CSIC Scientific Supervisor	Contact	Host Center CSIC	Website	Vacancies	Researh Groups	Scientific area
Dr.David Hochberg and Dra. M. Isabel Herreros (co-supervisor)	hochbergd@cab.inta-csic.es	Center for Astrobiology (CAB-CSIC/INTA)	https://cab.inta-csic.es/	2	**Prebiotic Chemistry and Physics of Complex Systems.** Their research group is engaged in both theoretical and computational approaches for analyzing origin of life models and chemical evolution, based on chemical reaction network models, and we are a major reference in the astrobiological community. Their primary interest is in explaining the origin of mirror symmetry breaking in chemical networks.	Fields or sub-specialties of pure or applied physics, in applied mathematics, chemistry, and/or in one of the chemical, mechanical, or aeronautical engineering disciplines. Also some knowledge in fluid mechanics, thermodynamics, modelling and numerical simulation.
Dr. Manuel Perger	perger@ice.csic.es	Institute of Space Sciences (ICE-CSIC)	https://www.ice.csic.es/	1	**The star-planet connection.** The research group is focused on the modelling of stellar variations associated with magnetic activity and the understanding of high-energy emissions of stars and their evolution over time.The research group has developed the state-of-the-art code STARSIM which is able to model most important exoplanet observables and is developing machine learning techniques to mitigate stellar effects on both spectroscopic and photometric data.	Natural Sciences; good understanding of a programming language like python; astrophysics and the exoplanetary field; ideal but not necessary: experience in the application of basic python machine learning packages like pytorch or tensorflow
Dr. Jonas Ruh	jruh@icm.csic.es	Institute of Marine Sciences (ICM-CSIC)	https://www.icm.csic.es/en	2	**Barcelona Center for Subsurface Imaging.** The research group focuses on acquisition, analysis, and processing of geophysical data such as seismic tomographic imaging, beyond others. Furthermore, the supervisor (Jonas Ruh) works on geodynamic numerical modelling including code development and applications related to the evolution of various tectonic systems. **The supervisor is currently PI of a national project related to soft-sediment deformation in Taiwan**	Specialized/interested in numerical/mathematical modelling, ideally within a geophysics context, and specialized/interested in structural geology, working on small- or large-scale tectonic topics.
Dr. David Martín Sánchez	david.martin@imse-cnm.csic.es	Microelectronics Institute of Seville (IMSE-CSIC/US)	http://www.imse-cnm.csic.es/home.php	1	**Design of digital and mixed integrated circuits - Cybersecurity** . The main focus of the Cybersecurity Group is the development of integrated solutions for security applications. Among its objectives are verifying the identity of hardware devices and users, as well as the use of cryptographic techniques to store and communicate sensitive data. This group currently leads the EU-funded project SQPRIM, whose purpose is to provide hardware security using photonic devices.	Photonics. Experience in optical sensing, design of optical systems, and/or modelling of optical behaviour (such as beam propagation or field simulation) is desired. Programming skills using Python or MATLAB are valued
Dr. José María de la Rosa	jmrosa@irnase.csic.es	Institute of Natural Resources and Agrobiology of Seville (IRNAS-CSIC)	https://www.irnas.csic.es/moss/	1	**Organic Matter in Soils and Sediments (MOSS)** .This research group focuses its investigations on various aspects of Soil Biogeochemistry, as well as the impact of soil management on Carbon and Nitrogen dynamics and sequestration, and agricultural quality and productivity. Its primary objective is the study of the impact of environmental factors on the biogeochemical cycles of C and N, their implications for ecosystem sustainability, Carbon and Nitrogen sequestration, and global climate change.	Sciences, specifically Chemistry, Environmental sciences, Agricultural Engineering or Biology, with experience and a keen interest in working with soils. Additionally, a positive assessment will be given to candidates possessing knowledge of applied statistics for research purposes.
Dra. Mónica Carrera and Dr. Manuel Pazo	mcarrera@iim.csic.es ; mpazos@iim.csic.es	Institute of Marine Research (IIM-CSIC)	https://www.iim.csic.es/	1	**Chemistry of Marine Products (QPM)** group aims to investigate the chemistry and biochemistry of marine food products. The group study the quality and safety of seafood, and the bioactivity and biological impact that seafood may have on human health. The group also uses advanced proteomics and metabolomics tools to study food allergies and the immune relationship between seafood consumption and human health	GPA>8, DEGREE IN BIOLOGY, BIOTECHNOLOGY, BIOCHEMISTRY, CHEMISTRY OR SIMILAR

Contact	Email	Institute	Website	No.	Research Group Description	Desired Background
Dr. César Domingo Pardo, IFIC Dr. Neil Moffat, IMB-CNM	domingo@ific.uv.es neil.moffat@csic.es	Institute of Corpuscular Physics (IFIC-CSIC/UV) Institute of Microelectronics of Barcelona, National Center of Microelectronics (IMB-CNM-CSIC)	http://webgamma.ific.uv.es/gamma/es https://rdg.imb-cnm.csic.es/	1	**IFIC: Gamma-Ray Spectroscopy and Neutrons Research Group:** their group focuses on experimental nuclear physics research, with fundamental R+D on nuclear structure and astrophysics (nucleosynthesis) studies. To this aim we develop forefront instrumentation for experiments at radioactive ion-beam facilities, and for experiments at world-leading neutron-beam facilities. They also leads different knowledge-transfer applications, mainly in the fields of medical physics. **IMB-CNM: Radiation Detectors Group (RDG):** they have a considerable expertise in the design and fabrication of silicon radiation detectors with N-on-P, P-on-N, and N-on-N technologies for pad, strip and pixel sensors, with a special interest in 3D and LGAD detectors. In addition, the group has a wide experience in the fields of microelectronic fabrication technologies on silicon, simulation, device electrical characterization and study of radiation hardness of electronics for use in HEP experiments.	Microelectronics and semiconductor physics. Background knowledge or interest in the following topics would be desirable: solid-state radiation detectors, signal formation in detectors, photon-detection semiconductor technologies, analogue and digital pulse processing readout circuits, advanced interconnect technologies.
Dr. Mohammad Afsar Uddin	m.auddin@csic.es	Institute of Materials Science of Madrid (ICMM - CSIC)	https://www.icmm.csic.es/en/investigacion-y-transferencia/research-groups	2	**Multifunctional and Supramolecular Materials Group**. This group which aims to develop new photo- and electroactive smart organic semiconducting materials and to elucidate the mechanism underlying their optical and electronic switchable behavior, will provide interesting guidelines and design principles for the future fabrication of new stimuli-responsive organic semiconducting materials. They also focus on the various proposed application areas, significant contributions to areas such as photocatalysis and organic electronics (like organic field effect transistor, Organic solar cells).	Chemistry/Organic Chemistry/ Material Chemistry/Physical Chemistry/ Physics who love organic semiconducting material research for electronics, sensing and photo catalysis applications.
José María Navas Mona Connolly	connolly.mona@inia.csic.es	National Institute of Agricultural and Food Research and Technology (INIA), Department of the Environment and Agronomy	https://www.inia.es/investigacion/Medio%20ambiente%20y%20agronomia/Ecotoxicolog%C3%ADa/Efectos%20de%20Contaminantes%20Ambientales/Pages/Home.aspx#	2	**Effects of Environmental Contaminants Group**. Their objective is to study the mechanisms underlying the toxicity of emerging pollutants (e.g. nanomaterials, endocrine disruptors, biocides or mycotoxins) and their bioaccumulation in aquatic organisms, particularly fish, through in vitro and in vivo approaches. They also develop environmental risk assessment methodologies and study potential contaminant resistances.	Biological or environmental sciences, ecotoxicology, nanomaterial safe use and sustainability
Dra. María Dimmicoli	mdimiccoli@iri.upc.edu	Institute of Robotics and Industrial Informatics (IRII-CSIC)	https://www.iri.upc.edu/research/perception#staff	1	**Perception & Manipulation**. group focuses on enhancing the perception, learning, and planning capabilities of robots to achieve higher degrees of autonomy and user-friendliness during everyday manipulation and assistive tasks. Some topics addressed are the interpretation of perceptual information from videos, construction of 3D object models, action selection and planning, reinforcement learning, and teaching by demonstration.	Computer Science, with focus in Machine Learning, Computer Vision and Natural Language Processing
		TOTAL		**14**		

MOST-CSIC PHD INTERNSHIP PROGRAMME 2024
EXPRESSION OF INTEREST

CSIC SCIENTIFIC SUPERVISOR: César Domingo Pardo, IFIC (CSIC-UV) Neil Moffat, IMB-CNM (CSIC)	
EMAIL: domingo@ific.uv.es neil.moffat@csic.es	**PHONE NUMBER:** +34.96354.3501 +34.935.947.700 Ext. 435.435

ICU'S (INSTITUT/CENTER/UNIT) NAME:

- Institute of Corpuscular Physics IFIC (CSIC-UV)

- Instituto de Microelectronica de Barcelona, Centro Nacional de Microelectronica (CSIC)

ICU'S ADDRESS:

IFIC (CSIC-UV):

Parque Científico

Catedrático José Beltran, 2

46980 Paterna

Valencia, Spain

IMB-CNM:

Carrer dels Til·lers, Campus UAB

08193 Cerdanyola del Valles

Barcelona, Spain

RESEARCH GROUP:

IFIC (CSIC-UV): Gamma-Ray Spectroscopy and Neutrons Research Group

IMB-CNM: Radiation Detectors Group (RDG)

CENTER/RESEARCH GROUP'S WEBSITE:

IFIC: webific.ific.uv.es/web/ R+D Group: webgamma.ific.uv.es/gamma/

IMB-CNM: www.imb-cnm.csic.es R+D Group: rdg.imb-cnm.csic.es

NUMBER OF STUDENTS WILLING TO WELCOME: 1

BRIEF DESCRITION OF THE RESEARCH GROUP:

IFIC: Our group focuses on experimental nuclear physics research, with fundamental R+D on nuclear structure and astrophysics (nucleosynthesis) studies. To this aim we develop forefront instrumentation for experiments at radioactive ion-beam facilities, such as the BRIKEN detector in RIKEN (Japan), the DTAS detector at GSI/FAIR (Germany) and for experiments at world-leading neutron-beam facilities such as CERN n_TOF [Dom23a] with the i-TED [Dom23b] system (https://hymnserc.ific.uv.es/). Our

group also leads different knowledge-transfer applications, mainly in the fields of medical physics [Bal22, Ler22] and nuclear-waste management [Cab18].

[Bal22] J. Balibrea-Correa et al. Eur. Phys. J. Plus 137, 1258 (2022)

[Cab18] L. Caballero et al., 2018 JINST 13 P03016

[Dom23a] C. Domingo-Pardo et al 2023 J. Phys.: Conf. Ser. 2586 012150

[Dom23b] C. Domingo-Pardo et al. EPJ Web of Conferences 284, 01018 (2023)

[Ler22] J. Lerendegui-Marco et al., https://doi.org/10.48550/arXiv.2207.09781 (2022)

IMB-CNM: IMB-CNM Radiation Detectors Group (RDG) is composed of 17 researchers, 10 of whom are permanent staff, with a considerable expertise in the design and fabrication of silicon radiation detectors with N-on-P, P-on-N, and N-on-N technologies for pad, strip and pixel sensors, with a special interest in 3D and LGAD detectors. In addition, the group has a wide experience in the fields of microelectronic fabrication technologies on silicon, simulation, device electrical characterization and study of radiation hardness of electronics for use in HEP experiments. RDG has its own laboratory with a RX, TCT, IV and CV characterisation equipment, a cascade probe station, freezer and radioactive sources to perform a full characterization of detectors and devices, both at room and low temperatures. It has a 2nd category Radioactive Facility license to work with encapsulated radioactive sources.

STUDENTS' ACADEMIC PROFILE (brief description of the student academic background):

Candidate with knowledge on microelectronics and semiconductor physics. In addition, background knowledge or interest in the following topics would be desirable: solid-state radiation detectors, signal formation in detectors, photon-detection semiconductor technologies, analogue and digital pulse processing readout circuits, advanced interconnect technologies.

BRIEF EXPLANATION THAT MOTIVATES THE STAY OF THE STUDENT(S) WHO WOULD MAKE THE STAY (brief description of the student's task):

We have recently started a collaboration between both research groups at IFIC & IMB-CNM, in order to explore the applicability of Low Gain Avalanche Diode (LGAD) sensors to perform experiments with high-intensity neutron beams at CERN n_TOF (Switzerland). LGAD sensors present a very short time-response, which is ideally suited for measurements requiring excellent time resolution and a high counting-rate capability.

The candidate will be actively involved in the research activities described below, which he/she will carry out with stays at both IMB-CNM-Barcelona and IFIC-Valencia. Funding for the stay will be covered by the latter institute. List of research tasks:

1) characterization of several sensors produced at IMB-CNM, thereby utilizing advanced laboratory equipment for the measurement of the IV and CV profiles of such sensors,

2) bonding of several selected sensors in a test-fixture for posterior characterization measurements at IFIC,

3) characterization of the time-resolution, waveform, signal-to-noise and spectroscopic response utilizing different (alpha-) sources at IFIC,

4) evaluation and interpretation of the results obtained, discussion on potential applicability for experiments at CERN n_TOF and elaboration of a short stay report.

€1.000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS

Responsible Researcher:	**Center Director:**	**ICU Manager:**
[digital signature below]	[digital signature below]	[digital signature below]
César Domingo Pardo	Nuria Rius	Ana Fandos

MOST-CSIC PHD INTERNSHIP PROGRAMME 2024

EXPRESSION OF INTEREST

CSIC SCIENTIFIC SUPERVISOR: Dr. David Hochberg and Dr. M. Isabel Herreros (co-supervisor)

EMAIL: hochbergd@cab.inta-csic.es	**PHONE NUMBER:** (+34) 91-520-1647

ICU'S (INSTITUT/CENTER/UNIT) NAME: Centro de Astrobiología (CSIC-INTA)
ICU'S ADDRESS: Campus INTA: Ctra Ajalvir, Km 4, 28850 Torrejón de Ardóz, Madrid
RESEARCH GROUP: *Prebiotic Chemistry and Physics of Complex Systems*
CENTER/RESEARCH GROUP'S WEBSITE: https://cab.inta-csic.es/investigacion/lineas-de-investigacion/grupo-de-quimica-prebiotica/
NUMBER OF STUDENTS WILLING TO WELCOME: 2
BRIEF DESCRITION OF THE RESEARCH GROUP: Our research group is engaged in both theoretical and computational approaches for analyzing origin of life models and chemical evolution, based on chemical reaction network models, and we are a major reference in the astrobiological community. Our primary interest is in explaining the origin of *mirror symmetry breaking* in chemical networks: this relates directly to the problem of the origin of biological homochirality. Life on earth relies mainly on chiral molecules: such molecules are *not* superposable on their mirror images. Indeed, the origin of single handedness of molecular chirality ("biological homochirality") has fascinated the scientific community ever since its' initial discovery by Pasteur. To uncover its possible origin(s), our daily work uses methods and concepts from physics, chemistry, and non-equilibrium thermodynamics, computation and numerical simulation. We have recently initiated a new exciting multidisciplinary research project involving chemical reactions and self-assembly taking place in certain types of curved continuous fluid-flow reactors. In such curved pipes, hydrodynamic flows can develop an amount of net chirality or *handedness* in the fluid flow which can then be transmitted, via viscous shear forces, down to the level of molecular self-assembly, and so establishes a purely fluid-mechanical mechanism of top-down (from the fluid flow to the molecules) mirror symmetry breaking. These theoretical and numerical studies have direct impact on the physics of fluids, the numerical simulation of fluid flows in curved pipes, and the design of micro-fluidic devices leading to numerous important applications in both pure and applied science, and in origin-of-life scenarios under the influence of fluid flow.

STUDENTS' ACADEMIC PROFILE (brief description of the student academic background): Our group welcomes motivated students with a solid academic background in any one of the fields or sub-specialties of pure or applied physics, in applied mathematics, chemistry, and/or in one of the chemical, mechanical, or aeronautical engineering disciplines. Note that some knowledge in fluid mechanics, thermodynamics, modelling and numerical simulation would be greatly valued for this stay.

BRIEF EXPLANATION THAT MOTIVATES THE STAY OF THE STUDENT(S) WHO WOULD MAKE THE STAY (brief description of the student's task): During his/her stay, the student will learn about and participate in the theoretical and numerical study of secondary flows in curved conduits, such as toroidal and helical pipes. It is well known that in such curved conduits, the secondary flow (in the pipe cross section) develops pairs of counter-rotating vortices: a symmetric pair in the case of toroidal geometries, but an asymmetric pair in the case of helical pipes. It is in this latter geometry that a net chirality, or "handedness" arises in the vortex pair, and this broken mirror symmetry in the secondary fluid flow can be transmitted down to the molecular level in molecular self-assembly processes. The student will acquire valuable skills in computational fluid dynamics (CFD) and be involved in the numerical modelling of such fluid flows. Results obtained have an important impact on the understanding of chirality in fluids and its transmission to chemical processes. The theoretical and physical aspects: e.g., relation of vorticity to fluid chirality, symmetry breaking in fluids, dissipation, etc., will be supervised by Dr. D. Hochberg, in close collaboration with Dr. M. Isabel Herreros, of the Department of Planetology and Habitability, will supervise the student(s) on all aspects having to do with the computational fluid dynamics (CFD)

€1.000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS

Responsible Researcher: **Center Director:**   **ICU Manager:**

Dr. David Hochberg

NSTC 國家科學及技術委員會
National Science and Technology Council

CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

MOST-CSIC PHD INTERNSHIP PROGRAMME 2024
EXPRESSION OF INTEREST

CSIC SCIENTIFIC SUPERVISOR: David Martín Sánchez	
EMAIL: david.martin@imse-cnm.csic.es	**PHONE NUMBER:** 954470764
ICU'S (INSTITUT/CENTER/UNIT) NAME: Instituto de Microelectrónica de Sevilla, IMSE-CNM	
ICU'S ADDRESS: Avenida Américo Vespucio 28, 41092 Sevilla (Sevilla)	
RESEARCH GROUP: Diseño de circuitos integrados digitales y mixtos – Cybersecurity	
CENTER/RESEARCH GROUP'S WEBSITE: http://www.imse-cnm.csic.es/	
NUMBER OF STUDENTS WILLING TO WELCOME: 1	
BRIEF DESCRIPTION OF THE RESEARCH GROUP: The main focus of the Cybersecurity Group is the development of integrated solutions for security applications. Among its objectives are verifying the identity of hardware devices and users, as well as the use of cryptographic techniques to store and communicate sensitive data. This group currently leads the EU-funded project SQPRIM, whose purpose is to provide hardware security using photonic devices.	
STUDENTS' ACADEMIC PROFILE (brief description of the student academic background): The requirement for this internship is knowledge of photonics. Experience in optical sensing, design of optical systems, and/or modelling of optical behaviour (such as beam propagation or field simulation) is desired. Programming skills using Python or MATLAB are valued.	
BRIEF EXPLANATION THAT MOTIVATES THE STAY OF THE STUDENT(S) WHO WOULD MAKE THE STAY (brief description of the student's task): The student would be directly involved in the SQPRIM project developing solutions to provide identity to hardware devices using physical unclonable functions (PUFs). In particular, the main objective would be assessing the implementation of PUFs in photonic integrated circuits. This would require tasks such as simulating the PUF's behaviour using modelling tools. The student would also have access to the Cybersecurity Lab to run experiments using optical PUFs developed by the group.	

€1.000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS

Responsible Researcher: **Center Director:**   **ICU Manager:**

MARTIN SANCHEZ DAVID - 25353066M
Firmado digitalmente por MARTIN SANCHEZ DAVID - 25353066M
Nombre de reconocimiento (DN): c=ES, serialNumber=IDCES-25353066M, givenName=DAVID, sn=MARTIN SANCHEZ, cn=MARTIN SANCHEZ DAVID - 25353066M
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MOST-CSIC PHD INTERNSHIP PROGRAMME 2024
EXPRESSION OF INTEREST

CSIC SCIENTIFIC SUPERVISOR: José María de la Rosa	
EMAIL: jmrosa@irnase.csic.es	**PHONE NUMBER: +34 954624711**
ICU'S (INSTITUT/CENTER/UNIT) NAME: Instituto de Recursos Naturales y Agrobiología de Sevilla (IRNAS-CSIC)	
ICU'S ADDRESS: Reina Merceces Av, 10, Seville (Spain)	
RESEARCH GROUP: MOSS	
CENTER/RESEARCH GROUP'S WEBSITE: https://www.irnas.csic.es/moss/	
NUMBER OF STUDENTS WILLING TO WELCOME: 1	

BRIEF DESCRITION OF THE RESEARCH GROUP:

The Organic Matter in Soils and Sediments (MOSS) research group focuses its investigations on various aspects of Soil Biogeochemistry, as well as the impact of soil management on Carbon and Nitrogen dynamics and sequestration, and agricultural quality and productivity. The MOSS group, an international reference in Organic Geochemistry, stands out for its extensive experience in the training of research and technical personnel. Its primary objective is the study of the impact of environmental factors on the biogeochemical cycles of C and N, their implications for ecosystem sustainability, Carbon and Nitrogen sequestration, and global climate change. The group is highly productive, with its members co-authoring over 80 scientific publications in first-quartile impact journals in their field over the last 5 years. Additionally, during this period, MOSS group members have coordinated 6 projects from national competitive calls and 4 international projects, in addition to several agreements with companies, and have obtained a European Patent.

The specific research line within those pursued by the MOSS group for which this internship is offered is dedicated to studying the application of new organic amendments (including biochar) for soil improvement, including implications for Carbon sequestration mechanisms, soil physical properties, and the molecular composition of organic matter.

STUDENTS' ACADEMIC PROFILE (brief description of the student academic background):

The ideal candidate for this position is a graduate in sciences, specifically in Chemistry, Environmental sciences, Agricultural Engineering or Biology, with experience and a keen interest in working with soils. Proficiency in spoken and written English is a prerequisite, with a proficiency level of at least B2 or higher. Additionally, a positive assessment will be given to candidates possessing knowledge of applied statistics for research purposes.

BRIEF EXPLANATION THAT MOTIVATES THE STAY OF THE STUDENT(S) WHO WOULD MAKE THE STAY (brief description of the student's task):

During their stay, the student will participate in the preparation and development of greenhouse trials and field sampling. This will include the characterization of organic amendments and soils, covering physical properties, elemental and molecular composition. The goal is for the student to acquire knowledge in soil analysis procedures and the operation of chromatographic equipment (GC/MS) and infrared spectroscopy (FT-IR). The internship also allows for the possibility that the student may bring their own materials, if desired, for characterization and analysis purposes.

€1.000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS

Responsible Researcher: **Center Director:**   **ICU Manager:**

MOST-CSIC PHD INTERNSHIP PROGRAMME 2024
EXPRESSION OF INTEREST

CSIC SCIENTIFIC SUPERVISOR: Jonas Ruh	
EMAIL: jruh@icm.csic.es	**PHONE NUMBER:** +34 681 966 859
ICU'S (INSTITUT/CENTER/UNIT) NAME: Instituto de Ciéncias del Mar (ICM)	
ICU'S ADDRESS: Passeig Marítim de la Barceloneta 37-49, 08003 Barcelona	
RESEARCH GROUP: Barcelona Center for Subsurface Imaging	
CENTER/RESEARCH GROUP'S WEBSITE: https://www.icm.csic.es/es/grupo-investigacion/barcelona-center-subsurface-imaging	
NUMBER OF STUDENTS WILLING TO WELCOME: 2	
BRIEF DESCRIPTION OF THE RESEARCH GROUP: The research group focuses on acquisition, analysis, and processing of geophysical data such as seismic tomographic imaging, beyond others. Furthermore, the supervisor (Jonas Ruh) works on geodynamic numerical modelling including code development and applications related to the evolution of various tectonic systems. The supervisor is currently PI of a national project related to soft-sediment deformation in Taiwan (PID2022-139422NB-I00). The PI (Jonas Ruh) has funds to cover the living expenses (2x 1000 €*)	
STUDENTS' ACADEMIC PROFILE (brief description of the student academic background): Specialized/interested in numerical/mathematical modelling, ideally within a geophysics context, and specialized/interested in structural geology, working on small- or large-scale tectonic topics.	
BRIEF EXPLANATION THAT MOTIVATES THE STAY OF THE STUDENT(S) WHO WOULD MAKE THE STAY (brief description of the student's task): The interested students working on geologic topics will have the chance to increase their scientific spectrum by learning and applying numerical tools to investigate the mechanics of small- or large-scale geodynamic systems. Ideal for students who work on structural geologic topics interested to test their hypotheses with state-of-the-art numerical experiments. Students will learn how to set up, run, and interpret numerical experiments with no restriction on using the numerical codes after termination of the internship.	

€1.000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS

Responsible Researcher: **Center Director:**   **ICU Manager:**

RUH JONAS BRUNO - Y4705671T
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Date: 2023.12.14 11:57:50 +01'00'

MOST-CSIC PHD INTERNSHIP PROGRAMME 2024

EXPRESSION OF INTEREST

CSIC SCIENTIFIC SUPERVISOR:
Mona Connolly, José María Navas

EMAIL: connolly.mona@inia.csic.es, jmnavas@inia.csic.es	**PHONE NUMBER:** +34 91 347 8723, +34-91 347 4155

ICU'S (INSTITUT/CENTER/UNIT) NAME: National Institute of Agricultural and Food Research and Technology (INIA), Department of the Environment and Agronomy

ICU'S ADDRESS: Ctra. de La Coruña, km 7, 5, Moncloa - Aravaca, 28040 Madrid

RESEARCH GROUP: Effects of Environmental Contaminants Group

CENTER/RESEARCH GROUP'S WEBSITE: https://www.inia.es/investigacion/Medio%20ambiente%20y%20agronomia/Ecotoxicolog%C3%ADa/Efectos%20de%20Contaminantes%20Ambientales/Pages/Home.aspx

NUMBER OF STUDENTS WILLING TO WELCOME: 1-2 students

BRIEF DESCRIPTION OF THE RESEARCH GROUP: Our main objective is to study the mechanisms underlying the toxicity of emerging pollutants (e.g. nanomaterials, endocrine disruptors, biocides or mycotoxins) and their bioaccumulation in aquatic organisms, particularly fish, through in vitro and in vivo approaches. We also develop environmental risk assessment methodologies and study potential contaminant resistances.

STUDENTS' ACADEMIC PROFILE (brief description of the student academic background): This position is suitable for a student with a degree, or currently studying biological or environmental sciences or with a special interest in the area of ecotoxicology or nanomaterial safe use and sustainability.

BRIEF EXPLANATION THAT MOTIVATES THE STAY OF THE STUDENT(S) WHO WOULD MAKE THE STAY (brief description of the student's task): Pollution of waterways poses a serious threat to ecosystems and human health. One of the main sources of pollution is the agri-food sector, in particular intensive agricultural practices that require the use of chemical substances or nanomaterials that can produce harmful effects to aquatic organisms and humans. Our research group focuses its work on the study of the toxicity of pollutants, their bioaccumulation and the endocrine alterations that they can cause on aquatic organisms. We mainly study the effects of:

Nanomaterials

Agri-food waste

Biocides

The ultimate goal is to generate information and to develop the necessary tools to assess the risks of these substances for the environment and for humans. The knowledge generated is used: a) to determine the environmental status of specific areas, b) by the regulatory agencies to develop risk assessment tools and c) by industry to design production systems and safe products.

There is an opportunity for the incoming student to participate in work that is being performed within the European project HARMLESS, specifically assessing the ecotoxicity of advanced mixed metal and 2D nanomaterials using fish and fish cell lines.

€1.000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS

Responsible Researcher:　　　　**Center Director:**　　　　**ICU Manager:**

MOST-CSIC PHD INTERNSHIP PROGRAMME 2024
EXPRESSION OF INTEREST

CSIC SCIENTIFIC SUPERVISOR: Mohammad Afsar Uddin	
SUPERVISOR ORCID: 0000-0002-3217-5513	
EMAIL: m.auddin@csic.es	**PHONE NUMBER:** +34-6454912
ICU'S (INSTITUT/CENTER/UNIT) NAME: Instituto de Ciencia de Materiales de Madrid (ICMM - CSIC)	
ICU'S ADDRESS: C. Sor Juana Inés de la Cruz, 3, 28049 Madrid	
RESEARCH GROUP: Multifunctional and Supramolecular Materials Group	
CENTER/RESEARCH GROUP'S WEBSITE: https://www.icmm.csic.es/en/investigacion-y-transferencia/research-groups	
NUMBER OF STUDENTS WILLING TO WELCOME: 2	

BRIEF DESCRIPTION OF THE RESEARCH GROUP:

Multifunctional and Supramolecular Materials Group is a multidisciplinary and interdisciplinary research group which aims to develop new photo- and electroactive smart organic semiconducting materials and to elucidate the mechanism underlying their optical and electronic switchable behavior, will provide interesting guidelines and design principles for the future fabrication of new stimuli-responsive organic semiconducting materials. Furthermore, we focus not only on basic science, but also on the various proposed application areas, significant contributions to areas such as photocatalysis and organic electronics (like organic field effect transistor, Organic solar cells). In these areas we have identified important bottlenecks that we plan to solve in the developments of this project, such as the fast electron-hole recombination characteristic of organic semiconducting photocatalysts or the limited mass diffusion and light penetration that characterize porous polymers, which we propose to solve by conferring them a switchable swelling-shrinking behavior. This approach represents an innovative way to produce more efficient organic semiconducting oligomers and polymers design and synthesis for stimuli response, photo catalyst, OFET and OPVC.

The group has two chemistry laboratories for the synthesis and purification of organic compounds equipped with the common facilities in organic chemistry laboratories and more specialized equipment that will be essential for this project, such as temperature-controlled ovens, immersion cooler, high pressure reactors, microwave reactors, photoreactors

equipped with blue and white light, NMR, HPLC, Mass Spectrometer, IR Spectrophotometer, Solid-state Nuclear Magnetic Resonance, Specific Surface area and Porosity Analysis, UV-Visible spectroscopy, Fluorescent spectroscopy, Thermal Analysis, High Resolution Transmission Electron Microscopy (HR-TEM), and Scanning Microscopy (SEM), Atomic Force Microscopy (AFM), Polarizing Optical Microscopy equipped with a hot stage, X-Ray Diffraction-Powder and single crystal diffraction. Group have several national and international collaborators to fabricate electronic devices such as OFET, OPVC.

STUDENTS' ACADEMIC PROFILE (brief description of the student academic background):

We have expected student have good academic score near 70 % numbers and background should be Chemistry/Organic Chemistry/ Material Chemistry/Physical Chemistry/ Physics who love organic semiconducting material research for electronics, sensing and photo catalysis applications.

We always encourage women in science.

BRIEF EXPLANATION THAT MOTIVATES THE STAY OF THE STUDENT(S) WHO WOULD MAKE THE STAY (brief description of the student's task):

Task 1: Synthesis of the materials:

Conjugated oligomers and polymers are organic macromolecules with alternating single and double bonds. Conjugated oligomer and polymer synthesis is to use chemical reactions of π-conjugated compounds to link them into repeating units to produce conjugated oligomers and polymers. Among other methods transition-metal-catalyzed polycondensation method can afford the resultant conjugated macromolecules with certain unique structural features, including high molecular weight, high purity, and low defect content. Since the optical, electrical, and mechanical properties of conjugated polymers strongly depend on their molecular structure and material quality, the polycondensation method to produce conjugated macromolecules with tailor-made structures and well-defined properties. Specific building blocks and their functional group influence certain applications of the final desire chemical structure. We have solid experience in the synthesis of molecules with (opto) electronic properties for incorporation into electronic devices. This previous experience represents a guarantee for the successful design and synthesis of properly functionalized building units. PhD student will also study mechnochromic (stimuli-responsive behavior) properties of synthesize organic semiconducting oligomer and/or polymers.

Task 2: Materials characterizations:

The structural characterization of composition and assessment of the electronic properties of the molecular units, self-assembling structure of polymers will be performed simultaneously to the organic materials (elemental analysis, 1H and 13C-NMR spectroscopy, IR, etc). Fundamental photo-electronic properties of the molecular precursors and of the final materials will be investigated by means of cyclic voltammetry, fluorescence and UV-vis spectroscopy. The morphology polymers will be studied by different microscopic techniques (POM, SEM, TEM) transferred on substrates. The thermal properties will be investigated by differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA). Crystal structure determination by single crystal or powder X-ray diffraction analysis. Crystalline thin film will be characterized by GIWAX technique. (OFETs, photovoltaics) will be driven by a clean room in the ICMM, will allow us to perform initial studies within our group. IP has a long term collaboration with Professor Woo's group at Korea University, South Korea and Professor Xugang Guo's Group, SUSTech, China. This collaboration offers our group access to excellent research infrastructures and techniques to fabricate flexible electronic devices and will provide a fantastic environment to share knowledge and develop joint ideas and initiatives.

Task 3: Report writing and presentation

To increase writing skill PhD candidate will write summary and research articles according to their research finding. Also student will present poster and oral presentation in the national and international congress.

€1.000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS

Responsible Researcher: **Center Director:**   **ICU Manager:**

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Firmado por UDDIN
MOHAMMAD AFSAR -
DNI ****8375* el
día 20/12/2023 con
un certificado
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MOST-CSIC PHD INTERNSHIP PROGRAMME 2024

EXPRESSION OF INTEREST

CSIC SCIENTIFIC SUPERVISOR: Dr. MÓNICA CARRERA and Dr. MANUEL PAZOS	
EMAIL: mcarrera@iim.csic.es, mpazos@iim.csic.es	**PHONE NUMBER:** + 34 986231930
ICU'S (INSTITUT/CENTER/UNIT) NAME: INSTITUTE OF MARINE RESEARCH (IIM-CSIC)	
ICU'S ADDRESS: EDUARDO CABELLO 6, 36208 VIGO, PONTEVEDRA, SPAIN	
RESEARCH GROUP: CHEMISTRY OF MARINE PRODUCTS (QPM)	
CENTER/RESEARCH GROUP'S WEBSITE: https://www.iim.csic.es/	
NUMBER OF STUDENTS WILLING TO WELCOME: 1	
BRIEF DESCRIPTION OF THE RESEARCH GROUP: Chemistry of Marine Products (QPM) group aims to investigate the chemistry and biochemistry of marine food products. The group study the quality and safety of seafood, and the bioactivity and biological impact that seafood may have on human health. The group also uses advanced proteomics and metabolomics tools to study food allergies and the immune relationship between seafood consumption and human health.	
STUDENTS' ACADEMIC PROFILE (brief description of the student academic background): GPA>8, DEGREE IN BIOLOGY, BIOTECHNOLOGY, BIOCHEMISTRY, CHEMISTRY OR SIMILAR	
BRIEF EXPLANATION THAT MOTIVATES THE STAY OF THE STUDENT(S) WHO WOULD MAKE THE STAY (brief description of the student's task): Food allergies affect over 6-8 percent of children around the world and the amount of people affected has been steadily increasing for the past decade. Liquid chromatography coupled to tandem mass spectrometry (LC/MS/MS) provides an accurate and sensitive way to test for allergens in food products. The students will be collaborated in the development of a protein-based fast method to identify the major fish allergen (beta-parvalbumin) in fish products by using a simple protein extraction protocol coupled to multiplex top-down proteomics using an Orbitrap Tribrid Eclipse mass spectrometer modified with an ultraviolet photodissociation (UVPD) source. The high mass accuracy and resolution, and the different fragmentation modes will allow the classification of proteins with high protein sequence homology. The method will provide the characterization of food allergens in minutes using a high throughput LC-MS/MS platform and top-down proteomics.	

€1.000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS

Responsible Researcher:	**Center Director:**	**ICU Manager:**
Dr. Mónica Carrera	Prof. Dr. Carmen González Sotelo	Alberto Espinosa

Dr. Manuel Pazos

MOST-CSIC PHD INTERNSHIP PROGRAMME 2024
EXPRESSION OF INTEREST

CSIC SCIENTIFIC SUPERVISOR: MARIELLA DIMICCOLI	
EMAIL: mdimiccoli@iri.upc.edu	**PHONE NUMBER:** 667330940
ICU'S (INSTITUT/CENTER/UNIT) NAME: INSTITUT DE ROBÒTICA E INFORMÀTICA INDUSTRIAL	
ICU'S ADDRESS: CARRER: Carrer Llorens i Artigas 4-6, 08028, Barcelona	
RESEARCH GROUP: Perception & Manipulation	
CENTER/RESEARCH GROUP'S WEBSITE: https://www.iri.upc.edu/research/perception#staff	
NUMBER OF STUDENTS WILLING TO WELCOME: 1	
BRIEF DESCRIPTION OF THE RESEARCH GROUP: The research of PERCEPTION AND MANIPULATION group focuses on enhancing the perception, learning, and planning capabilities of robots to achieve higher degrees of autonomy and user-friendliness during everyday manipulation and assistive tasks. Some topics addressed are the interpretation of perceptual information from videos, construction of 3D object models, action selection and planning, reinforcement learning, and teaching by demonstration.	
STUDENTS' ACADEMIC PROFILE (brief description of the student academic background): Students with a strong academic background in Computer Science, with focus in Machine Learning, Computer Vision and Natural Language Processing are the most suited for this project.	
BRIEF EXPLANATION THAT MOTIVATES THE STAY OF THE STUDENT(S) WHO WOULD MAKE THE STAY (brief description of the student's task): Turn-taking prediction, understood as the task of predicting who is going to talk seconds ahead, is a fundamental task for conversational systems, with numerous human-centered applications, such as early diagnosis and intervention for communication disorders like autism, conversational systems, human-robot communications to name but a few. Recently, supervised deep learning approaches have achieved impressive performance in a large variety of AI tasks. However, these methods rely on the availability of huge amount of labeled data. To cope with this problem, self-supervised approaches have emerged as a new deep learning paradigm allowing to train a model on a proxy-task with pseudo-labels that come from free from the data themselves, hence without requiring any manual annotation.	

In this project, the student will develop a multimodal self-supervised approach, able to learn an embedded space for multimodal data (audio, video and text). The embedded representation will be validated on the challenging task of turn-taking prediction, which is traditionally approached in a fully supervised fashion.

€1.000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS

Responsible Researcher:

Center Director:

ICU Manager:

CSIC SCIENTIFIC SUPERVISOR: Manuel Perger	
EMAIL: perger@ice.csic.es	**PHONE NUMBER:** +34937379788430354
ICU'S (INSTITUT/CENTER/UNIT) NAME: Institut de Ciències de l'Espai (ICE-CSIC)	
ICU'S ADDRESS: Campus UAB, Carrer de Can Magrans s/n, 08193 Bellaterra, Spain	
RESEARCH GROUP: The star-planet connection	
CENTER/RESEARCH GROUP'S WEBSITE: https://www.ice.csic.es/research/theory-observations/2-uncategorised/62-the-star-planet-connection	
NUMBER OF STUDENTS WILLING TO WELCOME: 1	
BRIEF DESCRIPTION OF THE RESEARCH GROUP: The research group is focused on the modelling of stellar variations associated with magnetic activity and the understanding of high-energy emissions of stars and their evolution over time. Those foci describe the current frontiers in the search for life outside our Solar System, i.e. the detection of small, rocky, and possibly habitable exoplanets, the characterization of their atmospheres and the detection of so-called biomarkers. The research group has developed the state-of-the-art code STARSIM which is able to model most important exoplanet observables and is developing machine learning techniques to mitigate stellar effects on both spectroscopic and photometric data. The group is further heavily involved in large-scale multi-national efforts such as CARMENES, HADES, ARIEL, or PLATO.	
STUDENTS' ACADEMIC PROFILE (brief description of the student academic background): The successful student should be from the Natural Sciences Department, and should have a good understanding of a programming language like python. The student should show great interest in the fields of astrophysics and the exoplanetary field and ideally have already gathered some experience. It would be furthermore ideal but not necessary, if the student would have experience in the application of basic python machine learning packages like pytorch or tensorflow.	

BRIEF EXPLANATION THAT MOTIVATES THE STAY OF THE STUDENT(S) WHO WOULD MAKE THE STAY (brief description of the student's task): The research group is amongst the first to apply machine learning techniques for the mitigation of stellar magnetic activity effects present in exoplanetary observational data. This combines the current frontiers in the search for life outside our Solar System with those of artificial intelligence. The successful student would be part of this effort, and advance her/his knowledge on python programming, machine learning, exoplanets, radial velocity and transit methods, stellar activity, and planetary atmospheres. The student would optimise the modelling process of synthetic observational data, feed and train complex Deep Neural Networks, investigate their architectures, and mitigate thereby the jitter introduced by stellar magnetic activity. We will then be able to extract better characterizations for all kinds of exoplanet observations, ranging from planetary and stellar parameters to atmospheric compositions.

€1.000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS

Responsible Researcher:　　　**Center Director:**　　　**ICU Manager:**

Manuel Perger　　　**Aldo Serenelli**　　　**Àngels Benet**