ICVS), J. Borme (INL)	Multiplex detection of circulating tumor DNA using graphene electrolyte-gate field-effect transistors PhD in Physics MAP-Fis (co-orientador estrangeiro)	
Ricardo José Silva Lima	Supervised by Pedro Costa, João Pereira, Senentxu Lanceros-Méndez	Advanced sensing polymer composites with self-healing capabilities for high responsibility applications Doctoral Program in Materials Engineering	

Rafaela Marques Meira,	Supervised by Clarisse Ribeiro, Senentxu Lanceros-Mendez, Daniela Correia,	Electroactive polymer materials based heart-on-a-chip as a novel approach for cardiac tissue engineering, Engenharia dos Materiais	
Joana Catarina Dias Moreira	Supervised by Margarida Fernandes, Daniela M. Correia, Senentxu Lanceros-Méndez	Physical active antimicrobial surfaces for preventing the spread of pathogenic microorganisms	
Rita de Magalhães Policia	Supervised by Daniela M. Correia, Pedro Martins, Senentxu Lanceros-Méndez	High-performance printable luminescent and chromic materials for improved device integration	
Ioana L. BORȘAN	Supervised by Daneil Muntenu and Filipe Vaz,	The influence of the structural architecture on the mechanical and tribological properties of TiN, (Ti,Al)N and (Ti,Si)N coatings PhD at Brasov, Romania	
Belgacem Tiss	Supervised by Luís Cunha and Diego Marínez	Deposition of UV-protective oxide films on complex substrates: Cork and Rubber	Engenharia de Materiais
Sara Martín Iglesias	Unai Silvan and Senentxu Lanceros-Méndez	Mechanisms regulating the cell response to the surface electric potential of biomaterials	UPV/EHU
Amaia Zarandona Rodríguez	Qi Zhang and Senentxu Lanceros-Méndez	BiSI-Baser Catalysts for Water Remediation by Hybrid Advanced Oxidation Processes,	UPV/EHU
Esraa Samy Abu Serea Sewlam	Javier Reguera and Senentxu Lanceros-Méndez	Unraveling the power of gold nanostars. From the ultrasmall and multicomponent nanostars to their use in advanced applications,	UPV/EHU
Pedram Ghorbanzade	Juan Miguel López del Amo and Senentxu Lanceros-Méndez	Investigating the role of interphases in composite electrolytes by solid-state NMR,	UPV/EHU

PhD projects in progress at December 31, 2025

Name	Supervisor	Title	Doctoral Program
Dana Swidan	Jorge Jorge, Madalena Lira	Computer Vision Syndrome in The Role of Contact lenses	Optometry and Vision Sciences
Dora Nazaré Marques	Sérgio M.C. Nascimento e João M.M Linhares	Environmental spectral statistics and brain plasticity – testing hypotheses about the mysterious vision of X-linked forms of colour vision deficiencies	Optometry and Vision Sciences
Eduardo Insua Pereira	Madalena Lira e Paula Sampaio	Evaluation of cytotoxic potential and inflammatory response induced by contact lenses	Optometry and Vision Sciences
Elaine Costa	Sandra Franco	Virtual reality and the visual systema	OCV
Fabiana Sousa	Madalena Lira	Impact of Hormonal modulation on the Tear Film, Ocular Surface and surgical outcomes	Optometry and Vision Sciences
Fatima Zahid	José M. González Méijome, Paulo Fernandes	Association Between Migraine and Ocular structures and Functions	Optometry and Vision Sciences

Filipe Miguel Gonçalves da Silva	Madalena Lira, João Linhares	The influence of ocular and external factor in measuring intraocular pressure	Optometry and Vision Sciences
Inês Pinheiro	António Queirós Paulo Fernandes	Night Myopia: Prevalence, Mechanisms and Impact on Road Safety	Optometry and Vision Sciences
José Alexandre Monteiro	João M.M Linhares e Sérgio M.C. Nascimento	Neural networks applied to the preservation and restoration of artistic paintings.	Optometry and Vision Sciences
Moazam Hussain	Jorge Jorge	Integrating AI-Driven Tele-Neuro-Optometry in Post-Stroke Vision Therapy: A Public Health Approach to Enhancing Rehabilitation Accessibility and Outcomes	Moazam Hussain
Pedro Tiago Jesus	Jorge Jorge	O Efeito da compensação das disfunções acomodativa/vergençiais na progressão da miopia	Optometry and Vision Sciences
Rita Maria Martins Alves	Fernanda Cássio, Madalena Lira, Ana Vera Machado	Contact lens materials: An ecosystem issue and a contribution to a circular economy	Molecular and Environ. Biology
Rita Seco	Rute J. Macedo de Araújo, José M. González-Méijome	Fluctuation of Intraocular Pressure in scleral lens wearers	Optometry and Vision Science
Sara Leite	Paulo Fernandes, José M. González Méijome	Evaluation of the potential of the retinal electrical activity as a biomarker for the development of myopia control treatments	Optometry and Vision Sciences
Timothy Albert	José M. González Méijome, Rute Araújo	Validation of an Italian Language Vision-Related Quality of Life Questionnaire and Evaluation of Corneal and Retinal Modifications in Patients with Keratoconus	Optometry and Vision Sciences
Alcinda Valéria Gomes Silva	Elisabete Maria dos Santos Castanheira Coutinho, Paula M.T. Ferreira (CQUM), David Pereira	Plasmonic dehydropeptide-based lipogels: functionalizing post-surgical patches against melanoma recurrence and metastases	Materials Engineering
Áureo Capuma Ucuajongo	Bernardo G. Almeida	Nanofibras compósitas por electrospinning para dosimetria	MAP-Fis
Cláudia Patrícia Vilela Teixeira	Marlene Lúcio, Carla M. Lopes (Fac. Ciências da Saúde, Univ. Fernando Pessoa), Raquel Branquinho (FCUP)	4R4CANCER – Rural collaboration, Resource Repurposing, and Recycled Nanomaterials for advanced ovarian CANCER theranostics	Materials Engineering
Daniela Filipa Magalhães dos Santos	Bernardo Gonçalves Almeida	Biofunctional Cyclic Dipeptide Nanofibers for Energy Harvesting and Nonlinear Optical Conversion	MAP-Fis
Daniela S. Costa	Joel Borges	Tailoring the nanostructure of Au-Ag/ZnO thin films for plasmonic sensing	Materials Engineering
Diogo Filipe Pinto Cunha	Mikhail Igorevich Vasilevskiy	Theory and modelling of two-dimensional materials and hybrid structures for nanophotonics	MAP-Fis
Fábio Alberto Costa Lopes	Paulo José Gomes Coutinho, Ana Rita Rodrigues, Paula Campello (C2TN/ULisboa)	Development of multifunctional magnetic/plasmonic nanosystems for combination therapy and radiosensibilization	Materials Engineering
Francisca Marçal Queiroz Pinheiro Guedes	Mário Rui Pereira (CFUM) Susana Costa (CQUM), Martin Lopez Garcia (INL)	Novel quantum materials inspired by natural photonic photosynthetic structures	Applied Chemistry
João Miguel Peixoto Oliveira	Bernardo Gonçalves Almeida	Multiferroic bilayer composites for coupled magnetic-electric-optical functionalization	MAP-Fis

Jorge Miguel Leite Gonçalves	Alice Maria Dias (CQUM), Paulo J. G. Coutinho (CFUM), Lígia Rodrigues (CEB)	Synthesis and evaluation of novel pyrimidine and purine derivatives as fluorescent probes for cancer diagnosis	Applied Chemistry
Marcelo Silva Barreiro	Andrei Postnikov (Univ. of Lorraine, Metz, France), Mikhail Vasilevskiy	Polariton-assisted energy harvesting in bio-inspired hybrid structures	University of Lorraine, France
Mariana Pereira da Silva	Alice Dias (CQ/UM), Paulo J. G. Coutinho (CF-UM-UP), Juliana Sousa (INL)	Smart sensing coatings for early corrosion detection	Applied Chemistry
Raquel Gaudência Dias Andrade	Elisabete Maria S. Castanheira Coutinho (CFUM), Cátia Pereira (CEB), Lígia Rodrigues (CEB)	Drug-loaded magnetoliposomes for triple negative breast cancer therapy	Materials Engineering
Ricardo Jorge Cunha Fernandes	Paulo J. Gomes Coutinho (CFUM), Luciana Pereira (CEB)	Photocatalytic degradation of PFAS under visible light: development of nanomaterials as novel photocatalysts and process scale-up	Materials Engineering
Sara Raquel Diniz Franco	Mikhail Vasilevskiy, Leonardo Novo (INL)	Scalable architectures for photonic quantum computers	MAP-Fis
Tiago Fernando Abreu Rodrigues	Bernardo Gonçalves Almeida, José Pedro Basto da Silva, João Pedro Araújo	Lead-free multiferroic heterostructures for enhanced magnetic field sensing	MAP-Fis
Ana Beatriz Ribeiro Camarinha	Cláudia Lopes	New Generation of Smart Dry Sensors with Triple-function for Neuromuscular Rehabilitation	Engenharia Biomédica - FEUP
Ana Sofia Ribeiro de Castro	Senen Lanceros Mendez	Nanocomposite membranes for water remediation and raw materials recuperation	Engenharia de Materiais
André Gustavo Silva de Macedo	Clarisse Marta Oliveira Ribeiro	Multiresponsive hydrogels as a novel approach for bone cancer therapies	Engenharia de Materiais
Bárbara Daniela Duarte Cruz	Senen Lanceros Mendez	Nanoparticle free functional materials for printable sensors	Engenharia de Materiais
Bhoomika Chelur Shivakumar	José Pedro Basto da Silva e Luís Silvino Alves Marques	Self-powered photodetectors based on ferroelectric thin films for IoT applications	MAP-Fis
Diana Margarida Ferraz Bogas	Clarisse Marta Oliveira Ribeiro	Spatially and temporally modulated active patches for skin cancer treatment	Map-Fis
Duarte José Martins Ribeiro	José Pedro Basto da Silva, Luís Silvino Alves Marques e Elizabeth C. Dickey (foreign supervisor)	Engineering Novel Ferroelectric Thin-films for Low-power Memory and Energy Storage Dual Operation	Engenharia de Materiais
Eduardo José de Sousa Pimetel	Daniel António da Silva Miranda	Printable piezoresistive materials based on natural polymers for medical device application	Engenharia de Materiais
Élida Melo Margalho	Elisabete Fraga de Freitas	Demonstration of the impacts of photocatalytic asphalt pavements	Engenharia Civil
Elmahdi Amar	Carlos José Tavares (UMinho), Sascha Sadewasser (INL)	Characterization of single-photon emitting defects in 2D materials by scanning probe microscopy	MAP-Fis

Fabiúla Pereira Leça	Joaquim Carneiro (CF-UM-UP)	Development and Evaluation of Photocatalytic and Adsorptive Pervious Concrete	Engenharia de Materiais
	Iran Rocha Segundo (CERIS)	Pavements for Sustainable Urban Infrastructure	
	Ricardo Simões (CCDRN)		
Igor Samuel Peixoto Gomes	Joaquim Carneiro (CF-UM-UP)	Affordable Air Quality Monitoring for Effective Urban Planning: A Case Study in Northern Portugal	Engenharia de Materiais
	Carlos Costa (CF-UM-UP)		
	Ricardo Simões (CCDRN)		
Joana Marina Silva Queirós	Senen Lanceros Mendez	Wide range polymeric membranes towards water remediation of contaminants of emerging concern	Engenharia de Materiais
João Dinis Castro Alves	Senen Lanceros Mendez	Advanced 3D printed multi-layered multi-functional hybrid membranes for wide range water remediation.	Engenharia de Materiais
João Pedro Cruz Serra	Senen Lanceros Mendez	Natural polymer based multifunctional materials for sensing applications	Engenharia de Materiais
Juliana Filipa Gouveia Marques	Carlos José Macedo Tavares	Difusão controlada de compostos ativos de microcápsulas mediada por ativação solar	Engenharia de Materiais
Kateryna Oleksandrivna Shvydyuk	Abílio Manuel Pereira da Silva	Self-sensing and self-healing ceramic composites using functionally graded materials and additive manufacturing technologies for thermal barrier coatings in aerospace applications	Engenharia Mecânica
Maria Inês Fernandes Monteiro	Renato Ferreira Gonçalves	New smart batteries with self-sensing capabilities for enhanced lifespan and safety	Engenharia de Materiais
Misha Khalid	Michał Pawlak (Nicolaus Copernicus University), Carlos José Macedo Tavares	Thermoelectric properties of ZnO:Sb, Bi transparent films	Nicolaus Copernicus University (Poland)
Nathalia Hammes	Joaquim Carneiro (CF-UM-UP)	Multistructured Fibres Loaded with Phase Change Materials for Smart Civil Engineering Structures	Engenharia de Materiais
	Iran Rocha Segundo (CERIS)		
	Helena Felgueiras (2C2T)		
Nuno Manuel Estrócio e Silva	José Pedro Basto da Silva e Luís Silvino Alves Marques	Exploring ferroelectric and antiferroelectric behaviours in binary oxides thin film capacitors for energy storage	MAP-Fis
Orlando de Sousa Lima Júnior	Elisabete Fraga de Freitas (ISISE)	Color-based road nanosensors based on thermochromic and self-cleaning abilities	Engenharia Civil
	Joaquim Carneiro (CF-UM-UP) Iran Segundo		
Omar Karam Mounsif	Veniero Lenzi, Luís Silvino Alves Marques	Predictive modelling of novel material heterostructures for energy harvesting	MAP-FIS
Rui Miguel Gonçalves Carvalho	Pedro Libânio de Abreu Martins	SuSprinting: Sustainable materials and technologies for printable spintronic applications	Engenharia de Materiais

Surya Kiran Puravankara Nair	José Pedro Basto da Silva, Luís Silvino Alves Marques e José Tiago Macedo de Carvalho	Superparaelectric state design from Relaxor Ferroelectric Thin Films for Energy Storage Capacitors	MAP-Fis
Talita Nicolau de Oliveira Vidal de Negreiros	Andrea Zille (UMinho), Carlos Carlos José Tavares (UMinho), Nuno Osório (UMinho)	The development of synergistic ozone and light-emitting diode activation system for the disinfection of fiber-based materials	Doutoramento Maria de Sousa – 2022 (FCT)
Alexandre Daniel Mendonça Faria da Silva	Luís Silvino Alves Marques, Veniero Lenzi	Emergence of novel properties at the interfaces in oxide heterostructures and superlattices	MAP-Fis
André de Albuquerque Rino Loureiro de Amorim	Miguel Faria Ribeiro	Improving Objective Contrast Sensitivity Function Estimates Using Anterior Segment Optical Coherence Tomography Densitometry Data	Optometry and Vision Sciences
Anita Camillini	Ernesto Galvão (INL), Michael Belsley	Architectures for scalable quantum photonic computing	MAP-Fis
Eloy Arroyo	Jorge Jorge	Effectiveness of orthokeratology treatment in myopic children from Quito-Ecuador	Optometry and Vision Sciences
Francesco Viviano	José M. González Méijome e Rute J. Macedo-de-Araújo	Scleral lens fitting in keratoconus patients	Optometry and Vision Sciences
Ghulam Muhammad	António Queirós; Paulo Fernandes	The impact of digital device use on myopia incidence and progression in children and adolescents.	Optometry and Vision Sciences
Giorgia Schmidt de Siqueira	José Filipe Vilela Vaz; Armando Ferreira	Next-Generation Cutting Tools: Enabling In-situ Process Monitoring through Nanostructured Multimodal Sensor Networks	Engenharia de Materiais
Isabel Alves Lopes	Rui Vilar, Luis Rebouta	Optical and tribological properties of femtosecond laser nanotextured surfaces	AdvaMTech
James Caleb Peters	João Pedro Santos Hall Agorreta Alpuim	Correlation of transport and structural properties of Graphene and Bismuth Telluride as a function CVD growth parameters	MAP-Fis
João Duarte Gonçalves Azevedo	Bruno Romeiro, Michael Scott Belsley	Development of nanophotonic computational devices inspired by neural circuits in insect brains	Map-Fis
Jorge Manuel Pereira Sousa	Elisabete Fraga de Freitas , Joaquim Alexandre dos Santos Almeida de Oliveira Carneiro	Incorporation of Composite Phase Change Materials into Asphalt Mixtures for Cooler Pavements	Engenharia Civil
Luís Proença Oliveira	Jorge Jorge	Estudo da influencia da Visão no atletismo	Optometry and Vision Sciences
Mafalda Inês Gonçalves de Abrantes	João Pedro Santos Hall Agorreta Alpuim	Graphene nanobioelectronics for neural interfacing	Engenharia de Materiais
Marina do Carmo Alves	Sascha Sadewasser, Joaquim Alexandre dos Santos Almeida de Oliveira Carneiro	Fabrication and characterization of micro-concentrator solar cells based on Cu(In,Ga)Se ₂	Engenharia de Materiais

Muhammad Qasim	Paulo Fernandes Jorge	Electroretinogram as a tool to measure efficacy in management of myopic young adults	Optometry and Vision Sciences
Nelsson Fernandez da Cunha	José Carlos Viana Gomes, Luis Rebouta	Design and construction of a Rangefinder/LiDAR testbed	MAP-Fis
Nuno Pacheco	Luís Silvino Marques	Desenvolvimento de um sistema de gasificação por plasma para a conversão termoquímica de lammas de depuração	Mechanical Engineering
Osvaldo Gramaxo de Freitas	António Joaquim Onofre Abreu Ribeiro Gonçalves	Application of deep learning networks to GW astronomy	Map-Fis
Pedro Alexandre Ferreira Passos	António Joaquim Onofre Abreu Ribeiro Gonçalves	Search for Exotic Compact Objects in the Universe	Map-Fis
Rafael dos Santos Pinto	Carlos Miguel da Silva Costa	Two- and three-dimensional sustainable solid-state printed batteries for portable electronic devices	Engenharia de Materiais
Rui Guilherme Coelho Silva	João Pedro Santos Hall Agorreta Alpuim	Software Defined Antenna for THz Applications	Electrical Engineering
Simão Meneses João	João Manuel Viana Parente Lopes	Spectral Methods in Quantum Transport	
Solange da Silva Nunes	António Joaquim Onofre Abreu Ribeiro Gonçalves	Deep-Learning Classification and Parameter Inference of Rotational Core-Collapse Supernovae	Map-Fis
Tiago Alves Queirós	João Pedro Santos Hall Agorreta Alpuim	Single Photons on Demand from a 2D Material Heterostructure	MAP-Fis
Tiago Saraiva Fernandes	António Joaquim Onofre Abreu Ribeiro Gonçalves	Deep Learning for transient signals in gravitational-wave astronomy	Map-Fis
Vitor Filipe Henriques da Silva	Paulo Mendes (DEIC-UM), Pedro alpuim	Radio-frequency graphene technology oscillators for biomedical devices	Electrical Engineering

Master theses completed in 2025

Name	Supervisor	Title	Master Course
Ana Carolina Antunes Pereira	Madalena Lira e António Queirós	Relação Influência do Estilo de Vida, Alimentação e Fatores Comportamentais na Sintomatologia Relacionada ao Uso de Dispositivos Digitais: Uma Avaliação por Questionário	Advanced Optometry
Eduarda Cristina da Cruz Guimarães Duque	Madalena Lira	Avaliação dos hábitos dos usuários de lentes de contacto	Advanced Optometry
Joana Catarina Fernandes da Silva	Madalena Lira	Efeitos oculares adversos provocados por medicação sistémica e tópica ocular	Advanced Optometry
Joana Luzia de Barros Silva	Rute J.Macedo de Araújo, José M. González Méijome	Desenvolvimento e Aplicação de um Novo Método para Medir a Pressão Intraocular Durante o Uso de Lentes Esclerais	Advanced Optometry
Gonçalo Queirós Ferreira	Rute J.Macedo de Araújo, José M. González Méijome	Medida da distorção luminosa como	Gonçalo Queirós Ferreira
Leonel Alexandre Ribeiro Sacramento	Miguel A. Faria-Ribeiro, José M. González Méijome	Functional visual assessment with different designs of progressive ophthalmic lenses	Advanced Optometry

Henrique Campos	Jorge Jorge	Análise retrospectiva da efetividade das lentes oftálmicas com tecnologia de DefocusIncorporatedMultipleSegments(D.I.M.S.) no abrandamento da progressão da miopia infantil e juvenil em Portugal	Advanced Optometry
Marta Gama Lima Macedo Pimenta	Jorge Jorge	Relação entre os Movimentos Oculares e o	Advanced Optometry
João Rodrigues Pinheiro	Madalena Lira, Jorge Jorge	Avaliação do comportamento das lentes de contacto em atividades desportivas	Advanced Optometry
Sofia Peixoto Vale	Madalena Lira, Elisabete Coutinho	Estudos de transporte e libertação de fármacos em lentes de contacto	Advanced Optometry
Ana Rita Cardoso Moreira Rodrigues	Elisabete M.S. Castanheira Coutinho (CF-UM-UP), Alexandra Teixeira (INL)	Surface-Enhanced Raman Scattering (SERS) metabolomics profiling of breast cancer cells	Biophysics and Bionanosystems
Ana Carolina da Silva Fernandes Casal	Andreia Gomes, Marlene Lúcio	DODAB:MO lipid-based nanocarrier for theranostic delivery in triple negative breast cancer	Molecular Genetics
André Mendes Marinho	Ricardo Ribeiro, Nuno Peres	Electronic and optical properties of two-dimensional materials consisting of group VI elements	Physics
André Faria Pereira	Mikhail Vasilevskiy	Tightly-bound excitons in organic and inorganic materials for bio-inspired energy harvesting	Physics
Diana Elias Mendes Fernandes	Marlene Lúcio (CF-UM-UP), Carla M. Lopes (U. Fernando Pessoa)	Development of a biomimetic ungual model based on a multilayer nano-fibrous scaffold with lipid deposition for permeation studies	Biophysics and Bionanosystems
Edgar Barros Sousa	Michael Belsley, Joel Borges	Pulsed-Laser Fabrication of Gold Plasmonic Nanoparticles in Thin Films for LSPR Sensing Applications	Physics
Eva Sousa Marta	Elisabete M.S. Castanheira Coutinho, Sérgio R. S. Veloso	Gels based on natural polymers containing silver nanoprisms for combined cancer therapy	Biophysics and Bionanosystems
Filipa Costa e Sá	Elisabete M. S. Castanheira Coutinho (CF-UM-UP), Andreia Granja (FFUP)	Plasmonic nanolipogels for combined photo-thermia and photodynamic therapy	Applications of Synthetic Biology
Francisca Freitas da Silva	Marlene Lúcio (CF-UM-UP), Helena Amaral (UPorto)	Functionalized lipid nanosystems as therapeutic strategies for photoaging and chronological skin aging	Biophysics and Bionanosystems
Jorge Biangue Vidal	Carlos Tavares, Fátima Cerqueira	Desenvolvimento de elétrodos na forma de filme fino de LaSrCoFeO ₃ para a divisão catalítica da água	Physics
Mariana Oliveira Nunes	Carla M. Lopes, Marlene Lúcio	Aplicação tópica dos canabinoides no controlo das lesões cutâneas	Pharmaceutical Sciences
Samuel Bastos Soares	Carla M. Lopes, Marlene Lúcio	Modelos Miméticos da Unha utilizados para o Estudo da Permeabilidade de Compostos Bioativos em Onicomioses	Pharmaceutical Sciences
Sofia Peixoto Vale	Madalena Lira, Elisabete M.S. Castanheira Coutinho	Behaviour of contact lenses incorporating drug-loaded Chitosan/Hyaluronic Acid nanoparticles	Advanced Optometry
Pedro Miguel Pereira Abreu	Sérgio Abílio Pereira Gonçalves, Flora José da Rocha Ferreira	Manipulação de uma mão robótica utilizando Deep Reinforcement Learning	Mestrado em Engenharia Eletrónica Industrial e Computadores
Catarina Isabel Vila Nova Oliveira	Clarisse Ribeiro, Vitor Correia	Electric trigger for controlled drug release through smart scaffolds	Engenharia Física
Bruno Filipe dos Santos Malta Pereira	Clarisse Ribeiro, Pedro Martins	Fibras Funcionais Condutoras para Microambientes de Estimulação e Regeneração Cardíaca	Engenharia de Materiais
Sofia Daniela Tenreiro Oliveira	Pedro Martins, Clarisse Ribeiro	Mimetização da Piezoelectricidade e Porosidade do Osso	Engenharia de Materiais
Samuel Sequeira	Carlos M. Costa, Senentxu Lanceros-Mendez	Métodos de descarregamento de baterias por via húmida para processos de reciclagem	Engenharia de Materiais
José Pedro Ribeiro	Pedro Martins, Senentxu Lanceros-Mendez	Nova geração de membranas poliméricas fotocatalíticas com porosidade customizável	Engenharia de Materiais

Tiago Crispim	Carlos José Tavares (UMinho), Marcus Osslander and Anna Kulter (Universidade de Graz)	Development of a Transmissive Blazed Grating for EUV Metaoptics	Engenharia de Materiais
Ângelo Miguel Sanches Silva	António Paleo Vieito (2C2T – UMinho) e Carlos José Tavares	Teste de diferentes tintas comerciais baseadas em carbono para têxteis termoeletrônicos	Engenharia de Materiais
Jorge Biangue Vidal	Carlos José Tavares e Fátima Cerqueira	Desenvolvimento de elétrodos na forma de filme fino de LaSrCoFeO_3 para a divisão catalítica da água	Mestrado em Física
Inês Peixoto Ferreira	Nicoleta Nicoara (INL) e Carlos José Tavares	Estudo em nanoescala sobre o papel das camadas buffer $\text{Zn}_{1-x}\text{Sn}_x\text{O}_y$ (ZTO) no desempenho das células solares de filmes finos CIGSe	Mestrado em Engenharia Física
Andreia Antunes Oliveira	Sascha Sadewasser (INL) e Carlos José Tavares	Filmes de ZnxSnO3-x feitos por CBD para camadas buffer para células solares de filmes finos	Mestrado em Engenharia Física
Daniel António Coelho de Sousa	Carlos Rosário (INL) e Carlos José Tavares	Explorando novos dispositivos eletrônicos baseados em isoladores topológicos	Mestrado em Engenharia Física
José Miguel Pires Monteiro	Joaquim Carneiro, Iran Rocha Segundo	Desenvolvimento de fibras coaxiais compostas por materiais de mudança de fase para a termorregulação de estruturas de Engenharia Civil	Ciências e Tecnologias do Ambiente: Área de Especialização em Energia
Maria João Ribeiro Vieira	Filipe Vaz	Investigação Experimental das Aplicações do Nanoindentador	Engenharia de Materiais
Maria João Vara Neiva	Filipe Vaz	Otimização do fabrico de cátodos LFP através da técnica de pulverização catódica para construção de baterias de filmes finos	Engenharia de Materiais
Carolina Fernandes Ferreira Novais de Carvalho	Filipe Vaz	Revestimentos anti-corrosão para armazenamento de hidrogénio	Engenharia de Materiais
Carolina Rodrigues Durães	Cláudia Lopes	Investigation of corrosion resistance in dry biopotential electrodes designed for neuromuscular rehabilitation	Engenharia de Materiais
Matilde Miguel Gato Santos Oliveira	José Pedro Basto da Silva e Luís Silvino Alves Marques	Superredes à base de materiais ferroelétricos e paraelétricos para o armazenamento de energia	Physics
Duarte José Martins Ribeiro	José Pedro Basto da Silva e Mário António Caixeiro de Castro Pereira	Fabrico e Caraterização de Filmes Finos Ferroelétricos	Mestrado Integrado em Engenharia de Materiais
Alessandra Alves	Graça Vasconcelos (DECiv) e Mário Pereira (DF)	Argamassas Gesso & Cal: Propriedades e aplicações	Mestrado Integrado em Engenharia de Materiais
Miguel Branco	Manuel Filipe Costa	Desenvolvimento do processo de produção de lentes em suportes multifunções	Eng. Física
Sofia Daniela Tenreiro Oliveira	Pedro Martins, Clarisse Ribeiro	Mimetização da Piezoelectricidade e Porosidade do Osso	Mestrado em Engenharia Materiais
Bruno Filipe dos Santos Malta Pereira	Pedro Martins, Clarisse Ribeiro	Sistemas Eletroactivos Condutores para Estimulação e Regeneração Cardíaca	Mestrado em Engenharia Materiais
Rafael Ferreira da Cunha	Luís Cunha, Luís Silvino Marques	Deposition of Metallic Oxide Thin Films for UV Protection of Challenging Substrates via Magnetron Sputtering: Morphology, Structure and Optical Characterisation with Performance Analysis	Engenharia Física

Externally funded projects

Projects finished in 2025

Funding entity	Reference	Researcher	Global Budget - UM
Comissão Europeia European Commission	OBERON - 956720	José Manuel González Meijome	721 680,48
Fundação para a Ciência e a Tecnologia FCT	PTDC/FIS-MAC/6606/2020	Joaquim Alexandre Santos Almeida Oliveira Carneiro	249 531,73
Fundação para a Ciência e a Tecnologia FCT	PTDC/NAN-MAT/0098/2020	Bernardo Gonçalves Almeida	48 220,00
Fundação para a Ciência e a Tecnologia FCT	PTDC/FIS-MAC/2045/2021	Ricardo Pedro Lopes Martins Mendes Ribeiro	49 163,95
Fundação para a Ciência e a Tecnologia FCT	M-ERA-NET3/0003/2021	José Pedro Basto Silva	207 819,00
Fundação para a Ciência e a Tecnologia FCT	2022.01740.PTDC	José Pedro Basto Silva	49 982,31
Fundação para a Ciência e a Tecnologia FCT	2022.02697.PTDC	Margarida Maria Macedo Francesko Fernandes	49 375,00
Fundação para a Ciência e a Tecnologia FCT	2022.15750.MIT	Sandra Mariana da Silva Marques Co-IR Maria José Lima	49 990,49
Fundação para a Ciência e a Tecnologia FCT	2023.00047.RESTART	Rute Juliana Ferreira Macedo Araújo	49 900,00
Polo - Produtos Ópticos, S.A	DIABETIC	Jorge Manuel Martins Jorge	35 000,00
Fundação para a Ciência e a Tecnologia FCT	2022.15686.UTA	Cláudia Jesus Ribeiro Lopes	49 803,80
Agência para o Investimento e Comércio Externo de Portugal	179826	Nuno Filipe Silva Fernandes Castro	328 318,99
Comissão de Coordenação e Desenvolvimento Regional do Norte CCDR-N	NORTE2030-FEDER-02722300 - 16004	Michael Scott Belsley	600 000,00
Agência para o Investimento e Comércio Externo de Portugal, E. P. E. (AICEP, E. P. E.)	Salty	Carlos Miguel Silva Costa	750 981,08

Projects in progress at December 31, 2025

Funding entity	Title	Researcher	Start date	End date	Global Budget - UM
FCT	Carlos Miguel Silva Costa	2022.03931.PTDC	01/01/2023	30/06/2026	186 262,94
FCT	Carlos Miguel Silva Costa	2022.03781.PTDC	01/02/2023	31/01/2026	93 290,00
FCT	Pedro Libânio Abreu Martins	2022.05540.PTDC	01/01/2023	30/06/2026	137 550,00
FCT	Bernardo Gonçalves Almeida	2022.03564.PTDC	01/03/2023	28/02/2026	22 137,50
FCT	Luís Silvino Alves Marques	2022.04128.PTDC	12/03/2023	11/09/2026	10 601,25
Projeto Direto	António Queirós	Precilens (Projeto Direto)	16/02/2022	15/02/2026	34 548,46
PRR	Carlos Miguel Silva Costa	PRR n.º 58 - NGS – New Generation Storage	01/01/2023	30/06/2026	1 346 046,59
PRR	Armando José Barros Ferreira	Agenda Drivolution 01/C05-i01/202	01/10/2022	30/06/2026	1 245 133,99
ANI	Cláudia Jesus Ribeiro Lopes	NORTE2030-FEDER-01697800 - 20400	01/12/2023	30/11/2026	223 858,22
FCT	Luís Manuel Fernandes Rebouta	LA/P/0095/2020	01/01/2021	31/12/2026	216 148,62
Projeto Direto	José Manuel González Meijome	AuraProject	01/10/2023	30/09/2026	62 401,14
CCDR-N	Senen Lanceros Mendez Sylvie de Oliveira Ribeiro	0140_BIOIMP_ACE_MAS_6_E	01/07/2023	31/12/2026	221 378,80
Bilateral	Cláudia Jesus Ribeiro Lopes	2023.10186.CBM	11/03/2024	10/03/2026	4 000,00
Bilateral	Cláudia Jesus Ribeiro Lopes	2023.09567.CBM	03/04/2024	02/04/2026	4 000,00
PRR	José Manuel González Meijome	PRR_Ensino_2024	04/07/2024	30/06/2026	74 839,00
FCT	Luís Manuel Fernandes Rebouta	CETP-2022-00046	01/12/2023	14/12/2026	125 000,00
FCT	António Joaquim Onofre Abreu Ribeiro Gonçalves	UID/04650/2025	01/01/2025	31/12/2029	2 000 000,00
CE	Luís Silvino Alves Marques	101168161	01/03/2025	31/03/2029	730 209,60
FCT	Tatiana Rappoport	2023.11755.PEX	01/01/2025	01/07/2026	48 875,80
EU	Sérgio Miguel Cardoso Nascimento	EASA.2024.C07	30/09/2024	31/05/2027	80 000,00
CE	Carlos Miguel Silva Costa	HORIZON-MSCA-2024-PF-01	01/04/2025	31/03/2027	207 183,12
FCT	Clarisse Marta Oliveira Ribeiro	COMPETE2030-FEDER-00772000 - 16547	01/07/2025	29/06/2028	212 058,00
ANI	Sandra Maria Braga Franco	COMPETE2030-FEDER-02241100 - 21634	01/07/2025	30/06/2028	133 735,60
FCT	Mikhail Igorevich Vasilevskiy	COMPETE2030-FEDER-00714300 - 16004	01/09/2025	30/08/2028	212 241,60
CE	José Filipe Vilela Vaz	HORIZON-MSCA-2024-DN-01-01	01/01/2026	31/12/2029	279 445,32
FCT	Senen Lanceros Mendez	COMPETE2030-FEDER-00887000 -15206	01/01/2025	31/12/2027	84 015,36

FCT	António Joaquim Onofre Abreu Ribeiro Gonçalves	UID/PRR/04650/2025	01/10/2025	30/06/2026	611 390,00
ANI	José Filipe Vilela Vaz	COMPETE2030-FEDER-02159600 – 20924	01/12/2025	30/11/2028	264 834,16
ANI	Carlos José Macedo Tavares	NORTE2030-FEDER-02190000 – 21061	01/04/2025	30/11/2027	47 279,04
FCT	Iran Gomes Rocha Segundo Uminho Joaquim Carneiro	2023.14962.PEX	20/02/2025	19/08/2026	49 999,99
FCT	José Pedro Basto Silva	2024.15998.PEX	31/12/2025	30/06/2027	59 959,91

2025 Affiliated Publications

3D-Printed Linear Variable Differential Transformer (LVDT) for Cost-Effective Displacement Sensing Maestu J.F., Pereira N., Tubio C.R., Lanceros-Méndez S. (2025) *Advanced Materials Technologies*, 10 (21), art. no. e00981, DOI: 10.1002/admt.202500981

3D-printed multilayer membranes for photocatalytic degradation of ciprofloxacin Alves D.C., Martins P.M., Pinto R., Costa P., Bazán B., de Luis R.F., Correia D.M., Lanceros-Méndez S. (2025) *Applied Materials Today*, 44, art. no. 102728, DOI: 10.1016/j.apmt.2025.102728

A comparative study of the corrosion behaviour of flexible dry electrodes based on Ti-Cu thin films. A. Camarinha, C. Lopes, A. Ferreira, A.C. Alves, F. Vaz. *Surfaces and Interfaces*, 58, 105855 (2025). DOI: <https://doi.org/10.1016/j.surfin.2025.105855>

A Novel Microfluidic System for 3D Epidermis and Full-Thickness Skin Growth for Nanoparticle Safety Assessment; Samantha Costa, Ana B. Carneiro, Filipa Lebre, João Meneses, Alar Ainla, Cacilda Moura, Ernesto Alfaro-Moreno, and Ana R. Ribeiro; *Advance Healthcare Materials*, 2025, e02518 (<https://doi.org/10.1002/adhm.202502518>)

Ab initio study of doping effects on the ferroelectric and piezoelectric properties of ZrO₂; A. Silva, R. Ganser, J. P. B. Silva, A. Kersch, V. Lenzi, L. Marques, *Acta Materialia* 301 (2025) 121584. Doi: 10.1016/j.actamat.2025.121584.

Accelerating two-dimensional electronic spectroscopy simulations with a probe qubit protocol; J.D. Guimarães, J. Lim, M.I. Vasilevskiy, S.F. Huelga, M.B. Plenio, *Phys. Rev. Research* 7 (2025) 023130; <https://doi.org/10.1103/PhysRevResearch.7.023130>

Additive manufacturing of multifunctional epoxy adhesives with self-sensing piezoresistive and thermoresistive capabilities Lima R., Costa P., Nunes-Pereira J., Silva A.P., Tubio C.R., Lanceros-Mendez S. (2025) *Composites Part B: Engineering*, 293, art. no. 112130, DOI: 10.1016/j.compositesb.2025.112130

Additive-free macroporous glasses by thermal amorphization of self-foaming copper silicate; S. Ferdov; *Journal of Materials Science* 60 (2025) 23344–23355; doi:10.1007/s10853-025-11748-y

Advanced UV Shielding for Cork: A comparative study of ZnO and TiO₂ films through colorimetric and FTIR techniques, B. Tiss, D. Martinez-Martinez, C. Mansilla, L. Cunha (2025) *Applied Surface Science* 685 (2025) 162038, DOI: 10.1016/j.apsusc.2024.162038

Advancements in Electrochromic Technology for Multifunctional Flexible Devices. A. Marciel, J. Borges, L. Pereira, R.F. Silva, M. Graça, *Materials* 18(13) (2025) 2964; <https://doi.org/10.3390/ma18132964>

Age, gender and regional/ethnic variations in emmetropic axial growth rate, T. Naduvilath, X. He, K. Saunders, P. Demir, R. Leighton, S. McCullough, K. Baskaran, A.F. Macedo, X. Xu, P. Sankaridurg, N. Tahhan *Ophthalmic Physiol Opt* 45(6) (2025) 1485–1495.

Albumin/hyaluronic acid gel nanoparticles loaded with a pyrimidine-based drug for potent anticancer activity, Sofia Teixeira, D. Ferreira, Ligia R. Rodrigues, M. Alice Carvalho, Elisabete M. S. Castanheira, *Gels* 11(9) (2025) 759; <https://doi.org/10.3390/gels11090759> (with CQUM)

Albumin/Hyaluronic Acid Nanoparticle-laden Contact Lenses for Ocular Delivery of 5-Fluorouracil, S.F.M. Senra, S.R.S. Veloso, M. Lira, Elisabete M. S. Castanheira, *Journal of Biomedical Materials Research - Part A* 113(1) (2025) e37839; <https://doi.org/10.1002/jbm.a.37839>

Albumin/Hyaluronic Acid Nanoparticle-Laden Contact Lenses for the Ocular Delivery of 5-Fluorouracil. Senra, Sara F. M.; Veloso, Sérgio; Lira, Madalena; Castanheira Coutinho, Elisabete. *Journal of Biomedical Materials Research: Part A* January 2025; Volume 113, Issue 1, e37839 DOI: <https://doi.org/10.1002/jbm.a.37839>

An overview of solid-state lithium metal batteries: Materials, properties and challenges Costa C.M., Macedo V.M., Salado M., Fernandes L.C., Zhao M., Lanceros-Méndez S. (2025) *EnergyChem*, 7 (5), art. no. 100169, DOI: 10.1016/j.enchem.2025.100169

Ancient and modern bone diagnosis: Towards a better understanding of chemical and structural feature alterations, M-Ali H. Al-Akhras, M.A. Alebrahim, Ali S. Ba Rajjash, Khaled Al Jarrah, H.M. Hammouri, M.S. Mousa, Tariq AlZoubi, Ghaseb N. Makhadmeh, Carlos J. Tavares, *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 326 (2025) 125259. DOI: <https://doi.org/10.1016/j.saa.2024.125259>

Anomalous phenomena in explosive percolation of polymer/metal nanocomposite films, Qais M. Al-Bataineh, Ahmad D. Telfah, Ihsan Aljarrah, Ahmad A. Ahmad, Carlos J. Tavares, Johannes Etzkorn, Yves Rosefort, *Polymer* 325 (2025) 128303. DOI: <https://doi.org/10.1016/j.polymer.2025.128303>

Anti-Icing Coatings for Asphalt Mixtures Using Sprayed Hierarchical Nano/Micro-Particle Structures. Rocha Segundo, I.; Moreira, L.; Freitas, E.; Lima, O., Jr.; Kuzminov, D.; Carneiro, J. O. *Emergent Materials*, 8, 4897–4916 (2025).

Application of Madelung hydrodynamics to plasmonics and nonlinear optics in two-dimensional materials; S.S. Cardoso, A.J. Chaves, N. Asger Mortensen, N.M.R. Peres; *Phys. Rev. A* 111 (2025) 043508; DOI: <https://doi.org/10.1103/PhysRevA.111.043508>

Application of Nano-TiO₂ and Micro-ZnO on Cementitious Surfaces for Self-Cleaning Façades by Spray Coating and Dip Coating: A Comparative Study. Lessa, F. P.; Lima, O., Jr.; Margalho, É.; Pinheiro, C.; Rocha Segundo, I.; Carneiro, J. O. *Journal of Building Pathology and Rehabilitation*, 10, 16 (2025). Impact Factor (2024): 1.444, DOI: <https://doi.org/10.1007/s41024-024-00522-3>

Assessment of Dry Eye Symptoms in Young Professional Musicians. Da Silva, F., Noya-Padin, V., Martingo, Â., Matos, V., Lira, M., & Pena-Verdeal, H. *Current Eye Research* 2025, 1–6. DOI: <https://doi.org/10.1080/02713683.2025.2587891>.

Asymmetrical magnetoimpedance on Permalloy/Ag multilayer for high-frequency sensor applications. A. de Moraes, F. Bohn, M. Gamino, E.F. da Silva, D.F. de Oliveira, C. Lopes, A. Ferreira, F. Vaz, M.A. Correa. *Surface and Coatings Technology*, 495, 131580 (2025). DOI: <https://doi.org/10.1016/j.surfcoat.2024.131580>

Authors Correction: A Maximum Principle for Optimal Control Problems Involving Sweeping Processes with a Nonsmooth Set, M.R. De Pinho, M.M. Ferreira, G. Smirnov, J. Optim. Theory Appl. DOI: doi.org/10.1007/s10957-025-02891-2

Ay N. hBN/PVDF-HFP and BNNS/PVDF-HFP nanocomposites as flexible and lightweight dielectric capacitors: High energy storage performance via electrically insulating nanoparticles Koroglu L., Tubio C.R., Correia D.M., Costa C.M., Ayas E., Lanceros-Mendez S., (2024) *Polymer Composites*, 45 (18), pp. 16556 - 16573, DOI: 10.1002/pc.28911

Batteries and sustainability: the relevance of life cycle assessment Barbosa J.C., Pinto R.S., Serra J.P., Gonçalves R., Lizundia E., Costa C.M., Lanceros-Mendez S. (2025) *Sustainable Energy Technologies and Assessments*, 82, art. no. 104488, DOI: 10.1016/j.seta.2025.104488

Biobased polymers for advanced applications: Towards a sustainable future Gonçalves R., Serra J., Reizabal A., Correia D.M., Fernandes L.C., Brito-Pereira R., Lizundia E., Costa C.M., Lanceros-Méndez S. (2025) *Progress in Polymer Science*, 162, art. no. 101934, DOI: 10.1016/j.progpolymsci.2025.101934

Bioelectrocatalysis for solar fuels and sustainable energy lost R.M., Lanceros-Méndez S., Crespilho F.N. (2025) *Catalysis Science and Technology*, 15 (13), pp. 3793 - 3805, DOI: 10.1039/d5cy00177c

Bioelectrochemical Systems: Prioritizing Energy Density, Long-Term Stability, and Validation Faria L.C.I., Nascimento S.Q., Lima F.C.D.A., Sedenho G.C., Bertaglia T., lost R.M., de Souza J.C.P., Lanceros-Méndez S., Minter S.D., Cosnier S., Furst A.L., Crespilho F.N. (2025) *ACS Energy Letters*, 10 (9), pp. 4470 - 4490. DOI: 10.1021/acsenenergylett.5c01678

Bridging external and attenuated total reflection infrared spectroscopies through computational simulations, L. G. Vieira, *Eur. J. Phys.* 46 (2025) 015301; DOI: <https://doi.org/10.1088/1361-6404/ad8c03>

CFD analysis of multi-layer cooling channels in three-dimensionally structured grinding wheels; S. Costa, P. Capela, A. Hassui, J. Ribeiro, M. Pereira, D. Soares, *Applied Thermal Engineering* 279 (2025) 127633. <https://doi.org/10.1016/j.applthermaleng.2025.127633>.

Challenges and Persistence of Contact Lenses in Wastewater Treatment Plants: Environmental Implications. Rita Alves, Ana Vera Machado; Fernanda Cássio; Madalena Lira. *Emerging Contaminants* 2025; 11; 100505 DOI: <https://doi.org/10.1016/j.emcon.2025.100505> (com colaboração do CBMA)

Change in monochromatic aberrations with accommodation in a large adult population. Mechó-García M, Arcas-Carbonell M, Orduna-Hospital E, Sánchez-Cano A, Fernández-Sánchez V, Macedo-de-Araújo RJ, Fernandes P, González-Méijome JM, Rozema JJ. *BMC Ophthalmol.* 2025 Mar 3;25(1):104. doi: 10.1186/s12886-025-03947-7.

Chitosan/Alginate Polyelectrolyte Magnetic Gel Nanoarchitectonics with Tunable Mechanical Properties for Magnetic Hyperthermia and Sustained Release of 5-Fluorouracil, S.R.S. Veloso, M. Vázquez-González, M.O. Ribeiro, L. Hilliou, C. Amorim, V. Amaral, M. A. Correa-Duarte, Elisabete M.S. Castanheira, *ACS Applied Materials & Interfaces* 17 (45) (2025) 61731-61741; <https://doi.org/10.1021/acscami.5c15863>

Climbing to the Top of the ATLAS 13 TeV data ATLAS Collaboration • Georges Aad (Marseille, CPPM) et al. e-Print: 2404.10674 [hep-ex] DOI: 10.1016/j.physrep.2024.12.004 (publication) Published in: *Phys.Rept.* 1116 (2025), 127-183

Clinical and simulated impact of intraocular lens tilt and decentration based on real-world data and optical simulation. Velarde-Rodriguez, G., Alejandre-Alba, N., Sánchez-Lozano, A., Garcia-Onrubia, L., Jiménez-Alfaro Morote, I., & Faria-Ribeiro, M. (2025). *Scientific Reports*.

Clinical impact of intraocular lens tilt and decentration: a cross-sectional study. Velarde-Rodriguez, G., Garcia-Onrubia, L., Sánchez-Lozano, A., Salgueiro-Tielas, L., Moreno-Rodríguez, L., Faria-Ribeiro, M., & Alejandre-Alba, N. (2025). *BMC Ophthalmology*, 25(1), 585.

Coercive field control in epitaxial ferroelectric Hf_{0.5}Zr_{0.5}O₂ thin films by nanostructure engineering; J. S. Kim, N. Strkalj, A. Silva, V. Lenzi, L. Marques, M. O. Hill, Z. Yuan, Y.-X. Liu, M. T. Becker, S. M. Fairclough, C. Ducati, Y. Zhang, J. Shen, Z. Hu, H. Dou, H. Wang, J. P. B. Silva, J. L. MacManus-Driscoll, *ACS Appl. Mater. Interfaces* 17 (2025) 25442–25450. doi: 10.1021/acscami.4c21787.

Color Preferences of Western Females with Art Education, Oliveira, Patrícia M. H., João M. M. Linhares, Claudia Feitosa-Santana, and Sérgio M. C. Nascimento, *Journal of the Optical Society of America A* 42, no. 5 (2025): B534. <https://doi.org/10.1364/JOSAA.553844>.

Comparative accuracy of Plusoptix A16, Vision Screener V100, and Grand Seiko WAM-5500 autorefractors versus subjective refraction. Jorge J, Fernandes P. *Clin Exp Optom.* 2025 Nov;108(8):1047-1054. doi: 10.1080/08164622.2025.2458161. Epub 2025 Feb 12. PMID: 39938926.

Comparative Evaluation of Photocatalytic Efficiency Measurement Techniques through Rhodamine B Degradation in TiO₂-Based Cementitious Materials. Lessa, F. P.; Lima, O., Jr.; Margalho, É.; Zahabizadeh, B.; Cunha, V. M. C. F.; Pereira, E.; Camões, A.; Costa, M. F. M.; Rocha Segundo, I.; Carneiro, J. *Catalysts.* 2025; 15(3):201. <https://doi.org/10.3390/catal15030201>

Comparative study of Cd-free Cu(In,Ga)Se₂ solar cells with amorphous In₂O₃:H and ZnO:Al front contact layer. Garzón, Diego Alejandro; Alves, Marina; Sousa, Pedro; Fonseca, José Miguel; Brito, Daniel; Carneiro, Joaquim Oliveira; Sadewasser, Sascha. *Journal of Physics: Energy* 7 (2025) 035011, <https://doi.org/10.1088/2515-7655/add769>

Comparison of corneal reconstruction between CASIA2 and Pentacam: Impact on IOL power calculation. Blanco-Martínez, I., Queiruga-Piñeiro, J., Rodríguez-Uña, I., Faria-Ribeiro, M., & González-Méijome, J. M. (2025) *Journal of Optometry*, 18(4), 100573. <https://doi.org/10.1016/j.optom.2025.100573>

Coolant flow in structured grinding wheels: CFD validation via high-speed imaging and particle tracking; S. Costa, A. Souza, L. Neves, J. Ribeiro, M. Pereira, D. Soares, *Applied Thermal Engineering* 281 (2025) 128689. <https://doi.org/10.1016/j.applthermaleng.2025.128689>.

Correlation between the electrical and thermal conductivity of acrylonitrile butadiene styrene composites with carbonaceous fillers with different dimensionality Tubio C.R., Merazzo K.J., Abad M.-J., Ares-Penas A.I., Malet R., Pérez M., Costa P., Lanceros-Mendez S. (2024) *Polymer Composites*, 45 (17), pp. 16153 - 16166, DOI: 10.1002/pc.28896

Corrigendum to “Molecular design of functional polymers for organic radical batteries” Barbosa J.C., Fidalgo-Marijuan A., Dias J.C., Gonçalves R., Salado M., Costa C.M., Lanceros-Méndez S. (*Energy Storage Materials*, (2023), 60, C, (102841), (S2405829723002209), 10.1016/j.ensm.2023.102841) (2025) *Energy Storage*

Materials, 82, art. no. 104587, DOI: 10.1016/j.ensm.2025.104587

Coupling between piezotronics and other physical phenomena; Longfei Wang, Shuhai Liu, JL MacManus-Driscoll, José PB Silva; MRS Bulletin 50 (2025) 174–180. Doi: 10.1557/s43577-024-00834-2.

Cross-Cultural Preferences for Optimal Daylight Illumination in Viewing Human Faces, Gomes, Andreia E., Sérgio M. C. Nascimento, and João M. M. Linhares. Journal of the Optical Society of America A 42, no. 5 (2025): B525. <https://doi.org/10.1364/JOSAA.541947>.

Deep learning powered numerical relativity surrogate for binary black hole waveforms Osvaldo Gramaxo Freitas, Anastasios Theodoropoulos, Nino Villanueva, Tiago Fernandes, Solange Nunes et al.e-Print: 2412.06946 [gr-qc]DOI: 10.1103/7bkx-hs53 (publication) Published in: Phys.Rev.D 112 (2025) 4, 043026

Dehydration and Physicochemical Changes in Myopia Control Contact Lenses: Influence of Material and Maintenance Solutions. Veronica Noya-Padin, Hugo Pena-Verdeal, Pedro Rodrigues; Ana Vera Machado; Eva Yebra-Pimentel, Madalena Lira. Contact Lens and Anterior Eye 2025 48(6):102478. DOI: 10.1016/j.clae.2025.102478

Determinants and Limitations of Subjective and Partially Objective Methods When Analysing Meibomian Gland Loss, Sousa, Fabiana, Filipe Da Silva, Madalena Lira, and João M. M. Linhares, Ophthalmic and Physiological Optics 45, no. 7 (2025): 1780–91. <https://doi.org/10.1111/opo.70020>.

Developing surface plasmon resonance imaging for discrete particle detection based on a silver layer coated with polyacrylic acid/iodine polyelectrolyte brushes, Al-Bataineh, Q.M., Rjoub, G., Telfah, A.D., Tavares, C.J., Hergenröder, R., Applied Surface Science 682 (2025) 161755. <https://doi.org/10.1016/j.apsusc.2024.161755>

Development of Co-Axial Fibres Composed of CA (Mn 50,000) and PEGs (600 and 1000): Evaluation of the Influence of the Coagulation Bath. Hammes, N.; Monteiro, J.; Rocha Segundo, I.; Felgueiras, H. P.; Silva, M. M.; Costa, M. F. M.; Carneiro, J. Applied Sciences. 2025; 15(6):3028

Development of eugenol derivatives with 5-LOX inhibitory activity, J.L. Pereira Filho, R.B. Pereira, T.F. Vieira, S.F. Sousa, J.R.A. Coelho, N.F.S. Pinto, C.M.M. Coelho, M.J.G. Fernandes, E.M.S. Castanheira, M.S.T. Gonçalves, D.M. Pereira, Journal of Enzyme Inhibition and Medicinal Chemistry, 40(1) (2025) 2535586, <https://doi.org/10.1080/14756366.2025.2535586> (with CQUM)

Development of thermo- and piezoresistive responses in epoxy resin-based adhesives Lima R., Amorim L., Nunes-Pereira J., Tubio C.R., Lanceros-Mendez S., Costa P. (2025) Polymer Composites, 46 (14), pp. 13167 - 13182, DOI: 10.1002/pc.29924

Domino synthesis of a new class of red-shifted and antimicrobial imidazole-based azo dyes from 5-aminoimidazole-4-carboxamidrazones, Mariana P. Silva, B. Silva, Inês Costa, Paulo J. G. Coutinho, Fátima Cerqueira, Eugénia Pinto, Alice M. Dias, Organic and Biomolecular Chemistry, 23(20) (2025) 4983–4996; <https://doi.org/10.1039/D5OB00463B> (with CQUM)

Effect of carbonaceous filler type and content on the piezoresistive response of screen-printed sustainable adhesive epoxy composites Lima R., Serra J., Costa C.M., Tubio C.R., Nunes-Pereira J., Lanceros-Mendez S., Costa P. (2025) Reactive and Functional Polymers, 215, art. no. 106375, DOI: 10.1016/j.reactfunctpolym.2025.106375

Effect of the Different Growth Shapes on the Electrochemical Behavior of Ti Thin Films for Medical Applications. M. Bertapelle, J. Borges, J.C. Mirza-Rosca, F. Vaz, Materials 18(17) (2025) 3959; <https://doi.org/10.3390/ma18173959>

Effect of the Different Growth Shapes on the Electrochemical Behavior of Ti Thin Films for Medical Applications. Matteo Bertapelle, Joel Borges, Julia Claudia Mirza-Rosca and Filipe Vaz. Materials 18(17) (2025) 3959. Doi: <https://doi.org/10.3390/ma18173959>.

Effects of dilution in a two-dimensional topological magnon insulator; M.S. Oliveira, T.V.C. Antão, E.V. Castro, Nuno Peres; Phys. Rev. B 111 (2025) 014204; <https://doi.org/10.1103/PhysRevB.111.014204>

Effects of thermal treatment on micro-Cu(In,Ga)Se₂ solar cells prepared by one-stage selenization of sputter Cu–In–Ga precursor. Marina Alves; Ricardo G Poeira; Phillip J Dale; Joaquim O Carneiro; Sascha Sadewasser. Journal of Physics: Energy 7 (2025) 045020, <https://doi.org/10.1088/2515-7655/ae020e>

Electrically Tunable Interband Collective Excitations in Biased Bilayer and Trilayer Graphene, Tomer Eini, M.F.C. Martins Quintela, J. C. G. Henriques, R. M. Ribeiro, Yarden Mazor, N.M.R. Peres, Itai Epstein, Phys. Rev. Lett. 134 (2025) 196903; <https://doi.org/10.1103/PhysRevLett.134.196903>

Energy-efficient electric control of magnetization in polymer-based magnetoelectrics for spintronic applications Carvalho R., Amorim L., Díez A.G., Ribeiro C., Lanceros-Mendez S.,

Martins P. (2025) Communications Materials, 6 (1), art. no. 44, DOI: 10.1038/s43246-025-00762-x

Engineering graphene quantum dots via laser ablation for epinephrine sensing; P.C. Ricardo, C.R. Vanoni, J. Padrão, A. Zille, V. Satulu, B. Mitu, M.R.C. Pereira, C.L. Jost, F.S. Silva, M.C. Fredel; Diamond & Related Materials 161 (2025) 113093; DOI: 10.1016/j.diamond.2025.113093

Engineering magnetoactive 3D CZFO/PVDF composites scaffolds with bioelectrical responsiveness for bone tissue regeneration D. Bogas, R. Brito-Pereira, V. Correia, P. Martins, U. Silvan, S. Lanceros-Mendez, C. Ribeiro*. Materials & Design, Vol. 259 (2025), article number 114901, DOI: 10.1016/j.matdes.2025.114901.

Engineering Pb-free relaxor ferroelectric thin films for low voltage energy storage applications, D.J.M. Ribeiro, S.K.P. Nair, A.R. Jayakrishnan, J. Oliveira, G. Magagnin, D. Albertini, Y. Walter, K.C. Sekhar, J.A. Moreira, Bernardo G. Almeida, B. Gautier, B. Vilquin, L. Marques, M. Pereira, J.P.B. Silva, Nanoscale 17 (2025) 19794; <https://doi.org/10.1039/d5nr02537k>

Engineering Pb-free relaxor ferroelectric thin films for low voltage energy storage applications; D. J. M. Ribeiro, S. K. P. Nair, A. R. Jayakrishnan, J. Oliveira, G. Magagnin, D. Albertini, Y. Walter, K. C. Sekhar, J. A. Moreira, B. G Almeida, B. Gautier, B. Vilquin, L. Marques, M. Pereira, J. P. B. Silva, Nanoscale 17 (2025) 19794-19805. Doi: 10.1039/D5NR02537K.

Environmentally Friendly Photoluminescent Coatings for Corrosion Sensing Tubio C.R., Garea L., Cruz B.D.D., Correia D.M., de Zea Bermudez V., Lanceros-Mendez S. (2025) Polymers, 17 (3), DOI: 10.3390/polym17030389

Evaluating retinal image quality for myopia control lenses in a synthetic accommodative wavefront model. Mechó-García, M., Fernandes, P., González-Méijome, J. M., & Faria-Ribeiro, M. (2025). Biomedical Optics Express, 17(1), 394-404.

Evaluation of Heavy Metal Content in Plastic Bags Used as Improvised Food Cooking Covers: A Case Study from the Mozambican Community; Nhang, M.C.; Geraldo, D.; Nhapulo, S.L.; João, A.F.; Carneiro, J.; Costa, M.F.M.; Sustainability 2025, 17, 964. <https://doi.org/10.3390/su17030964> C/ Centro de Quimica (Dulce Geraldo)

Evaluation of the photothermal performance of the Prussian blue/hydroxyapatite composite, A.N.B. Costa, J.L. Serra, I.L. Rodrigues, L.T.B. Mendonça, G. Pereira, Elisabete M.S. Castanheira, S.F. Rodrigues, A.E.M. Paiva, S.R.S. Veloso, A.R.O. Rodrigues, Gricirene S. Correia, Materials Today

Communications 46 (2025) 112598; <https://doi.org/10.1016/j.mtcomm.2025.112598>

Expanding the Applicability of Electroactive Polymers for Tissue Engineering Through Surface Biofunctionalization Leiva B., Irastorza I., Moneo A., Ibarretxe G., Silvan U., Lanceros-Méndez S. (2025) Biomimetics, 10 (2), art. no. 126, DOI: 10.3390/biomimetics10020126

Fabrication of high-performance electroactive poly(vinylidene fluoride)/magnetic nanoparticle composites via mechanical compression for deformation sensing sensor Martins L.A., Pereira N., Mendes-Felipe C., Costa C.M., Lanceros-Mendez S., Gomez-Ribelles J.L. (2025) Polymer, 340, art. no. 129278, DOI: 10.1016/j.polymer.2025.129278

Fast and Slow Response of the Accommodation System in Young and Incipient-Presbyope Adults During Sustained Reading Task. Safarian Baloujeh E, Queirós A, Navarro R, González-Méijome JM. J Clin Med. 2025, 14(4):1107. (PMID: 40004638, DOI: 10.3390/jcm14041107)

Ferroelectric and Non-Linear Optical Nanofibers by Electrospinning: From Inorganics to Molecular Crystals, Rosa M. F. Baptista, Etelvina de Matos Gomes, Michael Belsley, Bernardo Almeida, Nanomaterials 15(5) (2025) 409; doi: 10.3390/nano15050409

Flexible and multifunctional P(VDF-TrFE)/BT-BMT polymer composite films: Realizing high piezoelectric performance and electrocaloric effect, I. Coondoo, V.B. Isfahani, H. Amorín, I. Bdikin, J. Carvalho, C. Pascual-Gonzalez, B.M. Silva, J. Oliveira, D. Pukazhselvan, B.G. Almeida, G. Miranda, Chemical Engineering Journal 505 (2025) 158639; <https://doi.org/10.1016/j.cej.2024.158639>

Flexoionic Effect on Ionic Liquid Based Polymer Composites for Bending and Pressure Sensing Applications Fernandes L.C., Pereira N., Peřinka N., Botelho G., Correia D.M., Lanceros-Mendez S. (2025) Advanced Materials Technologies, 10 (17), art. no. e00465, DOI: 10.1002/admt.202500465

Fully Printed 3D-Thermoformed Electroluminescent Capacitive System for Human–MachinCampos-Arias L., Peřinka N., Vicente J., Gomes Correia V.M., Mendes-Felipe C., Vilas-Vilela J.L., Lanceros-Méndez S. e Interface Applications (2025) Advanced Materials Technologies, 10 (11), art. no. 2402116, DOI: 10.1002/admt.202402116

Future Circular Collider Feasibility Study Report : Volume 3 Civil Engineering, Implementation and Sustainability FCC Collaboration • M. Benedikt (CERN) et al.e-Print: 2505.00273 [physics.acc-ph]DOI: 10.1140/epjs/s11734-025-01958-5 (publication), 10.1140/epjs/s11734-025-

02043-7 (erratum) Published in: Eur.Phys.J.ST 234 (2025) 17, 5113-5383, Eur.Phys.J.ST (2025) (erratum)

Graphene Surface Functionalization with Pyrene-, Acridine-, and Fluorenyl-Linkers for DNA Hybridization Studies Using Electrolyte-Gate Graphene Field Effect Transistors, Telma Domingues, João Rodrigues, M. Fátima Cerqueira, Joana Rafaela Guerreiro, Jérôme Borme, Mariana Z. Tonel, Julia Schultz, Ivana Zanella da Silva, Solange Binotto Fagan, and Pedro Alpuim, *Langmuir* 41 (2025) 19375–19387; <https://doi.org/10.1021/acs.langmuir.5c01900>

Hard way or hardware? Taking the heat out of AI; A. R. Jayakrishnan, M. Hellenbrand, S. Dixon, A. Mehonic, J. P. B. Silva, J. L. MacManus-Driscoll, *APL Machine Learning* 3 (2025) 030901. Doi: 10.1063/5.0270385.

High-performance composite solid-state electrolyte combining NASICON-type $\text{Li1.5Al0.5Ti1.5(PO4)3}$ with ionic liquid and polymeric binders Salazar H., Gonçalves B.F., Valverde A., Gonçalves R., Costa C.M., Cavalcanti L.P., Porro J.M., Petrenko V., Lancers-Mendez S., Zhang Q. (2025) *Electrochimica Acta*, 509, art. no. 145299, DOI: 10.1016/j.electacta.2024.145299

Hybrid nano-scaffolds loaded with resveratrol and Omega-3 fatty acids: An innovative antimicrobial strategy against biofilm; A.B.V. Pereira, M.S. Terroso, H. Gonçalves, J. Catita, D. Santos, R.M.F. Baptista, F.J. Monteiro, C.M. Lopes, M. Lúcio, M.P. Ferraz, *Int. J. Pharmaceutics* 680 (2025) 125784; <https://doi.org/10.1016/j.ijpharm.2025.125784>

Hydrazides as Powerful Tools in Medicinal Chemistry: Synthesis, Reactivity, and Biological Applications, Sofia Teixeira, Elisabete M. S. Castanheira, M. Alice Carvalho, *Molecules* 30(13) (2025) 2852; <https://doi.org/10.3390/molecules30132852> (with CQUM)

Hydrogel In-Tape Electronic Tongue Brito-Pereira R., Policia R., Ribeiro C., Martins P., Lancers-Mendez S., Crespilho F.N. (2025) *ACS Applied Electronic Materials*, 7 (5), pp. 1792 - 1801, DOI: 10.1021/acsaelm.4c02059

Hydrothermal synthesis and crystal structure of uniform cube-like $\text{NaHf}_2(\text{PO}_4)_3$ nanocrystals; R. Abreu, I. Gomes, R. Gonçalves, C.M. Costa, S. Lancers-Méndez, S. Ferdov; *Ceramics International* 51 (2025) 35218–35222; doi:10.1016/j.ceramint.2025.05.163 (with CQ-UM)

IMI-Instrumentation for Myopia Management. Jones, D., Chow, A., Fadel, D., Gonzalez Meijome, J. M., Grzybowski, A., Kollbaum, P., Loughman, J., & Wolffsohn, J. (2025). *Investigative Ophthalmology & Visual Science*, 66(9), 7. <https://doi.org/10.1167/iovs.66.9.7>

Improving lithium-ion battery safety through separators with thermal shutdown characteristics induced by thermal expansion microspheres Monteiro I.F., Silva M.M., Fidalgo-Marijuan A., Gonçalves R., Costa C.M., Lancers-Mendez S. (2025) *Journal of Power Sources*, 631, art. no. 236311, DOI: 10.1016/j.jpowsour.2025.236311

Improving Thermal Regulation of Lithium-Ion Batteries by Poly(vinylidene fluoride-co-hexafluoropropylene) Composite Separator Membranes with Phase Change Materials Serra J.P., Antunes G., Fidalgo-Marijuan A., Salado M., Gonçalves R., He W., Lancers-Mendez S., Costa C.M. (2025) *ACS Applied Energy Materials*, 8 (3), pp. 1847 - 1856, DOI: 10.1021/acsaem.4c03121

Increased electroactive properties of poly(vinylidene fluoride) films by thermo-mechanical post-processing Martins L.A., Pereira N., Costa C.M., Gomez-Tejedor J.A., Lancers-Mendez S., Gomez Ribelles J.L. (2025) *Surfaces and Interfaces*, 75, art. no. 107814, DOI: 10.1016/j.surfin.2025.107814

Influence of midday removal and re-application of a scleral lens on fluid reservoir thickness, pre-lens tear film quality and visual acuity. Macedo-de-Araújo RJ, Amorim-de-Sousa A, González-Méijome JM. *Cont Lens Anterior Eye*. 2025 Feb;48(1):102250. doi: 10.1016/j.clae.2024.102250.

Influence of Plasmonic Thin-Film-Coated Photobioreactors on Microalgal Biomass Composition. F. Pereira, A. A. Vicente, F. Vaz, J. Borges, P. Geada, *ACS Sustain. Chem. Eng.* 13 (2025) 791–799. <https://doi.org/10.1021/acssuschemeng.4c06367>

Influence of Plasmonic Thin-Film-Coated Photobioreactors on Microalgal Biomass Composition. Francisco Pereira, Antonio A. Vicente, Filipe Vaz, Joel Borges, and Pedro Geada. *ACS Sustainable Chemistry & Engineering* 13 (2025) 791–799. Doi: <https://doi.org/10.1021/acssuschemeng.4c06367>.

Influence of scleral lens removal and reapplication on fluid reservoir thickness and visual quality after 5 h of lens wear. Seco, R., Macedo-de-Araújo, R. J., & González-Méijome, J. M. (2025). *Contact lens & anterior eye* 48(4), 102392. <https://doi.org/10.1016/j.clae.2025.102392>

Inkjet printed IGZO memristors with volatile and non-volatile switching Franco M., Kiazadeh A., Deuermeier J., Lancers-Méndez S., Martins R., Carlos E. (2024) *Scientific Reports*, 14 (1), art. no. 7469, DOI: 10.1038/s41598-024-58228-y

Insights into photoelectrocatalytic lignin oxidation to value-added products using a niobium-doped titanium dioxide photoanode, Daniela F. S. Morais, Luiza M. G. Sena, Joana M. Ribeiro, Telmo da Silva Lopes, Paula Dias, Adélio Mendes, Carina A. E. Costa, Alírio E. Rodrigues, Susana R. S. Pereira,

Paula C. Pinto, Rui A. R. Boaventura, Carlos J. Tavares, Vitor J. P. Vilar and Francisca C. Moreira, *Green Chem.* 27 (2025) 6537. <https://doi.org/10.1039/D5GC00038F>

Insights into the Antimicrobial Mechanism of Piezoelectric Materials Moreira J., Pandur Z., Fernandes M., Martins P., Correia V., Lanceros-Mendez S., Stopar D. (2025) *ACS Omega*, 10 (41), pp. 48642 - 48651, DOI: 10.1021/acsomega.5c06348

Insights into the electroactive impact of magnetic nanostructures in PVDF composites via small-angle neutron scattering Rodriguez-Lejarraga P., Petrenko V., Shibaev A., Kohlbrecher J., Carvalho R., Lanceros-Mendez S., Martins P. (2025) *Nanoscale*, 17 (9), pp. 5280 - 5288, DOI: 10.1039/d4nr03759f

Investigation of Carbon Quantum Dots With Good Optical Properties From Sunflower Seed Shells for Photoluminescence Sensing and DFT Analysis of Cd²⁺ Quenching, Ajaj, Chiayee Salih, Sadiq, Diyar, Idrees, Shinwar A., Tavares, Carlos J., Telfah, Ahmad, *Luminescence* 40 (2025) e70347. <https://doi.org/10.1002/bio.70347>

Ionic liquid based cellulose acetate composites: an approach for controlling infection caused by microorganisms Moreira J., Cruz B.D.D., Queirós J.M., Peřinka N., Fernandes M.M., Martins P.M., Correia D.M., Lanceros-Méndez S. (2025) *International Journal of Biological Macromolecules*, 321, art. no. 146424, DOI: 10.1016/j.ijbiomac.2025.146424

Ionic Liquid-Enhanced 3D Printed Flexible Resin for Pressure-Sensing Applications Pereira N., Castro A.S., Mendes-Felipe C., Correia D.M., Lanceros-Méndez S. (2025) *Advanced Materials Technologies*, DOI: 10.1002/admt.202501516

Label-free localized surface plasmon resonance (LSPR) biosensor, based on Au-Ag NPs embedded in TiO₂ matrix, for detection of Ochratoxin-A (OTA) in wine. D.I. Meira, A.I. Barbosa, J. Borges, R.L. Reis, V.M. Correlo, F. Vaz, *Talanta* 284 (2025) 127238. <https://doi.org/10.1016/j.talanta.2024.127238>

Label-Free Localized Surface Plasmon Resonance (LSPR) Biosensor, based on Au-Ag NPs Embedded in TiO₂ Matrix, for Detection of Ochratoxin-A (OTA) in Wine. Diana I. Meira, Ana I. Barbosa, Joel Borges, Rui L. Reis, Vitor M. Correlo, Filipe Vaz, *Talanta* 284 (2025) 127238. Doi: <https://doi.org/10.1016/j.talanta.2024.127238>.

Limitations of OTF-based metrics for predicting through-focus visual acuity in pseudophakic eyes. Faria-Ribeiro, M., Villemagne, N., & Joannes, L. (2025). *Biomedical Optics Express*, 16(11), 4503-4516.

Liposomal Formulations for Efficient Delivery of a Novel, Highly Potent Pyrimidine-based Anticancer Drug, Sofia Teixeira, Débora Ferreira, Ana Rita O. Rodrigues, L.R. Rodrigues, Elisabete M. S. Castanheira, M. Alice Carvalho, *Pharmaceuticals* 18(8) (2025) 1210; <https://doi.org/10.3390/ph18081210> (with CQUM)

Lithium difluoro(oxalato)borate additive stabilizes interfaces and boosts performance in poly(ionic liquid)s solid-state lithium-metal batteries Kang Z., Chang H., Zhang S., Zhong J., Costa C.M., Lanceros-Mendez S., Liu Y., Zhang L., Wang J.-Q. (2025) *Chemical Engineering Journal*, 520, art. no. 165761, DOI: 10.1016/j.cej.2025.165761

Lithium-ion battery separators based on sustainable collagen and chitosan hybrid membranes Andonegi M., Serra J.P., Silva M.M., Gonçalves R., Costa C.M., Lanceros-Mendez S., de la Caba K., Guerrero P. (2025) *Electrochimica Acta*, 526, art. no. 146087, DOI: 10.1016/j.electacta.2025.146087

Long term degradation kinetics and UV shielding efficiency of TiO₂ and ZnO coatings on rubber and cork substrates, B. Tiss, D. Martínez-Martínez, C. Mansilla, E. Le Baron, A. Disdier, L. Cunha (2025) *Applied Surface Science* 695 (2025) 162940, DOI: 10.1016/j.apsusc.2025.162940

Long-term hydrophilic PDMS surfaces using Brij L4: A simple and robust approach for biomedical applications. I.M. Gonçalves, D. Pinho, J. Borges, F. Vaz, A. Zille, T. Hori, Y. Nashimoto, H. Kaji, A. Moita, G. Minas, R. Lima, *Appl. Surf. Sci. Adv.* 30 (2025) 100904. <https://doi.org/10.1016/j.apsadv.2025.100904>

Long-term hydrophilic PDMS surfaces using Brij L4: A simple and robust approach for biomedical applications. Inês M. Gonçalves, Diana Pinho, Joel Borges, Filipe Vaz, Andrea Zille, Takeshi Hori, Yuji Nashimoto, Hirokazu Kaji, Ana Moita, Graça Minas, Rui Lima. *Applied Surface Science Advances* 30 (2025) 100904. Doi: <https://doi.org/10.1016/j.apsadv.2025.100904>.

Low-Impedance Hybrid Carbon Structures on SiO_x: A Sequential Gas-Phase Coating Approach Zhang X., Zhao M., Costa C.M., Zhang J., Scheiba F., Lanceros-Méndez S., Wang W., Zhang Q. (2025) *Small Methods*, 9 (7), art. no. 2401829, DOI: 10.1002/smt.202401829

Magnetic Field-Based Strategy for Damage Detection and Stratigraphy Assessment for Structural Health Monitoring Applications Amorim L., Martins P., Tubio C.R., Seoane-Rivero R., Lanceros-Mendez S. (2025) *Advanced Engineering Materials*, 27 (21), art. no. e202501217, DOI: 10.1002/adem.202501217

Measurement of the associated production of a top-antitop-quark pair and a Higgs boson decaying into a $b\bar{b}$ pair in pp collisions at $\sqrt{s}=13$ TeV using the ATLAS detector at the LHC ATLAS Collaboration • Georges Aad (Marseille, CPPM) et al. e-Print: 2407.10904 [hep-ex] DOI: 10.1140/epjc/s10052-025-13740-x Published in: Eur.Phys.J.C 85 (2025) 2, 210, Eur.Phys.J.C 85 (2025), 210

Measuring the spatial irradiance profile of the infrared beam in a Fourier transform infrared spectrometer; L. G. Vieira; European J. Phys. 46 (2025) 065301; <https://doi.org/10.1088/1361-6404/ae126d>

Metal-free heteroatom doping of carbon nitride for enhanced photocatalytic hydrogen peroxide production Sebastian-Garate E., Gonçalves B.F., Llusar J., Gluchowski P., Infante I., Lanceros-Mendez S., Zhang Q., Salazar H. (2025) Nano Energy, 146, art. no. 111551, DOI: 10.1016/j.nanoen.2025.111551

Microfabrication of rubidium-85 vapor cell for optically pumped magnetometer applications through UV light decomposition of rubidium azide, H.M. Pereira, B.S. Dores, J.P.O. Silva, A. Venâncio, M.F. Cerqueira, J.A. Rodrigues, J.H. Correia, M.J. Maciel, E.M.F. Vieira, Vacuum 234 (2025) 114103; <https://doi.org/10.1016/j.vacuum.2025.114103>

Microwave-assisted interzeolite transformations; S. Ferdov, R. Gonçalves; Dalton Transactions 54 (2025) 7621–7626; doi:10.1039/D5DT00723B (with CQ-UM)

Modeling a Graphene-Enhanced Surface Plasmon Resonance Sensor for Cancer Detection, Sahar Abdalla, Hela Ferjani, Ahmad M. Alsaad, Carlos J. Tavares, Ahmad D. Telfah, Plasmonics 20 (3) (2025) 1721–1728. <https://doi.org/10.1007/s11468-024-02354-w>

Multifunctional magneto-plasmonic lipogel based on peptide hydrogel for application in combined cancer therapy, Valéria Gomes, S.R.S. Veloso, A. Carvalho, L. Hilliou, Paulo J. G. Coutinho, C. Moura, J.A. Martins, Elisabete M. S. Castanheira, P.M.T. Ferreira, J. Peptide Sci. 31(1) (2025) e3650; <https://doi.org/10.1002/psc.3650> (with CQUM)

Multifunctional magneto-plasmonic lipogel based on peptide hydrogel for application in combined cancer therapy, Valéria Gomes, S.R.S. Veloso, A. Carvalho, L. Hilliou, Paulo J. G. Coutinho, C. Moura, J.A. Martins, Elisabete M. S. Castanheira, P.M.T. Ferreira, J. Peptide Sci. 31(1) (2025) e3650; <https://doi.org/10.1002/psc.3650> (with CQUM)

Multi-Structural and Biodegradable Humidity Sensors with Enhanced Surface Hydrophilicity Brito-Pereira R., Policia R., Macedo A.S., Tubio C.R., Borges J., Lanceros-Mendez S.

(2025) Advanced Materials Technologies, 10 (3), art. no. 2401038, DOI: 10.1002/admt.202401038

Multi-Structural and Biodegradable Humidity Sensors with Enhanced Surface Hydrophilicity. R. Brito-Pereira, R. Policia, A.S. Macedo, C.R. Tubio, J. Borges, S. Lanceros-Mendez, Adv. Mater. Technol. 10 (2025) 2401038. <https://doi.org/10.1002/admt.202401038>

New Cation Sensors Based on Eugenol-Derived Azo Dyes, J.R.A. Coelho, A.R.F. Pacheco, D.C. Domingues, A.R.O. Rodrigues, A.A. Temitope, Paulo J. G. Coutinho, M.J.G. Fernandes, Elisabete M.S. Castanheira, M.S.T. Gonçalves, Molecules 30(13) (2025) 2788; <https://doi.org/10.3390/molecules30132788> (with CQUM)

Next generation sustainable lithium-ion batteries: Micro and nanostructured materials and processes Costa C.M., Pinto R.S., Serra J.P., Barbosa J.C., Gonçalves R., Lanceros-Méndez S. (2025) Chemical Engineering Journal, 509, art. no. 161337, DOI: 10.1016/j.cej.2025.161337

Niobium–Molybdenum Oxide Thin Films Grown on Flexible ITO-Coated PET Substrates. A. Marciel, A.C. Bastos, L. Pereira, S.K. Jakka, J. Borges, F. Vaz, M. Peres, K. Lorenz, L.C. Alves, A. Bafti, L. Pavić, R.F. Silva, M. Graça, ACS Appl. Energy Mater. 8 (2025) 4184–4199. <https://doi.org/10.1021/acsaem.4c02935>

Niobium–Molybdenum Oxide Thin Films Grown on Flexible ITO-Coated PET Substrates. Alice Marciel, A. C. Bastos, Luiz Pereira, Suresh Kumar Jakka, Joel Borges, Filipe Vaz, Marco Peres, Katharina Lorenz, L. C. Alves, Arijeta Bafti, Luka Pavić, Rui F. Silva, and Manuel Graça. ACS Applied Energy Materials 8 (2025) 4184–4199. Doi: <https://doi.org/10.1021/acsaem.4c02935>

Novel Benzothiazole Boc-Phe-Phe-Bz Derivative Dipeptide Forming Fluorescent and Nonlinear Optical Self-Assembled Structures, Rosa M. F. Baptista, Daniela Santos, N.F. Cunha, M.C.R. Castro, P.V. Rodrigues, A.V. Machado, M. Belsley, Molecules 30(4) (2025) 942; <https://doi.org/10.3390/molecules30040942> (with CQUM)

Novel nanographene oxide conjugates as stimuli-responsive theranostic tool for cancer, H. Araújo-Silva, B. Martins, M. Fátima Cerqueira, H. Gonçalves, R. Machado, A.C. Gomes, Marlene Lúcio, Materials Today Chemistry 44 (2025) 102552; <https://doi.org/10.1016/j.mtchem.2025.102552> (with CBMA)

On the role of biconic surfaces in modelling astigmatic eyes. Blanco-Martínez, I., Navarro, R., & Faria-Ribeiro, M. (2025). Optics Express, 33(14), 29927-29938.

Optimal Color Sets to Represent the Colors of Natural Scenes by K-Medoids Clustering, Monteiro, José A. R., Dora N. Marques, João M. M. Linhares, and Sérgio M. C. Nascimento, *Journal of the Optical Society of America A* 42, no. 5 (2025): B50. <https://doi.org/10.1364/JOSAA.539089>.

Optimal control of systems with backlash: The case of inelastic impact, M.R. De Pinho, M.M. Ferreira, G. Smirnov, *Set-Valued and Variational Analysis* 33 (2025) 43; <https://doi.org/10.1007/s11228-025-00780-4>

Optimal control problem with nonregular mixed constraints via penalty functions, M.R. De Pinho, M.M. Ferreira, G. Smirnov, *System and Control Letters* 196 (2025) 106010; <https://doi.org/10.1016/j.sysconle.2024.106010>

Optimizing Biodegradable Poly(D,L-lactide) Scaffolds Reinforced with Graphene Oxide for Bone Tissue Regeneration Díaz E., García A., León X., Merodio Y., Ribeiro S., Lanceros-Méndez S. (2025) *Biomimetics*, 10 (10), art. no. 700, DOI: 10.3390/biomimetics10100700

Optimizing scleral lens prescriptions: a comparison of algorithmic and conventional refraction and over-refraction in irregular corneas. Alves-de-Carvalho RS, Macedo-de-Araújo RJ, González-Méijome JM. *Cont Lens Anterior Eye*. 2025 Aug 10;102485. doi: 10.1016/j.clae.2025.102485.

Parametric Study of Defect Periodic Acoustic Metamaterials Based on Helmholtz Resonators with Elongated Necks Malki M.E., Khettabi A., Sallah M., Pereira N., Lanceros-Mendez S., Hennache A., Othman S.I., Zaky Z.A. (2025) *Journal of Vibration Engineering and Technologies*, 13 (8), art. no. 588, DOI: 10.1007/s42417-025-02125-9

Perceived stress levels among patients treated for neovascular age-related macular degeneration with anti-VEGF injections, I. Nilsson, H. Senra, K. Baskaran, C. Mohlin, A.F. MacedoGraefes *Arch Clin Exp Ophthalmol* 263(9) (2025) 2523–2531.

Performance of 3D-structured grinding wheels with multi-layer internal cooling channels; S. Costa, P. Capela, A. Hassui, J. Ribeiro, M. Pereira, D. Soares, *Results in Engineering* 28 (2025) 107881. <https://doi.org/10.1016/j.rineng.2025.107881>.

Peripheral Defocus in Orthokeratology Myopia Correction: Systematic Review and Meta-Analysis. Queirós A, Pinheiro I, Fernandes P. *J Clin Med*. 2025, 14(3):662. (PMID: 39685771, DOI: 10.3390/jcm14030662)

Photocatalytic and antimicrobial polymer-based hybrid membranes with surface-modified TiO₂ nanoparticles with 5-aminosalicylic acid and silver nanoparticles Queirós J.M.,

Zheng F., Brito-Pereira R., Fernandes M.M., Carvalho E.O., Martins P.M., Lazić V., Nedeljković J.M., Lanceros-Mendez S. (2025) *RSC Sustainability*, 3 (10), pp. 4568 - 4582, DOI: 10.1039/d5su00569h

Piezoelectric properties of collagen films: Insights into their potential for electroactive biomedical applications Andonegi M., Díez A.G., Costa C.M., Romanyuk K.N., Kholkin A.L., de la Caba K., Guerrero P., Lanceros-Mendez S. (2025) *International Journal of Biological Macromolecules*, 309, art. no. 142799, DOI: 10.1016/j.ijbiomac.2025.142799

Piezoresistive materials based on natural polymers for medical device applications Pimentel E., Costa P., Vilaça J., Costa C.M., Lanceros-Méndez S., Miranda D. (2025) *Reactive and Functional Polymers*, 217, art. no. 106502, DOI: 10.1016/j.reactfunctpolym.2025.106502

Piezoresistive polymer composites based on polyether block amide and carbon nanotubes for self-sensing medical urinary catheters Pimentel E., Pereira N., Costa P., Tubio C.R., Vilaça J.L., Costa C.M., Lanceros-Méndez S., Miranda D. (2025) *Journal of Alloys and Compounds*, 1034, art. no. 181447, DOI: 10.1016/j.jallcom.2025.181447

Plasmon polariton assisted second-harmonic generation in graphene; J.M. Alendouro Pinho, S.S. Cardoso, Yu.V. Bludov, J.M. Viana Parente Lopes, V.V. Konotop, J. D. Cox, N.M.R. Peres, *Phys. Rev. B* 112 (2025) 195432; <https://doi.org/10.1103/jxtp-18tx>

Poly(Vinylidene Fluoride-co-Hexafluoropropylene) Matrix Nanocomposites Reinforced With Various Types of BaTiO₃ Nanoparticles for Flexible Energy Storage Applications Koroglu L., Tubio C.R., Costa C.M., Ayas E., Lanceros-Mendez S., Ay N. (2025) *Journal of Applied Polymer Science*, 142 (15), art. no. e56729, DOI: 10.1002/app.56729

Polymer Sorting Through Fluorescence Spectra, C.M. Penso, Elisabete M. S. Castanheira, M.C. Paiva, L.M. Gonçalves, *Bioengineering* 12(7) (2025) 708; <https://doi.org/10.3390/bioengineering12070708>

Potential of magnetic silver-coupled zinc and copper ferrite nanoparticles as visible-light photocatalysts towards the degradation of dyes, Ricardo J.C. Fernandes, B.D. Cardoso, Ana Rita Silva, Luciana Pereira, Paulo J.G. Coutinho, *Environmental Science: Advances*, 4(9) (2025) 1412–1426; <https://doi.org/10.1039/D5VA00062A>

Potential of photocatalytic nanomaterials for PFOA and PFOS degradation: Challenges and opportunities, Ricardo J.C. Fernandes, Ana R. Silva, B. D. Cardoso, Paulo J.G. Coutinho, Luciana Pereira, *Journal of Environmental Chemical*

Engineering, 13(1) (2025) 115201;
<https://doi.org/10.1016/j.jece.2024.115201>

Printed routes for tunable magnetoelectricity in energy-efficient devices R. Carvalho, L. Amorim, C. Ribeiro, S. Lanceros-Mendez, M. Serpelloni, G. Polidori, P. Martins. Revisiting De Magnete: Chemical Engineering Journal, Vol. 523 (2025), article number 166453, DOI: 10.1016/j.jcej.2025.166453

Properties of Nb-doped TiO₂ films prepared by grid-assisted magnetron sputtering at different substrate temperatures and Nb doping levels, Francisco Alfaro, Aline M. Morais, Rafael G. Delatorre, Julio C. Sagás, Fábio D. Origo, Bruno L.D. Santos, J. Stryhalski, Waldemar A.A. Macedo, Carlos J. Tavares, Diego A. Duarte, Thin Solid Films 829 (2025) 140807. <https://doi.org/10.1016/j.tsf.2025.140807>

Protective coatings for complex organic flexible materials I: characterization and tribological performance of TiO₂ and ZnO films deposited by magnetron sputtering on cork, B. Tiss a, D. Martínez-Martínez, C. Mansilla J.R. Gomes, C.S. Abreu, N. Pereira, L. Cunha (2025), Applied Surface Science Advances 27 (2025) 100753, DOI: 10.1016/j.apsadv.2025.100753

Protective coatings for complex organic flexible materials II: Improvement of tribological performance of three different rubbers by deposition of TiO₂ and ZnO films by magnetron sputtering, B. Tiss a, D. Martínez-Martínez, C. Mansilla J.R. Gomes, C.S. Abreu, N. Pereira, L. Cunha (2025) Tribology International 212 (2025) 110974, DOI: 10.1016/j.triboint.2025.110974

Quercetin and omega-3 fatty acids-loaded lipid hybrid nanoassemblies as promising antimicrobial biofilm strategies, A.B.V. Pereira, M.S. Terroso, H. Gonçalves, J. Catita, D. Santos, R.M.F. Baptista, F.J. Monteiro, Marlene Lúcio, C.M. Lopes, M.P. Ferraz; Mat. Today Nano 32 (2025) 100677; <https://doi.org/10.1016/j.mtnano.2025.100677>

Quercetin-mediated green synthesis of Au/TiO₂ nanocomposites for the photocatalytic degradation of antibiotic ciprofloxacin González-Ballesteros N., Martins P.M., Tavares C.J., Lanceros-Méndez S. (2025) Journal of Industrial and Engineering Chemistry, 143, pp. 526 - 537, DOI: 10.1016/j.jiec.2024.09.003

Raman measurements on gamma irradiated chestnut fruits, Amílcar L. Antonio, Sandra Cabo Verde, M. Fatima Cerqueira, Radiation Physics and Chemistry 230 (2025) 112547; <https://doi.org/10.1016/j.radphyschem.2025.112547>

Recent Advances in Ionic Liquid-Based Hybrid Materials for Electroactive Soft Actuator Applications Fernandes L.C., Correia D.M., Costa C.M., Lanceros-Mendez S. (2025)

Macromolecular Materials and Engineering, 310 (2), art. no. 2400279, DOI: 10.1002/mame.202400279

Recent advances in metal-based antimicrobial coatings. P. Pereira-Silva, J. Borges, P. Sampaio, Adv. Colloid Interface Sci. 344 (2025) 103590. <https://doi.org/10.1016/j.cis.2025.103590> (with CBMA)

Reduced Graphene oxide-based sustainable ink formulations and their implementation in screen-printed graphene field effect transistors and humidity sensors development Franco M., Peřinka N., Mulla M.Y., Freitag K., Vicente J., Kumar A., Andersson Ersman P., Lanceros-Méndez S. (2026) Sensors and Actuators B: Chemical, 450, art. no. 139273, DOI: 10.1016/j.snb.2025.139273

Remote Activation of Antimicrobial Properties via Magnetolectric Stimulation of Biopolymer-Based Nanocomposites Moreira J., Fernandes M.M., Correia D.M., Correia V., Rincón-Iglesias M., Lanceros-Mendez S. (2024) Advanced Materials Interfaces, 11 (34), art. no. 2400080, DOI: 10.1002/admi.202400080

Removing antibiotics from watercourses by surface immobilization of TiO₂ nanoparticles on poly(vinylidene fluoride) membranes by recrystallization under pressure Martins L.A., Ribelles J.L.G., Ródenas-Rochina J., Akudolu-Imafidon D.C., Sabater i Serra R., Gómez-Tejedor J.A., Lanceros-Méndez S., Tort-Ausina I. (2025) Results in Engineering, 28, art. no. 108232, DOI: 10.1016/j.rineng.2025.108232

Revisiting De Magnete: Printed routes for tunable magnetoelectricity in energy-efficient devices Carvalho R., Amorim L., Ribeiro C., Lanceros-Mendez S., Serpelloni M., Polidori G., Martins P. (2025) Chemical Engineering Journal, 523, art. no. 166453, DOI: 10.1016/j.jcej.2025.166453

Reviving the Colors of Paintings by Removing the Protective Coating: A Physical and Virtual Intervention, Monteiro, José A.R., Liliana Cardeira, Ana Bailão, Sérgio Miguel Cardoso Nascimento, and João M.M. Linhares, Journal of Cultural Heritage 74 (July 2025): 322–31. <https://doi.org/10.1016/j.culher.2025.06.015>.

Room-Temperature Hybrid Solid Polymer Electrolytes Incorporating Poly(vinylidene fluoride-co-hexafluoropropylene), Ionic Liquids, and Ceramic Particles for Solid-State Batteries Lucas M., Gonçalves R., Kallio T., Pakseresht S., Obrezkov F., Clain S., Malheiro M.T., Lanceros-Mendez S., Costa C.M. (2025) ACS Applied Energy Materials, 8 (6), pp. 3904 - 3915, DOI: 10.1021/acsaem.5c00186

Salicylic acid ionization dynamics in aqueous solution for pharmaceutical formulations, Ahmad Telfah, Salam Thiabat, Anas M. Ababneh, Ahmad A. Ahmad, Zaid Q. Ababneh, Qais M. Al Bataineh, Carlos J. Tavares, *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 725 (2025) 137601.

<https://doi.org/10.1016/j.colsurfa.2025.137601143>

Search for $\sqrt{s} = 13$ TeV with the ATLAS detector ATLAS Collaboration • Georges Aad (Marseille, CPPM) et al. e-Print: 2211.01136 [hep-ex] DOI: 10.1007/JHEP07(2023)203, 10.1007/JHEP05(2025)159 (erratum) Published in: JHEP 07 (2023), 203, JHEP 05 (2025), 159 (erratum)

Second harmonic generation and crystal structure of a self-assembled Boc-p-nitro-L-phenylalanyl-p-nitro-L-phenylalanyl dipeptide, Rosa M.F. Baptista, A. P. Ayala, E. Matos Gomes, M.C.R. Castro, A.V. Machado, M. Belsley, *CrystEngComm*, 27 (14) (2025) 2195-2203, doi:10.1039/d5ce00134j (with CQUM)

Self-assembly pathway influence on dehydropeptide-based gel properties and drug release, S.R.S. Veloso, T. Vijayakanth, S. Shankar, N. Fridman, L. Hilliou, P.V. Rodrigues, C. Moura, P.M.T. Ferreira, M. A. Correa-Duarte, Elisabete M.S. Castanheira, E. Gazit, *Macromolecular Bioscience* 25(9), (2025) 70003; <https://doi.org/10.1002/mabi.202400449> (with CQUM)

Self-assembly pathway influence on dehydropeptide-based gel properties and drug release, S.R.S. Veloso, T. Vijayakanth, S. Shankar, N. Fridman, L. Hilliou, P.V. Rodrigues, C. Moura, P.M.T. Ferreira, M. A. Correa-Duarte, Elisabete M.S. Castanheira, E. Gazit, *Macromolecular Bioscience* 25(9), (2025) 70003; <https://doi.org/10.1002/mabi.202400449> (with CQUM)

Self-Cleaning Road Marking Paints for Improved Road Safety: Multi-Scale Characterization and Performance Evaluation Using Rhodamine B and Methylene Blue as Model Pollutants. Lima, O., Jr.; Rocha Segundo, I.; Mazzoni, L.; Freitas, E.; Carneiro, J. *Coatings*. 2025; 15(11):1349, <https://doi.org/10.3390/coatings15111349>

Separator membranes for aqueous zinc-manganese oxide batteries: a comprehensive review on experimental results and theoretical simulations Rodrigues-Marinho T., Miranda D., Barbosa J.C., Gonçalves R., Lancers-Méndez S., Costa C.M. (2025) *Sustainable Energy and Fuels*, 9 (6), pp. 1432 - 1446, DOI: 10.1039/d4se01817f

Should EVs prioritize range? Strategies for efficient battery use, energy transition, and sustainability Zhao M., Costa C.M.,

Villaluenga I., Scheiba F., Zhang J., Wang W., Lancers-Méndez S., Zhang Q. (2025) *Materials Today Energy*, 52, art. no. 101945, DOI: 10.1016/j.mtener.2025.101945

Solid polymer electrolyte based on poly (vinylidene fluoride) with metal-organic framework and protonic ionic liquid for high-performance solid-state lithium-ion batteries at room temperature Macedo V.M., Gonçalves B.F., Barbosa J.C., Fidalgo-Marijuan A., Ruiz de Larramendi I., López del Amo J.M., Gonçalves R., Costa C.M., Martínez-Ibañez M., Lancers-Mendez S. (2025) *Journal of Power Sources*, 657, art. no. 238138, DOI: 10.1016/j.jpowsour.2025.238138

Spin pumping mechanism in Py/SnTe bilayers: An approach through the magnetoimpedance effect. A. de Moraes, E.C. Souza, A.L. de Silva, M. Gamino, E.F. da Silva, A. Ferreira, F. Vaz, C. Lopes, F. Bohn, M.A. Correa. *Journal of Alloys and Compounds* 1031 (2025) 181039. Doi: <https://doi.org/10.1016/j.jallcom.2025.181039>.

Structural Organization of Imidazolium-Based Ionic Liquids and Metal–Organic Frameworks within a Fluorinated Polymer Matrix and Its Influence on the Physical-Chemical Response Fernandes L.C., Gonçalves B.F., Petrenko V., Cavalcanti L.P., Tubio C.R., Botelho G., Costa C.M., Correia D.M., Lancers-Mendez S. (2025) *ACS Applied Polymer Materials*, 7 (18), pp. 12345 - 12355, DOI: 10.1021/acsapm.5c02138

Study of the Cu(In,Ga)Se₂ crystallization process through a combination of in-situ characterization techniques, José Fonseca, Carlos J Tavares, Alec P LaGrow, Zakaria Ziadi, Oleksandr Bondarchuk and Sascha Sadewasser, *J. Phys. Energy* 7 (2025) 035022. <https://iopscience.iop.org/article/10.1088/2515-7655/ade5c6>

Sunlight-Induced Photocatalytic Removal of Paracetamol Using Au-TiO₂ Nanoparticles Aoudjit L., Queirós J.M., Castro A.S., Zioui D., González-Ballesteros N., Lancers-Mendez S., Martins P.M. (2025) *Nanomaterials*, 15 (5), art. no. 358, DOI: 10.3390/nano15050358

Sustainable Battery Biomaterials Crespilho F.N., Costa C.M., Lancers-Méndez S. (2025) *ChemElectroChem*, 12 (3), art. no. e202400530, DOI: 10.1002/celec.202400530

Sustainable Electrochemical-Magnetic Biosensor Fabricated from Recycled Materials for Label-Free Detection of SARS-CoV-2 in Human Saliva Carvalho C.L.C., Nascimento S.Q., Bertaglia T., Faria L.C.I., Manuli E.R., Pereira G.M., da Silva W.C., Costa C.M., Maestu J.F., Lancers-Méndez S., Oliveira O.N., Jr., Sabino E.C., Crespilho F.N. (2025) *ACS Sensors*, 10 (3), pp. 1970 - 1985, DOI: 10.1021/acssensors.4c03175

Sustainable Power Generation with an All-Silk Electronics-Based Yeast Wearable Biobattery Policia R., Brito-Pereira R., Costa C.M., Lanceros-Méndez S., Crespilho F.N. (2025) ACS Omega, 10 (12), pp. 12522 - 12529, DOI: 10.1021/acsomega.5c00131

Sustainable soft actuators based on chitosan and choline containing ionic liquids with high bending response Serra J.P., Andonegi M., Salazar H., Correia D.M., de la Caba K., Guerrero P., Lanceros-Mendez S., Costa C.M. (2025) International Journal of Biological Macromolecules, 320, art. no. 145972, DOI: 10.1016/j.ijbiomac.2025.145972

Synthesis of Nb-Doped TiO₂ Nanoparticles for Photocatalytic Degradation of Ciprofloxacin: A Combined Experimental and DFT Approach Shili B., Khaldi O., Mendes-Felipe C., Rosales M., Alves D.C., Martins P.M., Ben Younes R., Lanceros-Mendez S. (2025) Nanomaterials, 15 (17), art. no. 1307, DOI: 10.3390/nano15171307

Tailoring dielectric properties of flexible ceramic sheets through graphene doping in the diatomite matrix. P.H. Chiberio, H.P.A. Alves, J.M.D. Neto, A. Ferreira, M.A. Correa. Journal of the American Ceramic Society, 108(4), e20285 (2025). DOI: <https://doi.org/10.1111/jace.20285>

Tailoring poly(vinylidene fluoride-trifluoroethylene-chlorofluoroethylene) membrane microstructure for lithium-ion battery separator applications Pinto R.S., Serra J.P., Barbosa J.C., Silva M.M., Salado M., Fidalgo Marijuan A., Amayuelas E., Grosu Y., Gonçalves R., Lanceros-Mendez S., Costa C.M. (2025) Journal of Colloid and Interface Science, 680, pp. 714 - 724, DOI: 10.1016/j.jcis.2024.11.013

Tailoring the piezoelectric and electrocaloric response of nanocomposites based on poly (vinylidene fluoride-trifluoroethylene-chlorotrifluoroethylene) with barium strontium titanate ceramic particles Costa C.M., Diez A.G., Zarandona A., Martinez-Perdiguer J., Gonçalves R., Sun H., Chen K., Peng B., Liu L., Zhang Q., Lanceros-Mendez S. (2025) Polymer, 325, art. no. 128305, DOI: 10.1016/j.polymer.2025.128305

Targeting flexible photodetectors responsive to specific irradiation spectra based on polymer-based composites Raimundo R.P., Correia V., Gonçalves B.F., Costa P., Tubio C.R., Salado M., Lima A.C., Cardoso V.F., Lanceros-Méndez S. (2025) Journal of Power Sources, 626, art. no. 235790, DOI: 10.1016/j.jpowsour.2024.235790

Tear Film Changes and Ocular Symptoms Associated with Soft Contact Lens Wear. Eduardo Insua Pereira, Madalena Lira, Ana Paula Sampaio. Vision 2025; 9,27. DOI: <https://doi.org/10.3390/vision9020027> (com colaboração do CBMA)

Tear Film Stability in Children: Age and Sex Associations Explored through Non-Invasive Tear Break-up Time, Silva, Filipe Da, João M.M. Linhares, Jorge Jorge, and Madalena Lira, Contact Lens and Anterior Eye 48, no. 3 (2025): 102351. <https://doi.org/10.1016/j.clae.2024.102351>.

Tetrahedrite Nanocomposites for High Performance Thermoelectrics, Rodrigo Coelho, Duarte Moço, Ana I. de Sá, Paulo P. da Luz, Filipe Neves, M. Fátima Cerqueira, Elsa B. Lopes, Francisco P. Brito, Panagiotis Mangelis, Theodora Kyratsi, António P. Gonçalves, Nanomaterials 15 (2025) 351; <https://doi.org/10.3390/nano15050351>

The duality of thermal and magnetic properties of Ni-Ta thin films: A new generation of sensing devices. N. Afonso, C. Lopes, G. Siqueira, M.A. Correa, A. Morais, J. Laranjeira, F. Vaz, M. Andritschky, A. Ferreira. Measurement, 246, 116758 (2025). DOI: <https://doi.org/10.1016/j.measurement.2025.116758>

The influence of the nanostructure design on the corrosion behaviour of TiN thin films prepared by glancing angle deposition. C. Lopes, A.C. Alves, A. Ferreira, E. Alves, N.P. Barradas, I. Borsan, D. Munteanu, F. Vaz. Materials Chemistry and Physics, 329, 130100 (2025). DOI: <https://doi.org/10.1016/j.matchemphys.2024.130100>

The optics of simultaneous vision intraocular lenses. Faria-Ribeiro, M.. (2025). Journal of Cataract & Refractive Surgery, 51(7), 618-628.

The wide range of battery systems: From micro- to structural batteries, from biodegradable to high performance batteries Costa C.M., Salado M., Ferrara C., Ruffo R., Mustarelli P., Mao R., Feng S., Shang Y., Wang X., Lei Z., Bai R., Yan C., Lee K.-H., Kim S.-W., Kim T.-H., Lee S.-Y., Kong L., Zhang Q., Devnani H., Gupta S., Rohan J.F., Curtis N.S., Lahiri A., He Y., Lanceros-Mendez S. (2025) Progress in Materials Science, 154, art. no. 101506, DOI: 10.1016/j.pmatsci.2025.101506

Thermoelectric performance of smart textiles: Influence of graphene nanoplatelet concentration and textile substrate, Luisa M. Arruda, Beate Krause, Mónica P.S. Ferreira, Afonso Gonçalves, João Bessa, Fernando Cunha, Carlos José Tavares, Antonio J. Paleo, Petra Pötschke, Raul Figueiro, Results in Surfaces and Interfaces 21 (2025) 100685. <https://doi.org/10.1016/j.rsufi.2025.100685>

Thermomagnetic energy conversion evaluation of Permalloy/Platinum multilayers on poly(vinylidene fluoride)-based flexible substrates Ferreira A., de Moraes A., Costa C.M., Lopes C., Neto J.M.D., Lanceros-Mendez S., Vaz F., Correa M.A. (2025) Journal of Alloys and Compounds, 1010, art. no. 178051, DOI: 10.1016/j.jallcom.2024.178051

Third-order theory of central and peripheral eye refraction. Blanco-Martinez, I., Faria-Ribeiro, M., & Navarro, R. (2025). *Journal of the Optical Society of America A*, 42(7), 1004-1012.

Ti-Cu dry electrodes for biomedical sensing: Tribocorrosion performance under simulated skin conditions. A.C. Alves, C. Lopes, A. Camarinha, D. Geraldo, F. Toptan, A. Ferreira, F. Vaz. *Surfaces and Interfaces*, 67, 106613 (2025). DOI:<https://doi.org/10.1016/j.surfin.2025.106613>

Tunable exciton polaritons in biased bilayer graphene; V.G.M. Duarte, P. Ninhos, C. Tserkezis, N. Asger Mortensen, N.M.R. Peres, A.J. Chaves; *Phys. Rev. B* 111 (2025) 075411; <https://doi.org/10.1103/PhysRevB.111.075411>

Tuning the properties of gelatin films through crosslinking and addition of ionic liquids Etxabide A., Carvalho E.O., Pereira N., Correia D., Guerrero P., Costa C.M., de la Caba K., Lanceros-Mendez S. (2025) *Reactive and Functional Polymers*, 216, art. no. 106445, DOI: 10.1016/j.reactfunctpolym.2025.106445

Ultra-sensitive, self-powered, CMOS-compatible near-infrared photodetectors for wide-ranging applications; N. E. Silva, A. R. Jayakrishnan, A. Kaim, K. Gwozdz, L. Domingues, J. S. Kim, M. C. Istrate, C. Ghica, M. Pereira, L. Marques, M. J. M. Gomes, R. L. Z. Hoye, J. L. MacManus-Driscoll, J. P. B. Silva, *Advanced Functional Materials* 35 (2025) 2416979. doi: 10.1002/adfm.202416979.

Understanding the structural and optical evolution of Eu3+ and Dy3+ co-doped YVO4 phosphors across concentration series for lighting applications, Houssem E. Sekrafi, Eya Hergli, S. Ferdov, Paulo J.G. Coutinho, L. Rebouta, *Journal of Alloys and Compounds* 1010 (2025) 177389; <https://doi.org/10.1016/j.jallcom.2024.177389>

Understanding the structural and optical evolution of Eu3+ and Dy3+ co-doped YVO4 phosphors across concentration series for lighting applications, Houssem E. Sekrafi, Eya Hergli, S. Ferdov, Paulo J.G. Coutinho, L. Rebouta, *Journal of Alloys and Compounds* 1010 (2025) 177389; <https://doi.org/10.1016/j.jallcom.2024.177389>

Vapor phase processing as a strategy towards MXene formation, Roman Parkhomenko, Oreste De Luca, Petra Rudolf, Evgeny Modin, Diego Martínez Martínez, Luís Cunha, Mato Knez, (2025) *Materials Today Advances* 26 (2025) 100587, DOI: 10.1016/j.mtadv.2025.100587

Variation of the general mixing rule to explore the interphase in the AC electrical conductivity of polypropylene melt-mixed with as-grown carbon nanofiber composites, Najoia Aribou, Antonio J. Paleo, Jaime Oliveira da Silva, Carlos J. Tavares, M. Essaid Achour, *Physica B: Condensed Matter* 714 (2025) 417420. <https://doi.org/10.1016/j.physb.2025.417420>

Wavefront sensing: A breakthrough for objective evaluation of dynamic accommodation in accommodative dysfunctions. Gomes, J., Franco, S. *Computers in Biology and Medicine* Open source preview, 186 DOI: 10.1016/j.combiomed.2025.109718

What Intrinsic Factors Affect the Central Corneal Thickness, Da Silva, Filipe, João M. M. Linhares, and Madalena Lira, *Ophthalmic and Physiological Optics* 45, no. 1 (2025): 315–32. <https://doi.org/10.1111/opo.13414>.

Wireless Stimulation of Barium Titanate@PEDOT Nanoparticles Toward Bioelectrical Modulation in Cancer Jones C.F., Carvalho M.S., Jain A., Rodriguez-Lejarraga P., Pires F., Morgado J., Lanceros-Mendez S., Ferreira F.C., Esteves T., Sanjuan-Alberte P. (2025) *ACS Applied Materials and Interfaces*, 17 (6), pp. 8836 - 8848, DOI: 10.1021/acsam.4c12387

ZnO nanostructures for biosensing applications: Recent advances, challenges, and future perspectives; M. Bhakyalatha, S. Sathish, K.C. Sekhar, José P.B. Silva, Koppole Kamakshi, *Microchemical Journal* 213 (2025) 113893. Doi: 10.1016/j.microc.2025.113893.

Sustainable synthesis of carbon nanomaterials: Green methods from biomass waste for theranostic and bioremediation applications; Bruna Martins, C.M. Lopes, A.C. Gomes, Marlene Lúcio, *Materials Today Nano* 32 (2025) 100697; doi:10.1016/j.mtnano.2025.100697

Evaluating retinal image quality for myopia control lenses in a synthetic accommodative wavefront model

Imaging the Neel Vector in Few-Layer CrPS4 with Second-Harmonic Generation, NANO LETTERS, Viana-Gomes, JC (Viana-Gomes, Jose C.) Volume25Issue14Page5624-5630 DOI10.1021/acs.nanolett.4c06237

The Aberrometric Effect of Corneal Plus Power Ring Distribution on Axial Length Growth in Myopic Children Undergoing Orthokeratology Treatment
