ICMM-CSIC INTERNSHIP OFFER (2025-2026)





TYPE OF INTERNSHIP	PROGRAMS	Preferred Education Background	Internship Duration (months)	from	to	SUBJECT	SUMMARY	SUPERVISOR	email	Research Group
Any educational level including high school	High Schools Internships (with agreements in force) Prácticas de Formación Profesional (reguladas por convenio del CSIC con la Consejería de Educación de la Comunidad de Madrid) Prácticas Curriculares de Grado/Trabajos Fin de Grado (Universidades Españolas con convenios vigentes con CSIC) Prácticas Curriculares de Máster/Trabajos Fin de Máster (Universidades Españolas con convenios vigentes con CSIC) Internships students from foreign institutions (with bilateral agreements with CSIC) ERASMUS+ programme	While not essential, a background in chemical sciences—particularly physical chemistry—would be beneficial	(months)	16/09/2025	31/08/2026	Real-Time Chemistry: Spectroscopic Windows into Catalysis	Our research group develops advanced spectroscopic tools to design efficient catalysts for key chemical reactions like water splitting, hydrogen production, and converting methane into methanol. We're especially interested in mimicking nature—such as enzymes that oxidize methane—and creating artificial systems for solar energy conversion. To understand how these catalysts work and improve their performance, we use powerful techniques like time-resolved X-ray spectroscopy. These allow us to capture ultrafast changes in the structure and electronic states of molecules during reactions, helping us uncover what makes a catalyst active and stable. We combine synchrotron-based X-ray methods with labbased techniques like UV-Vis, Raman, and electron paramagnetic resonance spectroscopy. Our work bridges chemistry, physics, and materials science to push forward clean energy technologies.	Dooshaye Moonshiram	dooshaye.moonshiram@csic.es	Time-resolved Spectroscopy in Biological and Chemical Catalysis
Any educational level including high school Undergraduate students Master students	High Schools Internships (with agreements in force) Prácticas de Formación Profesional (reguladas por convenio del CSIC con la Consejería de Educación de la Comunidad de Madrid) Prácticas Curriculares de Grado/Trabajos Fin de Grado (Universidades Españolas con convenios vigentes con CSIC) Prácticas Curriculares de Máster/Trabajos Fin de Máster (Universidades Españolas con convenios vigentes con CSIC) Internships students from foreign institutions (with bilateral agreements with CSIC) ERASMUS+ programme	Physics		15/09/2025	30/06/2026	High-performance computer simulations of spin models	Are you curious about the physics behind tomorrow's technologies? Join our research group, where we combine fundamental science with the search for innovative solutions in spin-based electronics and next-generation computing architectures. Our team is a dynamic mix of seven graduate students and three senior researchers, working together on cutting-edge problems in computational modeling of magnetic materials. We investigate phenomena ranging from the electronic ground state to ultrafast dynamical responses on femtosecond timescales.\nCurrent research topics include\notational stabilizing and controlling complex magnetic couplings\notational (2D) magnetic systems\n\computational studies of topological properties in spin systems\nWhat you'll gain as an intern\n\n\Hands-on experience with high-performance computing tools\notation\notational repertions of the couplings\notational studies of topological properties in spin systems\n\Skills in Python-based data processing and scripting\n\nFxpoure to a stimulating research environment that values curiosity, collaboration, and creativity\n\n\n\text{This internship is ideal for students interested in physics, materials science, or computational methods who want to experience real-world research at the intersection of fundamental physics and emerging technology\n	Unai Atxitia Macizo	u.atxitia@csic.es	Multiscale Materials Modelling

Any educational level	· High Schools Internships	Chemistry, engnnering,	7	12/01/2026	25/06/2026	Materials and cyhemical	Using waste, which often poses an environmental	M. A. Martin-Luengo	mluengo@icmm.csic.es	Design of new
including high school	(with agreements in force)	environment, biology				substances for a cleaner	problem, renewable energy, substances and materials, can			materials and
· Undergraduate students	· Prácticas de Formación Profesional					future	be produce, reducing dependence on fossil fuels and			substances for circular
· Master students	(reguladas por convenio del CSIC con la						advocating for a Circular Economy, an interesting			economy and
	Consejería de Educación de la Comunidad de						philosophy from both economic and environmental			sustainability
	Madrid)						perspectives.			
	Prácticas Curriculares de Grado/Trabajos									
	Fin de Grado (Universidades Españolas con						First, a summary will be studied to describe the influence			
	convenios vigentes con CSIC)						of scientific and technological developments on the			
	Prácticas Curriculares de Máster/Trabajos						current global situation. Some substances and processes			
	Fin de Máster (Universidades Españolas con						have contributed to an unprecedented quality of life, but			
	convenios vigentes con CSIC)						have also had, in some cases, irreparable consequences for the environment and health. This relates to the			
	Internships students from foreign									
	institutions (with bilateral agreements with CSIC)						exponential increase in population and the resulting needs.\nThe aim is to promote the Circular Economy			
	· ERASMUS+ programme						(CE) and Sustainable Development (SD), with a view to			
	Eloto 103 · programme						an economic, social, and environmental model that will			
							help combat Climate Change (CC). Currently, one of the			
							most important actions carried out in this regard is waste			
							reduction to protect the environment and human health,			
							while replacing non-renewable natural resources with			
							waste.			
							waste.			
							Some examples to be studied are water purification to			
							combat desertification and tissue engineering to alleviate			
							the need for these, given the increasing average age of the			
							population la			
Any educational level	· High Schools Internships	Some experience is		16/09/2025	01/09/2026	Real-Time Chemistry:	Our research group develops advanced spectroscopic	Dooshaye	dooshaye.moonshiram@csic.es	Time-resolved
including high school	(with agreements in force)	chemical sciences is				Spectroscopic Windows	tools to design efficient catalysts for key chemical	Moonshiram		Spectroscopy in
· Undergraduate students	· Prácticas de Formación Profesional	beneficial although not				into Catalysis	reactions like water splitting, hydrogen production, and			Biological and
· Master students	(reguladas por convenio del CSIC con la	essential.					converting methane into methanol. We're especially			Chemical Catalysis
	Consejería de Educación de la Comunidad de						interested in mimicking nature—such as enzymes that			
	Madrid)						oxidize methane—and creating artificial systems for solar			
	· Prácticas Curriculares de Grado/Trabajos						energy conversion.			
	Fin de Grado (Universidades Españolas con									
	convenios vigentes con CSIC)						To understand how these catalysts work and improve			
	· Prácticas Curriculares de Máster/Trabajos						their performance, we use powerful techniques like time-			
	Fin de Máster (Universidades Españolas con						resolved X-ray spectroscopy. These allow us to capture			
	convenios vigentes con CSIC)						ultrafast changes in the structure and electronic states of			
	· Internships students from foreign						molecules during reactions, helping us uncover what			
	institutions (with bilateral agreements with						makes a catalyst active and stable.			
	CSIC)									
	· ERASMUS+ programme						We combine synchrotron-based X-ray methods with lab-			
							based techniques like UV-Vis, Raman, and electron			
							paramagnetic resonance spectroscopy. Our work bridges			
							chemistry, physics, and materials science to push forward			
							clean energy technologies			
Any educational level	High Schools Internships (with agreements in	Physics		01/09/2025	30/06/2026	Emergence of mental	In recent years it has been recognized the contribution of	Belén Valenzuela	belenv@icmm.csic.es	Quantum Materials for
including high school	force)					states in cognitive	tools in physics to model the mind.\nln particular, the			Quantum Technologies
· Undergraduate students	Prácticas Curriculares de Grado/Trabajos					networks	concept of emergence of perceptual states from a			
· Master students	Fin de Grado (Universidades Españolas con						configuration of cognitive networks. This internship			
1							project is recommended to students curious in an			
1	convenios vigentes con CSIC)			1	l	Ī	interdisciplinary domain from physics to cognition.	i		
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Placer soutiens Process Curriculates de Grado Tralejous	Master students	Prácticas Curriculares de Grado/Trabajos	Chemistry	6	12/01/2026	30/06/2026	Development of new	Synthesis and develpoment of new hybrid glasses based	Celia Castillo Blas	castillo@icmm.csic.es	SUPREMA
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Principal Curriculares de Mister/Tralujos Fin de Pister (Universidade Españolas con comenios (gentes con CSIC)		Fin de Grado (Universidades Españolas con	•				Optical Materials for	ability to precisely control the structural properties of	•	-	
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Internships students from foreign institutions (with bilateral agreements with CSIC) ERASMUS+ programme The programme the prog		Fin de Máster (Universidades Españolas con					batteries for optimum	system (instrumentation) to analyze, using programmable			
institutions (with bilateral agreements with CSIC) ERASMUS+ programme Gramme Gramma Gramm		convenios vigentes con CSIC)					performance	power supplies, data acquisition systems, and surface			
institutions (with bilateral agreements with CSIC) ERASMUS+ programme during different charge and discharge cycles. Furthermore, carbon-based materials will be used to effectively dissipate heat from the battery, thus improving its performance and lifespan. This experimental work will be combined with finite element simulations for system optimization. The work carried out will be part of a European project (ERC CoG) and will involve		· Internships students from foreign						thermocouples, the heat generated by a planar battery			
CSIC) • ERASMUS+ programme carbon-based materials will be used to effectively dissipate heat from the battery, thus improving its performance and lifespan. This experimental work will be combined with finite element simulations for system optimization. The work carried out will be part of a European project (ERC CoG) and will involve		institutions (with bilateral agreements with									
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European project (ERC CoG) and will involve								,			1
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Collaboration with various industrial partners, like Philips.											
								·			
ASML and Thales.								ASML and Thales.			

Master students	Prácticas Curriculares de Máster/Trabajos Fin de Máster (Universidades Españolas con convenios vigentes con CSIC) Internships students from foreign institutions (with bilateral agreements with CSIC) - ERASMUS+ programme	Physics or Engineering	6	29/09/2025	30/06/2026	Thermal management of batteries for optimum performance	In this project, the student will develop an experimental system (instrumentation) to analyze, using programmable power supplies, data acquisition systems, and surface thermocouples, the heat generated by a planar battery during different charge and discharge cycles. Furthermore, carbon-based materials will be used to effectively dissipate heat from the battery, thus improving its performance and lifespan. This experimental work will be combined with finite element simulations for system optimization. The work carried out will be part of a European project (ERC CoG) and will involve collaboration with various industrial partners, like Philips, ASML and Thales.		m.m.rojo@csic.es	2D Foundry
Undergraduate students	Prácticas Curriculares de Grado/Trabajos Fin de Grado (Universidades Españolas con convenios vigentes con CSIC) • Prácticas Curriculares de Máster/Trabajos Fin de Máster (Universidades Españolas con convenios vigentes con CSIC)	Chemical Engineering	4	07/01/2026	29/05/2026	Development of hybrid porous materials for water remediation	Synthesis of new based-metal-organic framework materials for the decontamination of water. Particularly the project will treat the capture and the degradation of microplastics	Celia Castillo Blas	castillo@icmm.csic.es	SUPREMA
Undergraduate students · Master students	Prácticas Curriculares de Grado/Trabajos Fin de Grado (Universidades Españolas con convenios vigentes con CSIC) Prácticas Curriculares de Máster/Trabajos Fin de Máster (Universidades Españolas con convenios vigentes con CSIC) Internships students from foreign institutions (with bilateral agreements with CSIC) ERASMUS+ programme	Physics, Chemistry, Material Science, related	6	01/10/2025	30/06/2026	Nanoscale Control of 3D Printed Materials Properties	This research project is a chance to dive into the world of 3D laser writing. Instead of just printing, you will be using lasers to change material properties at the nanoscale. By precisely controlling the laser's dose we seek to customize electrical properties, surface wettability, and adhesion of our 3D printed polymers. You will use an Atomic Force Microscope (AFM) in various modes to measure these changes, proving you can engineer new materials from the ground up.	Eider Berganza	eider.berganza@csic.es	Nanomagnetism
Undergraduate students · Master students	Prácticas Curriculares de Grado/Trabajos Fin de Grado (Universidades Españolas con convenios vigentes con CSIC) Prácticas Curriculares de Máster/Trabajos Fin de Máster (Universidades Españolas con convenios vigentes con CSIC) Internships students from foreign institutions (with bilateral agreements with CSIC) ERASMUS+ programme	Physics, Chemistry, Material Science, Engineering,		01/10/2025	30/06/2026	3D laser writing at the microscale	Are you interested in cutting-edge nanotechnology, 3D printing, and exploring the limits of material science? Join our lab for a hands-on research internship focused on two-photon lithography (2PL) — a state-of-the-art 3D nanoprinting technique capable of fabricating structures with sub-micron precision. What You'll Do: Use Two-Photon Lithography to 3D-print custom nanoscale structures.\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n	Eider Berganza	eider.berganza@csic.es	Nanomagnetism
Undergraduate students · Master students	· ERASMUS+ programme	Chemistry	3	01/06/2026	31/08/2026	Delopment of new hybrid glasses to block UV radiation	Hybrid glasses field is a new and promising branch in the field of the coordination chemistry based on the recent discovery that coordination polymers and MOFs are able to melt. In this intership the student will synthetise hybrid materials, will prepare the glasses using a tube furnace and will characterise them by TGA, DSC, UV-VIS and PXRD. The student will also gain experience in the use of scientific software and will be in touch with international experts in the field.	Celia Castillo Blas	castillo@icmm.csic.es	SUPREMA

Undergraduate students	· Prácticas Curriculares de Máster/Trabajos	Chemistry	6	01/10/2025	30/06/2026	Development of new	Synthesis and develpoment of new hybrid glasses based	Celia Castillo Blas	castillo@icmm.csic.es	SUPREMA
· Master students	Fin de Máster (Universidades Españolas con			51/10/2023	30/00/2020	hybrid glasses for UV	on metal-organic frameworks. During this	Cona Casuno Dias	casano@icinin.csic.es	JOI ILLI II I
	convenios vigentes con CSIC)					protection	multidisciplinary project the student will acquire skills in			
	,						different techniques including single crystal X-ray			
							diffraction, powder diffraction, and thermal			
							characterisation. The project will evaluate the optical			
							characterisation of the material as well.			
Undergraduate students	· Prácticas Curriculares de Grado/Trabajos	Physics, Theoretical		01/10/2025	31/07/2026	Advanced simulation of	Our group is specialized in the multiscale simulation of	Silvia Gallego Queipo	sgallego@icmm.csic.es	Multiscale Materials
· Master students	Fin de Grado (Universidades Españolas con	Chemistry, Physics				nanostructured magnetic	nanostructured materials, from the electronic ground			Modelling
	convenios vigentes con CSIC)	Engineering, Materials				materials	state to the dynamical response in the micromagnetic			
	· Prácticas Curriculares de Máster/Trabajos	Science					regime under the action of temperature and external			
	Fin de Máster (Universidades Españolas con						fields. We investigate fundamental physics problems			
	convenios vigentes con CSIC)						related to the development of sustainable magnets, as			
	· Internships students from foreign institutions (with bilateral agreements with						well as to the search for technological solutions in the field of spin-based electronics and computing			
	CSIC)						architectures. Current projects include exploring the			
	· ERASMUS+ programme						conditions to stabilize complex magnetic couplings,			
							exploiting the singular features of two-dimensional (2D)			
							magnetic platforms, and manipulating the chemical and			
							structural properties of sustainable materials in order to			
							optimize their magnetic response. We are also interested			
							in testing the ability of acceleration techniques (high			
							throughput, machine learning) to capture the rich physics			
							of complex systems including disorder effects, long-range			
							interactions and large scale features difficult to access			
							with accurate ab initio approaches. Any of these topics			
							could be addressed in the present internship. We are also open to related topics suggested by the student that can			
							be addressed with the theoretical tools available in the			
							group.			
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Undergraduate students · Master students	· Prácticas Curriculares de Grado/Trabajos Fin de Grado (Universidades Españolas con	Physics and engineering (telecom, computer	6	16/09/2025	30/07/2026	Silicon Neurons: Building Brain-Inspired Computers	What if we could build systems that process information like brains using light instead of electricity? In this project,	Pedro David García Fernández	pd.garcia@csic.es	Cristales Fotónicos
Triaster students	convenios vigentes con CSIC)	science)				with Light and Vibrations	you'll explore how the natural thermal vibrations in tiny	remandez		
	Prácticas Curriculares de Máster/Trabajos	science)				WIGH LIGHT AND VIDIACIONS	silicon structures interact with trapped laser light,			
	Fin de Máster (Universidades Españolas con						creating an "optomechanical" coupling that can mimic			
	convenios vigentes con CSIC)						neural processing.			
	· Internships students from foreign						, ,			
	institutions (with bilateral agreements with						These nanostructures are constantly vibrating due to			
	CSIC)						thermal energy, and when you confine light in the same			
	· ERASMUS+ programme						tiny space, the optical and mechanical modes influence			
							each other in fascinating ways giving rise to strongly			
							nonlinear and complex dynamics. By measuring and controlling these dynamics, its possible to develop a new			
							type of neural network that can process information at			
							light speed with minimal power consumption.			
							6 - F 2-2 F-2/G Consumption			
							In this internship, you will get access to the models we			
							use to describe the dynamical regimes of the silicon			
							nanostructures and hands on experiments where we			
							process information in the time domain exploiting the			
							complexity of these tiny systems.			
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Undergraduate students · Master students	Prácticas Curriculares de Grado/Trabajos Fin de Grado (Universidades Españolas con convenios vigentes con CSIC) - Prácticas Curriculares de Máster/Trabajos Fin de Máster (Universidades Españolas con convenios vigentes con CSIC) - Internships students from foreign institutions (with bilateral agreements with CSIC) - ERASMUS+ programme	Physics and Engineering (Telecom engineering, computer science)	6	01/09/2025	31/07/2026	Silicon Neurons: Building Brain-Inspired Computers with Light and Vibrations	What if we could build systems that process information like brains using light instead of electricity? In this project, you'll explore how the natural thermal vibrations in tiny silicon structures interact with trapped laser light, creating an "optomechanical" coupling that can mimic neural processing. These nanostructures are constantly vibrating due to thermal energy, and when you confine light in the same tiny space, the optical and mechanical modes influence each other in fascinating ways giving rise to strongly nonlinear and complex dynamics. By measuring and controlling these dynamics, its possible to develop a new type of neural network that can process information at light speed with minimal power consumption.	Pedro David García Fernández	pd.garcia@csic.es	Cristales Fotónicos
Undergraduate students · Master students	Prácticas de Formación Profesional (reguladas por convenio del CSIC con la Consejería de Educación de la Comunidad de Madrid) Prácticas Curriculares de Grado/Trabajos Fin de Grado (Universidades Españolas con convenios vigentes con CSIC) Prácticas Curriculares de Máster/Trabajos Fin de Máster (Universidades Españolas con convenios vigentes con CSIC) Internships students from foreign institutions (with bilateral agreements with CSIC) ERASMUS+ programme	Chemistry	3	01/11/2025	30/06/2026	Green Science in Action: Developing Polymeric Porous Materials for Environmental Applications	The general goal is to develop new polymer-based materials using sustainable methods (mechanochemistry, green solvents, etc.) so that it can be used in applications of environmental interest such as CO2 conversion, biomass transformation, toxic metal removal, etc.	Eva M. Maya	eva.maya@csic.es	SUPREMA: Supremolecular, polymeric and reticular metarials
Undergraduate students · Master students	Prácticas Curriculares de Grado/Trabajos Fin de Grado (Universidades Españolas con convenios vigentes con CSIC) Prácticas Curriculares de Máster/Trabajos Fin de Máster (Universidades Españolas con convenios vigentes con CSIC)	Physics or Chemistry	3	05/01/2026	01/06/2026	Raman and structural characterization of 2D transitional metal carbides (MXenes)	In this assignment, the student will learn about a relatively new class of 2D materials known as MXenes. The objective of the work will be focused on the structural and physico-chemical characterization, specially with Raman spectroscopy, of our lab-made MXenes.	Miguel Muñoz Rojo	m.m.rojo@csic.es	2D Foundry
Undergraduate students · Master students	Prácticas Curriculares de Grado/Trabajos Fin de Grado (Universidades Españolas con convenios vigentes con CSIC) Prácticas Curriculares de Máster/Trabajos Fin de Máster (Universidades Españolas con convenios vigentes con CSIC) Internships students from foreign institutions (with bilateral agreements with CSIC)	Physics		01/10/2025	30/06/2026	Transferencia de información cuántica a través de puntos cuánticos semiconductores	The student will work on modeling protocols for quantum information transfer across different platforms, particularly in semiconductor quantum dot arrays, and will learn the properties of these systems for creating spin quantum bits and their applications in quantum computing.	Gloria Platero	gplatero@icmm.csic.es	Novel Platforms

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Undergraduate students	· Prácticas Curriculares de Grado/Trabajos	Physics and Chemistry	3	01/09/2025	31/07/2026	On-surface Synthesis of	This internship is framed within on-surface synthesis	Carlos Sánchez	cssanchez@icmm.csic.es	ESISNA
· Master students	Fin de Grado (Universidades Españolas con					Carbon-based	(OSS), an emerging and multidisciplinary field at the	Sánchez		
	convenios vigentes con CSIC)					Nanostructures	intersection of Surface Science, Organic Chemistry, and			
	· Prácticas Curriculares de Máster/Trabajos						Vacuum Technology. During the stay, the student will			
	Fin de Máster (Universidades Españolas con						take part in the on-surface synthesis of atomically precise,			
	convenios vigentes con CSIC)						carbon-based nanostructures that display novel quantum			
	· Internships students from foreign						properties, such as π-magnetism. These systems will be			
	institutions (with bilateral agreements with						experimentally characterized using a multi-technique			
	CSIC)						approach, including state-of-the-art scanning probe			
	· ERASMUS+ programme						microsco-pies (SPM) at cryogenic temperatures (5 K) and			
							photoemission spectroscopies such as X-ray photo-			
							emission spectroscopy (XPS).			
							This internship will give the student the opportunity to			
							gain hands-on experience in a rapidly growing field with			
							strong scientific and technological potential. It will provide			
							a broad perspective of the disci-pline together with			
							multidisciplinary training that bridges Physics and			
							Chemistry. The work will be car-ried out within the			
							ESISNA group, an internationally recognized leader in the			
							field of surface reactions, with strong collaborations with			
							•			
							leading research groups worldwide.			
Undergraduate students	· Prácticas Curriculares de Grado/Trabajos	Physics		01/09/2025	31/08/2026		In my group, we research on quantum science and	Rubén Seoane	ruben.seoane@csic.es	Quantum Materials for
· Master students	Fin de Grado (Universidades Españolas con	'					technologies, with special emphasis on implementations.			Quantum Technologies
	convenios vigentes con CSIC)						Topics include new qubit designs and devices for efficient			(Q4Q)
	· Prácticas Curriculares de Máster/Trabajos						electronics and precise sensing.			(2)
	Fin de Máster (Universidades Españolas con									
	convenios vigentes con CSIC)									
	· Internships students from foreign									
	institutions (with bilateral agreements with									
	CSIC)									
	· ERASMUS+ programme									
	- ENASITIOST programme									
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Undergraduate students	· Prácticas Curriculares de Grado/Trabajos	Physics, Chemistry	12	01/09/2025	30/07/2026	Wave-Particle Duality in	Does your phone heat up when you watch videos or use	Guilherme Vilhena	guilherme.vilhena@csic.es	www.nanotrib.com
· Master students	Fin de Grado (Universidades Españolas con					Heat Transport	GPS?\nThat heat is wasted energy, and avoiding it is one			
	convenios vigentes con CSIC)						of the great challenges of the digital future.\n\nln this			
	· Prácticas Curriculares de Máster/Trabajos						project, you'll join cutting-edge research led by our group			
	Fin de Máster (Universidades Españolas con						that has, for the first time, demonstrated that heat can			
	convenios vigentes con CSIC)						travel as a wave at room temperature, breaking with			
	,						classical paradigms of thermal transport. This property			
							opens the door to a revolution: devices that block or			
							redirect heat (like thermal diodes), or materials that cool			
							themselves depending on their structure.			
							themselves depending on their structure.			
							You'll work with theoretical models and numerical			
							simulations to understand—atom by atom—how			
							molecular vibrations can control heat flow. \n\nObjective:			
							·			
							design a thermal rectifier, something that allows almost			
							no heat to pass in one direction.			
							What We Offer:			
							Real group research experience, collaborating and			
							learning alongside researchers at different levels (more at			
							www.nanotrib.com)			
							Possibility to link the work to your Bachelor's (TFG) or			
							Master's (TFM) thesis			
							· Option to continue toward a PhD thesis			
							· In some cases, financial support may be available to help			
							cover the internship			
Undergraduate students	· Prácticas Curriculares de Grado/Trabajos	Physics, Chemistry	12	01/09/2025	30/07/2026	Nonequilibrium Physics:	Did you know that 23% of the energy we consume is lost	Guilherme Vilhena	guilherme.vilhena@csic.es	www.nanotrib.com
· Master students	Fin de Grado (Universidades Españolas con	,,				The Challenge of Energy	to friction processes? And that, to this day, we're not able		8	
Traster stadents	convenios vigentes con CSIC)					Dissipation	to predict friction a priori?			
	· Prácticas Curriculares de Máster/Trabajos					Dissipation	What you've learned so far about these processes are			
	Fin de Máster (Universidades Españolas con						empirical laws proposed by Leonardo da Vinci over 500			
	convenios vigentes con CSIC)						years ago, for example, that friction is proportional to the			
	convenios vigentes con CSIC)									
							normal load. But these laws don't explain what actually			
							happens at the contact interface, they don't guide physical			
							reasoning, and they don't always hold. In fact, when			
							they're violated, new and counterintuitive phenomena can			
							emerge.			
							This project invites you to explore that interface by			
							bringing in knowledge from solid-state physics, statistical			
							physics, and quantum mechanics, using atomistic			
							simulations and analytical models.			
							Objective: relate energy dissipation to intrinsic material			
							properties and establish the foundations of a fundamental			
							theory of friction (energy dissipation).			
							What We Offer: Real group research experience,			
							collaborating and learning alongside researchers at			
							different levels (more at www.nanotrib.com)			
							· Possibility to link the work to your Bachelor's (TFG) or			
							Master's (TFM) thesis			
							· Option to continue toward a PhD thesis			
							· In some cases, financial support may be available to help			
							cover the internship			
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