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DRUG RESEARCH AND INNOVATIVE TREATMENTS

Director prof. Carla Ghelardini

TITLE OF THE SCHOLARSHIP	Cardiomyocytes differentiated from induced pluripotent stem cells: an alternative to animal models for high-throughput evaluations of innovative cardiovascular drugs			
PRINCIPAL INVESTIGATOR	RAFFAELE COPPINI			
SUMMARY OF THE RESEARCH TOPIC	Drug testing on animal models has a profound environmental impact, in particular in the field of cardiovascular research, where the use of large animal models is often necessary. Alternative in vitro models, based on cultured cells of human origin, will allow us to spare animal lives and global resources. During the PhD project, the student will learn advanced techniques for the culture of induced pluripotent stem cells and their differentiation into cardiomyocytes; moreover, he or she will use an innovative customized high-throughput optical platform, available in our labs, to simultaneously record fluorescent signals from multiple cell dishes. This system will allow us to test new molecules acting on ion channels to be used as antiarrhythmics. Finally, he/she will learn automated patch techniques during the stage in the company and will delve into in silico modelling during an internship at the University of Oxford.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Study of vegetal extracts for the treatment of visceral hypersensitivity			
PRINCIPAL INVESTIGATOR	CARLA GHELARDINI			
SUMMARY OF THE RESEARCH TOPIC	The objective of the proposal is to identify and characterize plant extracts suitable for the acute and chronic treatment of painful abdominal pathologies with the dual aim of reducing pain and promoting tissue recovery processes in the intestine. The specific objectives of this proposal concern: i) Identification and phytochemical characterization of extracts of <i>Astragalus membranaceus</i> , <i>Centella asiatica</i> , <i>Zingiber officinalis</i> and <i>Catha edulis</i> for the development of innovative products for the treatment of painful abdominal pathologies. ii) Study of the efficacy profile in reducing neuronal hyperactivity in complex in vitro systems consisting of intestinal organoids and neurons stimulated with damage agents; iii) Study of the protective efficacy profile on the intestinal organoid stimulated with damaging agents; iv) Study of the pharmacodynamic profile in vitro models of intestinal organoids and organoids/neurons; v) Study of the safety profile in vitro.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Identification of new molecular targets for the development of innovative drugs with hypotensive and neuroprotective effects for the treatment of ocular pathologies			
PRINCIPAL INVESTIGATOR	CARLA GHELARDINI			
SUMMARY OF THE RESEARCH TOPIC	<p>The aim of this project is to develop innovative drugs with hypotensive, antiapoptotic and neuroprotective actions for the treatment of eye diseases, such as glaucoma, one of the leading causes of blindness in the world, and progressive optic neuropathy, the main cause of irreversible blindness. The specific topics of the research include identification of new molecular targets for the development of innovative drugs for the treatment of eye diseases, such as glaucoma and progressive optic neuropathy; study of the pharmacokinetic and pharmacodynamic profile of these new drugs in animal models of transient and stable ocular hypertension; study of the renoprotective and neuroprotective actions of these new drugs in an experimental model of retinal ischemia in the rabbit. This research requires knowledge of pharmacology, molecular biology and preclinical studies in animal models.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
INNOVATION	6	6	05/11/2021	Italian/English



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BIOMEDICAL SCIENCES

Director prof. Fabrizio Chiti

TITLE OF THE SCHOLARSHIP	100% green products to modulate the use of conventional anti-tumor drugs			
PRINCIPAL INVESTIGATOR	MICHAELA LUCONI			
SUMMARY OF THE RESEARCH TOPIC	The aim of the research is the development and characterization of bio and green compounds, such as biochar obtained from the slow pyrolysis of lignocellulosic matrices, on which fatty acids (such as short-chain fatty acids and some medium-chain fatty acids) are adsorbed in fixed proportions. Both the direct antitumor properties of these compounds and their activity on the tumor microenvironment and on the intestinal microbiota, as well as their anti-inflammatory properties in some tumors of endocrine-metabolic interest, such as colon cancer, in in vitro and in vivo models, with the use of cell lines, mouse models and the development of a pilot study on patients with intestinal polyposis.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	05/11/2021	Italian

TITLE OF THE SCHOLARSHIP	Engineered cardiac and skeletal tissues as alternative models to animals for the study of cardiomyopathies and neuromuscular diseases			
PRINCIPAL INVESTIGATOR	CHIARA TESI / CECILIA FERRANTINI			
SUMMARY OF THE RESEARCH TOPIC	The aim of the research is the development of experimental models of cardiomyopathies and neuromuscular diseases alternative to extremely expensive animal ones, which have a negative environmental impact and a doubtful translational potential. The development and validation of alternative tissue models, based on cultured cells of human origin would save animal lives and enormous environmental resources, as well as being a more representative model of human pathology. Modern techniques for generating engineered and patient-specific heart and muscle tissues can effectively address this need.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	8	05/11/2021	Italian



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EVOLUTIONARY BIOLOGY AND ECOLOGY

Director prof. Stefano Cannicci

TITLE OF THE SCHOLARSHIP	Systems-biology approaches applied to next-generation bioinoculant formulations for increasing yield and resilience of sustainable crop production			
PRINCIPAL INVESTIGATOR	ALESSIO MENGONI			
SUMMARY OF THE RESEARCH TOPIC	The PhD program is aimed at studying plant-associated microbes with the help of genomic tools and systems biology approaches and promote the use of microbial bioinoculant in agriculture.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Trait-mediated interactions in agroecosystems: development of new tools for biological control			
PRINCIPAL INVESTIGATOR	GIACOMO SANTINI			
SUMMARY OF THE RESEARCH TOPIC	The project aims to identify and use indirect "trait-mediated" interactions in prey-predator complexes of Mediterranean and tropical agroecosystems as a key for the development of a safe and easy to manage biological control system. In particular, key ant species (Hymenoptera: Formicidae) will be selected as predators. The main actions of the project are i) identification of the species complexes and the agroecosystems to be analysed in detail; ii) identification of the signal molecules involved in the interactions; iii) realization of laboratory and field tests for the evaluation of their applicability in the biological control of selected pests.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Biodiversity conservation in the genomic era: the creation of barcoding libraries of European threatened species, with special attention to aquatic species			
PRINCIPAL INVESTIGATOR	SARA FRATINI			
SUMMARY OF THE RESEARCH TOPIC	Habitat degradation and climate change are among the main causes of the increasing global loss of biodiversity, with more than 25% of animal species threatened with extinction. This loss threatens to rapidly erode the provision of ecosystem goods and services that human society depends upon. Addressing the global biodiversity crisis requires accurately recognizing the diversity of life on earth so that we can develop monitoring systems to track over time how biodiversity - and the ecosystem functions it plays - responds to different environmental pressures. In this context, this PhD project aims to develop barcoding libraries of endangered European species by advanced genomics techniques, in order to efficiently record biodiversity patterns at the level of ecoregions and predict over time how they may change.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	03/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Social wasps and their microbiome as bioindicators and toolbox in environmental entomotherapy			
PRINCIPAL INVESTIGATOR	DUCCIO CAVALIERI			
SUMMARY OF THE RESEARCH TOPIC	The project plans to promote the use of wasps as biodiversity biosensors and to measure the impact of human activities on the ecosystem. The ability of insects to behave as natural vectors hosting, transporting and spreading the microorganisms in the environment indicates their potential in evaluating changes in the microbial composition of any environment, vineyard, in particular, caused by pollution, climate change and use of pesticides. The taxonomic and functional analysis of the insect microbiome will shed light on the variations of the wasps' microbiota present in the vineyard, thus helping to develop machine learning algorithms and tools to predict the factors that influence the microbiota of the vineyard. Finally, the possibility of using wasps of the <i>Polistes dominula</i> species will be evaluated for the biological fight against pests and the repopulation of yeasts and lactic bacteria in the vineyard, promoting the use of microbial inocula brought by insects in agriculture.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	The micro- and nano-plastic environmental pollution: detection of the genotoxic effects on higher plants			
PRINCIPAL INVESTIGATOR	ANDREA COPPI			
SUMMARY OF THE RESEARCH TOPIC	The project aims at developing new approaches to determine the impact of environmental pollution from nano- and micro-plastics by evaluating their effects on plants. The main actions for the project will consist in: i) development of protocols for the preparation of nano- and micro-plastics, both pristine and subject to consecutive ageing cycles; ii) identification of two focal plant species, one representative of terrestrial environments and one of wetland ones, for testing the effect of the pollutants produced in the laboratory; iii) assessment of pollutant incidence and physiological/genotoxic effects of pollutants on focal species. Environmental tests will be carried out on focal species collected also in nature from potentially contaminated sites.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	03/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Monitoring and evaluation of the health status of pollinators in urban and peri-urban environments			
PRINCIPAL INVESTIGATOR	FRANCESCA ROMANA DANI			
SUMMARY OF THE RESEARCH TOPIC	The proposed research concerns the conservation of pollinating insects, mainly Apoidea, and the evaluation of actions implemented to support them. Recently, actions of this type, based on the sowing of nectar plants, have been undertaken at the national and local level, but in a few cases, studies have been carried out to quantify the variations in the pollinating insect community. The main problems of this type of study are the breadth of the taxonomic groups involved (about 1100 apoidea species), and the difficulty of developing solid detection methods. Thanks to existing agreements with the Consorzio di Bonifica 3 and with the regional Tuscan beekeeping association (Arpat), the project aims to evaluate the effectiveness of some ongoing actions and contribute to the development of good practices in the management of the vegetation in public areas or close to infrastructures of public interest.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	9	No	03/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Monitoring and modelling of microbial activity in wastewater treatment plants and possible identification of biotechnological targets			
PRINCIPAL INVESTIGATOR	MARCO FONDI			
SUMMARY OF THE RESEARCH TOPIC	The aim of the project resides in the development of methods and processes for the identification of the functional role of microbial strains that are naturally present in wastewater treatment plants and that can be potentially used as biotechnological resources. Further, through the implementation of theoretical modelling, the project aims at developing predictive models on the possible taxonomic and functional states of sampled microbial communities.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Sequencing and analysis of non-model species genomes for the conservation of European biodiversity and ecosystem services			
PRINCIPAL INVESTIGATOR	CLAUDIO CIOFI			
SUMMARY OF THE RESEARCH TOPIC	The Ph.D. candidate will work on sequencing and analysis of whole genomes of threatened/endangered vertebrate species important for biodiversity and ecosystem services. The three-year programme will involve the collection of biological samples in the field, application of molecular genetics techniques for de novo and re-sequencing of genomes, bioinformatic analysis of sequencing products and population genomic analysis of data. Previous lab experience and population genetic data analysis skills are recommended. Training can be provided on advanced genome sequencing techniques and bioinformatic pipelines. The Ph.D. programme will include collaborative research with other Italian as well as EU and US research groups collaborating on this project.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	An open-air laboratory on the island of Giannutri to favour sustainable bee keeping in Mediterranean areas			
PRINCIPAL INVESTIGATOR	LEONARDO DAPPORTO			
SUMMARY OF THE RESEARCH TOPIC	<p>The purpose of this program is to establish an open-air laboratory on the island of Giannutri in close collaboration with the "La Pollinosa" farm in order to evaluate the sustainability of beekeeping activities in the maritime-Mediterranean environment to produce quality honey and select genetic lines of domestic bees more resistant to common pathogens with a reduced, if not positive, impact on the environment. The project foresees three fundamental objectives:</p> <ol style="list-style-type: none"> 1) the evaluation of the trend over time of the populations of wild pollinators through the use of transects, 2) the evaluation of the effects of the load of honeybees on the behavior of wild bees, 3) the evaluation of the cost-benefits of beekeeping activities in the Mediterranean-maritime environment. <p>The final aim of the project will be the drafting of guidelines for the sustainable management of honeybees in the Mediterranean-maritime environment.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	9	6	03/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Enhancement of the biodiversity of sustainable crops in response to climate change			
PRINCIPAL INVESTIGATOR	FEDERICO MARTINELLI			
SUMMARY OF THE RESEARCH TOPIC	<p>Functional genomics analyses will be performed in two legumes (chickpea and lentil) for the identification of genes involved in drought resistance and the regulation of the expression of traits of qualitative and nutraceutical interest through integrated approaches of transcriptomics, genomics and metabolomics. The identified genes will be used in genome editing and/or genetic transformation approaches for their possible use in marker-assisted genetic improvement.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03/11/2021	Italian/English



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PHYSICS AND ASTRONOMY

Director prof. Raffaello D'Alessandro

TITLE OF THE SCHOLARSHIP	Artificial intelligence for the operational nowcasting of extreme weather phenomena and the determination of parameters for energy production from renewable sources			
PRINCIPAL INVESTIGATOR	FRANCO BAGNOLI			
SUMMARY OF THE RESEARCH TOPIC	Adaptation and development of methods based on artificial intelligence and deep learning for localized and short-term weather forecasting, starting from data provided by larger-scale meteorological models (data provided by other laboratories). Application to the forecast of extreme events and the regulation of energy production systems such as solar and wind power.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	12	No	03/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Inorganic perovskites for thin-film photovoltaics			
PRINCIPAL INVESTIGATOR	FRANCESCO BICCARI			
SUMMARY OF THE RESEARCH TOPIC	Photovoltaics is one of the fundamental technologies for the production of electric energy from renewable sources. However, the most common technologies, based on crystalline silicon, are too costly to be highly competitive. The activity of this PhD will be experimental, and it will consist in the study and optimization of two leading technologies of the thin-film photovoltaic research: the inorganic halide (CsPbI ₃ , CsPbBr ₃ , ...) and chalcogenide perovskites (BaZrS ₃ , SrZrS ₃ , ...). Besides being low-cost, the inorganic perovskites promise to solve the fundamental problem of hybrid organic-inorganic perovskites, which hinders their use in the market despite their very high photovoltaic efficiencies: their stability. These materials will be mainly studied by photoluminescence techniques with a high spectral, spatial, and temporal resolution, and they will be used as absorbers for the fabrication of photovoltaic cells.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	03/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Development of Ecofriendly Laser sources, high efficiency-low consumption in the UV - NIR range for biomedical application			
PRINCIPAL INVESTIGATOR	ANNA VINATTIERI			
SUMMARY OF THE RESEARCH TOPIC	A significant research effort in physics has been recently directed to the study of halide perovskites (PSK) for applications to renewables, photonics and medical diagnostics/therapy. The composition and design of PSK can be tuned to satisfy requirements as highly efficient radiative recombination, tunability of the emission in the range UV-NIR and material nanostructuring. Also relevant are the low cost and ease of synthesis and deposition. The main objective of this project is to develop perovskite-based efficient light emitters for application to biomedical imaging and therapy in view of the replacement of traditional light sources. The proponent research group has recognized expertise in the synthesis and characterization (especially by optical techniques) of perovskites and light-emitting device realization is under study. The collaboration with El.En., a leader in the laser market for application to medicine, will be highly beneficial to the project.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	03/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Development of a muography based diagnostic system for monitoring hydroelectric reservoirs dams			
PRINCIPAL INVESTIGATOR	RAFFAELLO D'ALESSANDRO			
SUMMARY OF THE RESEARCH TOPIC	The research activity, carried out with an adequate numerical-computational methodology, belongs to the realm of experimental particle physics and cosmic rays applied to the detection of underground structures. The main object of the activity will be the identification of any infiltrations inside the dam body or other occlusions in order to be able to provide a targeted intervention plan for core drilling so that an early diagnosis of possible damage can be formulated and eventually remedied. The activity begins with exhaustive numerical simulations of the expected muon flux followed by simulations of "typical" cases to be studied in detail before carrying out measurement campaigns with purpose-built detectors. During the PhD, the doctoral student will carry out a six-month internship with the firm BUILT1.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	03/11/2021	Italian/English



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INTERNATIONAL DOCTORATE IN ATOMIC AND MOLECULAR PHOTONICS

Director prof. Diederik Sybolt Wiersma

TITLE OF THE SCHOLARSHIP	Passive radiative cooling			
PRINCIPAL INVESTIGATOR	DIEDERIK S. WIERSMA			
SUMMARY OF THE RESEARCH TOPIC	The PhD aims to promote the development of innovative photonic materials with a high emissivity in the mid-infrared range corresponding to the first atmospheric transparency window. Under certain conditions, these materials can exert a net passive radiative cooling power, which makes them promising candidates for an array of green applications such as reducing electricity consumption related to air conditioning, offering a non-evaporative pathway to cooling, and increasing the efficiency of photovoltaic modules by lowering their working temperature. The PhD project will rely on a multidisciplinary approach to the design and optimization of the spectral response of candidate materials over a broad range of wavelengths from the UV to the mid-infrared, including numerical modeling, material science and fabrication aspects.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	12	12	03/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Development and control of soft nanostructured materials for the realization of green filters			
PRINCIPAL INVESTIGATOR	RENATO TORRE			
SUMMARY OF THE RESEARCH TOPIC	The research intends to develop photonic technologies for the creation of innovative materials and techniques for water treatment based on soft materials characterized by a low environmental impact. The project involves the study and realization of innovative and green materials-technologies in close collaboration with a leading industry in the sector; Furthermore, a series of intermediate objectives are envisaged up to the creation of an innovative filtering system based on green materials. Collaboration with industry favors the inclusion of the PhD student in the job.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Study of complex photonic systems for high security remote authentication without access keys (cybersecurity)			
PRINCIPAL INVESTIGATOR	DIEDERIK S. WIERSMA			
SUMMARY OF THE RESEARCH TOPIC	The project aims to create new authentication protocols based on complex photonic systems. The cryptographic keys will be generated by interrogating the photonic systems with laser light whose transmitted intensity profiles (speckle pattern) will be processed using standard image processing algorithms (hash function). These systems will be non-clonable (Physical Unclonable Functions, PUF) and the protocols studied without access keys (the key is directly encoded within the system). PUF systems find direct applications in the remote authentication and anti-counterfeiting sectors. A one-year stay is expected at the start-up QTI company, based at the National Institute of Optics (INO), in Arcetri (Florence).			
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INNOVATION	12	6	03/11/2021	Italian/English



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INTERNATIONAL DOCTORATE IN STRUCTURAL BIOLOGY

Director prof. Lucia Banci

TITLE OF THE SCHOLARSHIP	Time-resolved analysis and real-time optimization of enzymatic reactions of industrial interest			
PRINCIPAL INVESTIGATOR	ENRICO RAVERA			
SUMMARY OF THE RESEARCH TOPIC	NMR plays a central role in modern Chemistry and Biology, but its applicability is in some cases limited by the time cost of the experiments, which also limits the applicability to probe fast-occurring processes, such as reactions of industrial relevance. Decreasing the time costs of the experiments will drastically reduce their price, increasing the attractiveness for companies, and will allow for probing fast processes, such as enzymatic reactions. Enzymes are highly evolved catalysts that perform very complex chemical tasks with high selectivity without the use of noxious solvents. When immobilized, they become easily separable and stable, so that they can be reused. The possibility of real-time monitoring of the reaction mixture (in terms of products, byproducts, etc...) allows for real-time optimization of the reaction conditions, to tune the yield of the processes. In turn, this would leverage the use of reagents and solvents, in line with the principles of Green Chemistry.			
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GREEN	6	6	04/11/2021	English

TITLE OF THE SCHOLARSHIP	Study and characterization of innovative materials for hydrogen storage through solid-state NMR, para-hydrogen and NMR relaxometry			
PRINCIPAL INVESTIGATOR	MORENO LELLI			
SUMMARY OF THE RESEARCH TOPIC	Hydrogen will be the energy carrier for the next decades, thanks to its ability to store large quantities of energy and make it available efficiently. One of the most important limitations to the development of hydrogen technology is the difficulty of storing it in a safe and transportable way. The study of innovative materials for hydrogen storage is therefore crucial. Several materials are proposed, but their development is limited by the difficulties of characterizing them and monitoring the state of the hydrogen incorporated inside, the interactions with the material and the molecular dynamics of release. The aim of the project is to develop new methods based on the solid NMR technique combined with the para-hydrogen and relaxometry techniques, able of providing information on the molecular structure of the material, the chemical and physical transformations of the hydrogen molecule in the material, its diffusion and release.			
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GREEN	6	6	04/11/2021	English



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TITLE OF THE SCHOLARSHIP	The exploitation of polymers of bacterial origin for the preparation of bioplastics through the integration of microscopic and magnetic resonance techniques			
PRINCIPAL INVESTIGATOR	GIACOMO PARIGI			
SUMMARY OF THE RESEARCH TOPIC	Plastic substances are mainly composed of non-biodegradable polymers deriving from petroleum or synthesis processes. In recent years there has been an important effort towards the development of biopolymers and bioplastics characterized by high biodegradability. Atomic information on the structure of biopolymers is essential to make bioplastics with specific thermal, mechanical and biodegradability properties. Through integrated studies of solid-state NMR, FT-IR, scanning electron microscopy coupled to SD microanalysis it will be possible to evaluate how the atomic structure and the presence of contaminants, which can compromise the biodegradability and eco-compatibility of the material itself, depend on factors such as the composition of the culture medium and the experimental conditions of growth of the bacteria. The characterization of the different biopolymers will allow the development of biodegradable plastics with specific thermal and mechanical properties.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04/11/2021	English

TITLE OF THE SCHOLARSHIP	Development of a high-throughput approach for drug screening in live cells by NMR			
PRINCIPAL INVESTIGATOR	LUCIA BANCI			
SUMMARY OF THE RESEARCH TOPIC	In the rational design of new drugs, many promising compounds do not pass the subsequent preclinical and clinical stages because they prove ineffective or have undesirable effects. To increase the 'success rate' of drug candidates, it is essential to demonstrate 'target engagement' within the cell from the earliest stages. In-cell NMR can provide an important contribution since it can observe protein-drug interactions directly in living cells and with atomic detail. The project aims to 1) develop in close collaboration with Bruker Italia Srl a modular system in flow (NMR bioreactor) which allows keeping the cells viable for a long period, thus allowing for the observation of the interactions between drug candidates and target protein in real-time, directly in living human or bacterial cells; 2) apply the NMR bioreactor for the screening of molecules selective towards intracellular targets.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
INNOVATION	6	6	04/11/2021	English



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MATHEMATICS, COMPUTER SCIENCES, STATISTICS

Director prof. Matteo Focardi

TITLE OF THE SCHOLARSHIP	Mathematical models and methods for image processing for diagnosis in agriculture and for building energy surveys			
PRINCIPAL INVESTIGATOR	GIANLUCA VINTI			
SUMMARY OF THE RESEARCH TOPIC	<p>The topic of the research concerns mathematical models for the processing of digital images with applications both in agriculture and for the energy surveys of buildings. More in detail, the project has its theoretical basis on Approximation Theory and its applications to Signal and Image Processing, while the most applied part will be aimed at processing both optical and thermographic images for green thematic applications in the energy field (mainly aimed at buildings) and agriculture.</p> <p>The proposed project, although based on mathematical bases, has an interdisciplinary nature, involving mathematical, informatics, energy and environmental issues. To achieve the desired results, optical and infrared images obtained from cameras/thermal imaging cameras on drones will also be used.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	9	No	04/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Food choice and global health			
PRINCIPAL INVESTIGATOR	MICHELA BACCINI			
SUMMARY OF THE RESEARCH TOPIC	<p>Food production and consumption affect the environment through different mechanisms, inducing direct and indirect negative consequences on human health. Quantitative evaluations of these impacts at a local and a global level under actual and future hypothetical scenarios are needed in order to inform policies and develop effective communication plans aimed at enhancing food literacy in the population. Within this project, we will review the quantitative literature about this broad topic, develop methods for impact assessment and uncertainty evaluation to address specific questions in this context (e.g. impact of intensive livestock farming or food waste on climate, air pollution and human health), and explore community perception about these themes through sentiment analysis.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	04/11/2021	Italian



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TITLE OF THE SCHOLARSHIP	Innovative 3D techniques for marine environmental monitoring through drone swarms			
PRINCIPAL INVESTIGATOR	CARLOTTA GIANNELLI			
SUMMARY OF THE RESEARCH TOPIC	The continuous growth of cutting-edge technologies promotes the development of autonomous and intelligent systems for the support of environmental monitoring and protection. In this reference setting, the variety of numerical and computational models involved in the design of autonomous vehicles should provide suitable solutions in the different steps of the control process. The research fellowship is devoted to the development of 3D innovative techniques designed to integrate modern computational methods with flexible modeling and approximation schemes to properly coordinate drone swarms in aquatic environments. The geometrical and numerical properties of the developed schemes will be exploited to comply with the input data stream and obtain optimal solutions for the automatic tracing of the environmental conditions, while simultaneously providing information on the marine fauna and flora.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	04/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	How to reduce the digital divide among older people: an approach based on offline social networks			
PRINCIPAL INVESTIGATOR	BRUNO ARPINO			
SUMMARY OF THE RESEARCH TOPIC	In a country like Italy where the percentage of older people is constantly increasing, the development of digital services aimed at this segment of the population is of growing interest for businesses, public administration and society. However, the "digital divide" between older people and the young remains strong. The topic of the project is to study how to reduce the digital divide by exploiting the "offline" family and social networks in which older people are inserted. More specifically, we will analyze: 1) the development and effectiveness of apps shared between older people and members of their family or the social network; 2) the role of apps dedicated to "proxy users" (users through which older people can access digital technologies) in guaranteeing access to products and services by the older population; 3) the effectiveness of group digital literacy modalities involving family members or social network members. The effectiveness of these solutions will be examined with regard to their usability and also in relation to health and well-being outcomes.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
INNOVATION	6	6	04/11/2021	Italian/English



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CHEMICAL SCIENCES

Director prof. Anna Maria Papini

TITLE OF THE SCHOLARSHIP	Electrodeposition and analysis of galvanic surfaces with a view to industry 4.0			
PRINCIPAL INVESTIGATOR	MASSIMO INNOCENTI			
SUMMARY OF THE RESEARCH TOPIC	The rising cost of noble metals makes luxury brands looking for alternative solutions for the production and finishing of fashion jewellery & accessories to be established into the market maintaining quality standards high and "compatible" with environmental, or rather ecosystemic equilibrium. The project aims to perform a research project in cooperation with Valmet Plating, operating for years in the field. The aim is to select alternative materials to precious metals and to propose alternative sequences of eco-friendly electrodeposition, reducing the environmental impact of the galvanic processes used. Replacement of cyanide-based baths and significant reduction of precious metals load will be the final objective. Surface analysis techniques adapted to the measurements of metal and metal alloys control systems with a view to industry 4.0 will be developed, for correct and sustainable use of water processes.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	04-05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Green deal and Zero Pollution strategy: innovative solutions for emerging contaminants removal			
PRINCIPAL INVESTIGATOR	ALESSANDRA CINCINELLI			
SUMMARY OF THE RESEARCH TOPIC	The European Green Deal in its "zero pollution strategy" has among its priority objectives the protection of biodiversity in lakes and rivers, and the reduction of pollution from agricultural fertilizers, microplastics and drugs. To this aim, the project will develop Nature-Based Solutions for sustainable urban drainage and engineered adsorbent materials for the development of alternative treatment systems to be integrated into traditional treatment cycles for the removal of organic and microplastic pollutants from wastewater (i.e. tertiary treatment). Biodegradation and the reaction pathways that can occur along the water treatment cycle will also be investigated by batch tests. Finally, innovative analytical methodologies will also be developed for the sampling and determination of emerging contaminants in aqueous samples from a green-chemistry perspective.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04-05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Micro and nanoplastic pollution: strategies to decrease the environmental footprint and release of plastic from synthetic textile during washing			
PRINCIPAL INVESTIGATOR	DAVID CHELAZZI / TANIA MARTELLINI			
SUMMARY OF THE RESEARCH TOPIC	Washing/rinsing in the textile industry contributes to 35% of plastic release in oceans, thus it is crucial to develop innovative protocols and products to safeguard the environment and biodiversity. In this framework, the doctorate project will focus on the characterization of pollution from microfibers and the evaluation of their impact on aquatic animals, as well as the study of new detergents and filtering systems to decrease plastic release during industrial washing. The project eco-compatibility will be implemented in cooperation with the University of Helsinki, where the PhD student will spend at least 6 months. Close interaction with the industrial project partner and other textile/wastewater industries will allow validating the new protocols to reduce plastic pollution, with the final aim to propose a model for future regulations and market demand.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04-05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Advanced Methods for the development of sustainable industrial formulations			
PRINCIPAL INVESTIGATOR	COSTANZA MONTIS			
SUMMARY OF THE RESEARCH TOPIC	Fabric-care products contain additives for encapsulating-releasing active ingredients. Self-assembled systems based on biodegradable/natural materials could be green alternatives to traditional poorly biodegradable systems; however, the lack of effective methods for evaluating the efficiency of these systems strongly limits the implementation of more sustainable formulations. The PhD project focuses on the development of microfluidic methods for the characterization of novel green encapsulating systems. Microfluidic chips and characterization protocols/methods will be developed thanks to the collaboration between the Department of Chemistry of UNIFI, P&G and the LAAS-CNRS (Toulouse) and will be tested in parallel on traditional and innovative materials with low environmental impact. The developed methods will be made available to academic and non-academic communities; the most efficient green capsules will be proposed as substitutes of traditional systems in industrial formulations.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04-05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Intelligent and sustainable synthesis and processing of innovative permanent magnets			
PRINCIPAL INVESTIGATOR	FEDERICO TOTTI			
SUMMARY OF THE RESEARCH TOPIC	The proposed research activity will concern the development of new materials for the realization of permanent magnets and devices that will replace in many technologies (transport and energy production) those currently in use containing rare earths, and that can improve the recycling rate of current permanent magnets, promoting the circular economy and environmental sustainability. The research activity will be focused on the synthesis by colloidal chemistry and solid-state reactions of high coercivity hexagonal ferrites and soft nanomaterials, which will be used as building blocks to realize exchange-coupled nanocomposites. The use of recycled hard magnetic materials will be also considered. The most promising nanocomposites will be tested at the company partner to manufacture bonded magnets to be implemented in devices for energy production from renewable sources and sustainable mobility.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04-05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Production of carbonaceous materials from waste biomasses of high environmental hazard, their characterization and application for wastewater treatment			
PRINCIPAL INVESTIGATOR	MASSIMO DEL BUBBA			
SUMMARY OF THE RESEARCH TOPIC	The research aims to produce carbonaceous materials by thermal conversion of waste biomasses of high environmental concern, such as biological sludge deriving from wastewater treatment processes. The materials will be subjected to chemical and thermal activation processes to increase the adsorption capacity towards target molecules of particular environmental significance. The materials will be characterized both from the product (surface area, porosity distribution, etc.) and environmental viewpoints (release of polycyclic aromatic hydrocarbons, metals, etc.) and compared with reference materials, such as commercial activated carbons. The most promising materials will be used in studies for the removal of molecules of environmental interest, such as pharmaceutical compounds, perfluorinated and polyfluorinated compounds, both by adsorption isotherms, and column studies on real wastewaters fortified with such compounds.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04-05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Study of low environmental impact products for the conservation of Cultural Heritage			
PRINCIPAL INVESTIGATOR	ANTONELLA SALVINI			
SUMMARY OF THE RESEARCH TOPIC	The use of perfluoroalkyl compounds (PFAS) has increased in the twentieth century in numerous application sectors due to the amphiphobic behavior (water repellency or oleophobicity) and the high stability to degradation that allows prolonged efficiency with small quantities of product. These characteristics have been found to be important in the field of conservation of cultural heritage where non-fluorinated compounds present less efficiency, easier degradation and finally the need for a much larger quantity of product. In recent decades, however, attention has increased for the possible presence of PFAS as contaminants and the need has emerged to reduce and control consumption to avoid their accumulation in the environment. The aim of this project is the study of new formulations with low environmental impact, for use as protective materials on materials of historical and artistic interest capable of showing high performance with low concentrations, high stability and low mobility.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	04-05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Development of flexible hybrid molecular and inorganic solar cells for the design of self-sustainable greenhouses			
PRINCIPAL INVESTIGATOR	MATTEO MANNINI			
SUMMARY OF THE RESEARCH TOPIC	The Ph.D. project aims at the development of new solar cells based on bulk heterojunctions. These photovoltaic cells will be developed starting from nanostructured inorganic components as well as molecular and polymeric semiconductors selecting them on the basis of eco-compatibility and sustainability of production and disposal processes rather than the efficiency of the final devices. The target photovoltaic cell will be a low-cost cell with a low impact on the environment that can be transferred also on flexible supports. The research will be focused on the optimization of the nanostructuring methods to be used producing these components and assembling them, as well as on the realization, on the chemical, structural and functional characterization of cells pointing, at the end of the Ph.D. to the realization of down-scaled cell prototypes evaluating the feasibility of their use in new greenhouses.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04-05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Optimizing the structure of sustainable hydrogels for nano/microfiltration, selective absorption, and anti-biofouling behavior			
PRINCIPAL INVESTIGATOR	MARCO LAURATI			
SUMMARY OF THE RESEARCH TOPIC	The focus of this project is the development of sustainable hydrogels with internal structures that optimize transport in micro and nanofiltration processes, selective absorption, and anti-biofouling behavior. The study of three-dimensional transport of bacteria and molecules in the interior of highly transparent hydrogels presenting porous structures with a large variety of pore sizes and geometries, different mechanical properties, and distinct tracer-hydrogel interactions, will guide the structural optimization. Transport will be characterized by means of novel particle-tracking and optical correlation techniques. Sustainable hydrogels obtained from natural resources (polysaccharides) will be produced by designing green synthesis processes. The project is in collaboration with bioMérieux Italy, with the goal of developing hybrid hydrogels to be used in diagnostics.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04-05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Development of macromolecular and cross-linked materials based on proteins/peptides from vegetable sources			
PRINCIPAL INVESTIGATOR	CLAUDIA BELLO / LUCA ROSI			
SUMMARY OF THE RESEARCH TOPIC	In the last years, Spin-PET focused its research and prototyping toward new eco-sustainable polymeric materials for packaging. Recently proteins have attracted particular attention in the field, despite they present some limitations, such as very slow biodegradability and only under composting conditions, very scarce mechanical properties, and excessive hydrophilicity. The project intends to address this problem by evaluating the possible development of biocompatible and renewable polymeric materials based on vegetal proteins, by integrating the experience Spin-PET acquired so far in the field with the competencies existing in PeptLab at the University of Florence on peptide and protein molecules. The joined activity will concern the study and preparation of molecules of natural origin, primarily peptides, that will be used as additives for industrially produced proteins, in order to develop prototypes of protein-rich materials showing structural and functional properties.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04-05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Development of green technologies for the automated synthesis of peptide active ingredients			
PRINCIPAL INVESTIGATOR	ANNA MARIA PAPINI			
SUMMARY OF THE RESEARCH TOPIC	<p>Recently peptides raised increasing interest from industry, as valuable molecules in several areas, such as in the pharmaceutical and cosmetic field, and as novel materials. This fuelled the need for effective and eco-compatible manufacturing methods. Solid-phase strategies are methods of election for peptide synthesis at any scale. However, large quantities of hazardous solvents and reagents can be required. Thus innovative synthetic and purification technologies should be developed to identify greener procedures. This will be the final goal of this industrial project. A tight collaboration between PeptLab at the University of Florence, internationally recognised in peptide and protein chemistry, and Gyros Protein Technologies, a leading company in the development and production of dedicated instrumentation, will be essential for the project development that will span from laboratory to medium/large scale production, with special attention to cGMP compliance of the new protocols.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04-05/11/2021	Italian/English



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EARTH SCIENCES

Director prof. Sandro Moretti

TITLE OF THE SCHOLARSHIP	Capture and recovery of heavy metals in trap minerals			
PRINCIPAL INVESTIGATOR	GIOVANNI ORAZIO LEPORE			
SUMMARY OF THE RESEARCH TOPIC	The project will focus on the development of innovative methods for the uptake and release of heavy metals from contaminated liquids and it will have an impact on both the protection of the ecosystem (through the decrease of toxic metals dispersed in the environment) and the promotion of technologies for sustainable development (through the study of methods for the recovery of metals from the trapping matrix). The project aims at investigating the relationship between the structural characteristics at the atomic scale and the uptake/release capabilities of minerals characterized by i) the presence of cavities capable of hosting heavy metal cations and ii) high redox versatility. Uptake/release experiments will be performed using liquids with controlled chemical composition and also contaminated waters. Part of the project will be developed in collaboration with ECOTEC research center.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	02/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Satellite geodesy and remote sensing imagery for geothermal energy exploration			
PRINCIPAL INVESTIGATOR	CAROLINA PAGLI			
SUMMARY OF THE RESEARCH TOPIC	The Main Ethiopian Rift (MER) have intense geothermal activity and active volcanoes. Tulu Moye volcano is located in the central sector of the MER and the area is one of the main geothermal prospects in Ethiopia with exploration including subsurface drilling ongoing. We plan to address the contribution of the hydrothermal system to the surface deformation as a means to understand how magmatic sources feed geothermal systems. This research will interpret the crustal deformation observed by InSAR at Tulu Moye with other constraints from geophysical data such as seismicity, magnetotellurics (MT), GPS measurements, structural geology, the surface expression of hydrothermal fluid flow such as fumaroles and hot springs, and new drilling of deep geothermal wells.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	02/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	The salt deposits of the Messinian as a possible resource of trace elements: prospects for use in the field pharmaceutical and industrial			
PRINCIPAL INVESTIGATOR	CLAUDIO NATALI			
SUMMARY OF THE RESEARCH TOPIC	The PhD program is multidisciplinary and involves different skills such as geochemistry, petrography, mineralogy, physical chemistry, mining exploration and so forth. The PhD student is required to 1) Carry out a mineralogical-petrographical characterization of the Messinian saline deposits to identify and quantify the saline phases derived by advanced processes of evaporation (bittern salts), e.g. kainite, and leonite; 2) Develop specific analytical techniques to determine selected trace elements in a highly complex matrix such as that of saline deposits; 3) Investigate the connate waters occurring during the exploitation of the saline deposits to verify the enrichment of specific elements that can give more importance to the saline deposits and use them as tracers in the mining explorations; 4) Set up extraction processes of those trace elements that can be useful in pharmaceutical, food and industrial applications.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	02/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Impact of climate change on hydrogeomorphological dynamics at basin and slope scale			
PRINCIPAL INVESTIGATOR	RICCARDO FANTI			
SUMMARY OF THE RESEARCH TOPIC	The aim of the research is to get operational protocols for the characterization and monitoring of geomorphological instability phenomena (erosion, subsidence, slow-moving and rapid landslides) also through their numerical and conceptual modelling. This will be achieved by analysing the relationships between the phenomena and surface and subsoil geo-hydrological conditions, looking at the triggering climatic factors (regional scale) and the definition of event scenarios on significant events (slope scale). The research will use advanced remote sensing monitoring techniques to define the characteristics of the phenomena, the relationships between their kinematics and the trend of geo-environmental variables (rainfall, hydrogeology in the unsaturated and saturated zones) and short and long-term evolutionary scenarios.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	02/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Optimization of soil cover in landfills of municipal solid waste with sewage sludge and recirculation of leachate for the abatement of diffuse biogas emissions into the atmosphere			
PRINCIPAL INVESTIGATOR	FRANCO TASSI			
SUMMARY OF THE RESEARCH TOPIC	The project aims to develop and optimize a treatment process for cover soils in municipal solid waste landfills involving sewage sludges and landfill leachates in order to improve the efficiency of biodegradation processes affecting biogas, in a perspective of circular economy and environmental sustainability. Moreover, the project will contribute to reducing the biogas diffuse emissions from landfill cover soils mitigating the impact of nuisance odors and harmful gases at the local scale and the release of greenhouse gases at the global scale. The project will include laboratory experiments with a landfill small-scale reproduction, field tests (6 months) to be performed in the Belvedere landfill (Legoli, Italy) and a training/research experience (at least 6 months) at the Institute of Technology and Renewable Energies (ITER) in Tenerife (Canary Islands, Spain).			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	02/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Design of an eco-compatible system for the restoration of stone artefacts			
PRINCIPAL INVESTIGATOR	ORLANDO VASELLI			
SUMMARY OF THE RESEARCH TOPIC	The project aims to identify and develop ecological and environmentally friendly materials for the cleaning, consolidation and protection of stone artifacts. In particular, the materials developed will be derived from substances contained in biomass from agriculture, in order to satisfy two important conditions: the reduced impact on both the environment and man and the use of products from renewable sources. Moreover, the project aims at developing strategies (both new formulates and specific methodologies for the application of products) for improving: a) the efficacy and compatibility of the selected materials with the stone substrate, which include marble, calcareous and siliceous stones, artificial stones; b) the durability of the conservation treatments under different environmental conditions; c) the sustainable conservation of the historical-architectural heritage through the reduction of the climatic change impacts.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	02/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Development of innovative methodologies for soil conservation through the application of erosive hydrological models and remote sensing techniques			
PRINCIPAL INVESTIGATOR	FEDERICO RASPINI			
SUMMARY OF THE RESEARCH TOPIC	<p>The research activities are within the field of soil conservation and protection from extreme climatic events that can have significant effects on the ground. The aim is to provide tools for assessing the problem of soil erosion that could overcome some of the limitations present in the current state of the art. The activities include the development, implementation and application of erosive hydrological models related to the conservation of the soil resource. The activities include the implementation of procedures for the collection and management of data acquired through in situ surveys and remote sensing (e.g., Lidar and multi- and hyper-spectral drone sensors) and validation in test areas selected also with the support of the company involved, as well as the assessment of the effectiveness and applicability of the proposed systems.</p> <p>Impacts of the activities include human resources development and the reduction of the impacts of climate change.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	02/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	THALLIUM: a Potential Toxic Element (PTE) of the third millennium			
PRINCIPAL INVESTIGATOR	SIMONE TOMMASINI			
SUMMARY OF THE RESEARCH TOPIC	<p>The research project is focussed on creating an interdisciplinary approach in the field of environmental and earth sciences through the determination of the chemical speciation and stable isotope composition of Thallium, an element with high toxicity even at low concentrations. The study will be carried out by means of the identification of discriminating parameters between anthropogenic versus geogenic sources, in the different environmental matrices (rock substrate, soil, water, airborne particulate). This will be finalized to create an analytical procedure apt to be applied in a variety of environmental and geologic contexts characterized by potential Thallium hazard. The results of this research will have important scientific, social, and economic implications concerning the policy of implementation of the Best Available Techniques (BAT) to prevent Thallium pollution.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	02/11/2021	Italian/English



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DEVELOPMENT ECONOMICS AND LOCAL SYSTEMS (DELOS)

Director prof. Donato Romano

TITLE OF THE SCHOLARSHIP	Digital innovation and green economy for the sustainable transition. Focus on creative industries and gamification			
PRINCIPAL INVESTIGATOR	LUCIANA LAZZERETTI			
SUMMARY OF THE RESEARCH TOPIC	Digital innovations can be key to the green transition. The project analyses how digital innovations (apps, web-based products, video games, etc) can promote sustainable transition. These innovations are developed in creative sectors (software, video games, ICT) and have spillovers in many contexts (education, entertainment, cultural industries (museums)). Through digital storytelling, they tell stories and bring experiences to life, facilitating the sustainable transition. The project aims to investigate how digital innovations in the creative and cultural industries can facilitate the transition towards sustainable economic development. It focuses on innovation and technology transfer between research and businesses, through cross-sectoral cross-fertilization processes in four industries: digitalization, green economy, cultural and creative industries, education.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03/11/2021	English

TITLE OF THE SCHOLARSHIP	Environmental sustainability and social inclusiveness of blockchain-based solutions in the agri-food system			
PRINCIPAL INVESTIGATOR	DONATO ROMANO			
SUMMARY OF THE RESEARCH TOPIC	The key challenge in the agrifood systems is to make provision and verification of information efficiently along supply chains, ensuring transparency, security and accountability for all involved stakeholders. The project will systematically assess blockchain-based solutions for the agrifood system in relevant dimensions such as technical, socio-economic, environmental and regulatory-institutional dimensions, with a focus on traceability and certification. This is meant to favor more sustainable solutions through a reduction of food waste and loss, preservation of quality and identity along the value chains, prevention of food frauds.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	9	03/11/2021	English



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LEGAL SCIENCES

Director prof. Alessandro Simoni

TITLE OF THE SCHOLARSHIP	The implementation of the blockchain in green procurement: new legal rules and administrative practices to support environmental sustainability			
PRINCIPAL INVESTIGATOR	GIUSEPPE MOBILIO			
SUMMARY OF THE RESEARCH TOPIC	The research proposed must be oriented towards the analysis - in a comparative and/or interdisciplinary perspective - of the legal rules and administrative practices concerning the use of the blockchain within “green procurement”, with special regard to understanding whether and how this technology can effectively replace, in the context of public procurement, the solutions based on electronic platforms or traditional contracts			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	02/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Legal models and regulatory instruments in the winery sector in the context of the ecological transition: comparative and interdisciplinary perspectives			
PRINCIPAL INVESTIGATOR	ALESSANDRO SIMONI			
SUMMARY OF THE RESEARCH TOPIC	The research proposed must aim at investigating the problems concerning the development of a legal framework for the regulation of production and marketing processes within the wine sector that can accommodate as well environmental protection standards. The projects must give priority to topics and methodologies that can contribute to a better understanding of the national legal context through the comparison with other legal systems (also non-European ones) and/or the integration with perspectives borrowed from other branches of knowledge, e.g., economics.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	02/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Sanctions and economic incentives in the promotion of sustainable fishery and aquaculture: comparison of models and national practices within the Common Fisheries Policy			
PRINCIPAL INVESTIGATOR	ALESSANDRO SIMONI			
SUMMARY OF THE RESEARCH TOPIC	The research proposed must contribute to the understanding of the potential of the different normative techniques in ensuring the effectiveness of environmental protection standards within fishery and aquaculture, through comparative studies (that can cover EU as well as non-EU member states) and/or interdisciplinary methodologies			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	02/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Regulation of outdoor sports activities in the mountains and environmental sustainability: a comparison of models and practices in the Alpine region			
PRINCIPAL INVESTIGATOR	ALESSANDRO SIMONI			
SUMMARY OF THE RESEARCH TOPIC	The research proposed will have to contribute to the understanding of the effectiveness levels and economic implications of the different normative techniques and practices that can be found in the Alpine region with regard to the protection of the environment against the impact of winter sports and recreational activities.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	02/11/2021	Italian/English



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ARCHITECTURE AND DESIGN CULTURES, KNOWLEDGE AND SAFEGUARDING OF CULTURAL HERITAGE

Director prof. Francesco Collotti

TITLE OF THE SCHOLARSHIP	Seaside Towns - Survey and investigation by the sea, safeguarding the system of small Mediterranean coastal towns			
PRINCIPAL INVESTIGATOR	FRANCESCO COLLOTTI			
SUMMARY OF THE RESEARCH TOPIC	In a context of digital and ecologic transition, considering strategies to reduce the effects of climate change, preserving the coastal biodiversity and improving green actions for a better environment focusing on the sea, the water and the human and urban settlement, the research aims to define a sustainable approach for the Mediterranean city. The target of the programme is first of all the building of a researcher's and professional profile devoted to the analysis of the relations' system connecting coast, sea floor, and human/urban settlement from the point of view of the waterfront considering the urban structure of the seaside towns. The research's project involves transdisciplinary themes connecting architecture, landscape and urban planning, geography, focused on the common target of environmental safeguarding/regeneration of coastal degraded or polluted contexts. Near traditional tools of investigation, the research requires surveys/simulations using digital technologies from the seaside.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Sustainable Heritage: the value of sustainability for the conservation and management of cultural and natural heritage sites			
PRINCIPAL INVESTIGATOR	SUSANNA CACCIA GHERARDINI			
SUMMARY OF THE RESEARCH TOPIC	The research is aimed at defining sustainable approaches for the management of World Heritage sites regarding the objectives of the United Nations 2030 Agenda. Particular emphasis will be given to green issues related to the impact of climate change on cultural and natural heritage and risk management and energy improvement of cultural heritage. It is also intended to verify the effectiveness of the use of sustainable products in the restoration sector, produced and implemented with respect for the material authenticity of architectural artefacts as required in the management of sites recognised as universal heritage. Particular attention will be paid to the production chain by analysing both the actual sustainability of the individual product made and its real effectiveness in terms of conservation and proof of time, also through simulations carried out using digital and augmented reality technologies.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03/11/2021	Italian/English/french



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TITLE OF THE SCHOLARSHIP	Interoperability between structural models and BIM for the safeguard of cultural heritage			
PRINCIPAL INVESTIGATOR	MARCO TANGANELLI			
SUMMARY OF THE RESEARCH TOPIC	<p>The project aims to the creation of a new profile able to respond to the renewal needs within the researcher figure inside the building process. The study is targeted to the optimization of the interoperability within software concerning building information management (BIM) and software for structural analysis. H-BIM models found the maximum diffusion referring to the existing cultural heritage, historical and monumental buildings. Although the existence of an acknowledged exchange model (IFC model), in the information transfer to the structural software several limits or gaps exist, justified by multiple factors that the project aims to confront. The presented research project supplies a specific knowledge for the formation of a researcher with enabling technologies' expertise, with advanced skills in the field of digitalization for the cultural heritage and the assessment of the structural vulnerability of the historical and monumental buildings.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
INNOVATION	6	6	03/11/2021	Italian/English



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SUSTAINABLE MANAGEMENT OF AGRICULTURAL RESOURCES, FORESTRY AND FOOD

Director prof. Erminio Monteleone

TITLE OF THE SCHOLARSHIP	Development and implementation of a drone-based system for greenhouse gases monitoring and mitigation in livestock farming			
PRINCIPAL INVESTIGATOR	MATTEO BARBARI			
SUMMARY OF THE RESEARCH TOPIC	<p>The project aims at studying innovative drone-based systems to monitor GHGs emissions and air pollutants in livestock farms. The research project involves the development and validation, in the laboratory and in the field, of this new system. The PhD candidate will acquire expertise in multiple fields: monitoring and mitigation of GHGs emissions in livestock systems, study and design of monitoring networks at the enterprise level, integration of agronomical and engineering knowledge.</p> <p>The innovation promoted by the project is implemented through the placement on the market of a new system for the sustainable management of livestock productions at a farm scale.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	02/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Towards a sustainable management of Water-Energy-Food-Ecosystems (WEFE) Nexus for Rural Communities of Mediterranean			
PRINCIPAL INVESTIGATOR	ELENA BRESCI			
SUMMARY OF THE RESEARCH TOPIC	<p>The PhD student will develop a research project within the NEXUS-NESS project (https://prima-nexus-ness.org/). In particular, the focus of the research will be the analysis of the management of the Water-Energy-Food-Ecosystem (WEFE) Nexus through GIS, hydrological modeling, and integrated indicators (Ecosystem Services) in 4 different agroecosystems of the Mediterranean basin (Italy, Spain, Egypt, Tunisia). The goal of the research is to develop strategies for the optimal management of the components of the WEFE Nexus. Good skills in scientific analysis and applied programming are required in the earth and environmental sciences sector (e.g. matlab, GIS, python, javascript, ...) with a preference on skills related to hydrological modeling.</p> <p>A period of 6 months at the URBETORBIT SME (https://www.urbyetorbit.it/?lang=it) is foreseen.</p> <p>References: https://www.sciencedirect.com/science/article/abs/pii/S1877343519300387, https://www.sciencedirect.com/science/article/abs/pii/S004896972104167X</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	02/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Applications of IT and IoT to the conservation and enhancement of the wooden cultural heritage			
PRINCIPAL INVESTIGATOR	MARCO FIORAVANTI			
SUMMARY OF THE RESEARCH TOPIC	The research aims to address the issue of inserting innovative technologies based on Information Technology (IT) and in particular of the so-called Internet of Things (IoT), to the conservation of wooden artefacts of historical, artistic and archaeological interest, with potential repercussions also on applications for a green timber building. The professional figure to be trained will have interdisciplinary skills.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
INNOVATION	12	6	02/11/2021	Italian/English



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INFORMATION ENGINEERING

Director prof. Fabio Schoen

TITLE OF THE SCHOLARSHIP	Advanced Machine Learning Approaches for in vehicle driving assistance and predictive vehicle maintenance			
PRINCIPAL INVESTIGATOR	FABIO SCHOEN			
SUMMARY OF THE RESEARCH TOPIC	The proposed research aims at introducing advanced methodologies in order to significantly increase the safety of the driver and other agents (other vehicles and pedestrians). This will be accomplished through the prevention of risky behavior by the driver and the prediction of onboard breakdowns and malfunctions. Advanced machine learning methods, computer vision, sensor fusion, anomaly detection will be used. The large bandwidth of 5G connections will be exploited to send large amounts of diagnostic data (OBD-II), GPS and videos, useful for training machine learning models, using both labeled data and self-supervised learning techniques.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	12	No	03/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Fleet management methods of e-vehicle, with machine learning techniques, explainable artificial intelligence and IoT, for the reduction of maintenance costs and environmental impact			
PRINCIPAL INVESTIGATOR	PAOLO NESI			
SUMMARY OF THE RESEARCH TOPIC	We are observing a progressive growth of electric vehicles and their types, models and in particular of their use in fleets of rental vehicles or for city use for the use of operators, and therefore also of the related problems. These, having to manage significant numbers of vehicles, can control their evolution and maintenance, based on driving conditions, routes, and also the very structure of the mechanics and electronics of the vehicle. The primary objectives are the reduction of downtime for maintenance, and the reduction of unexpected failures that lead to emergency interventions, but also the management of refills, the identification of components that can fail, the profiling of periodic maintenance. These requests can be satisfied by developing Ai and XAI algorithms on the large amounts of data that are available. At the same time, the semantic modelling of the structures involved such as the vehicle itself, the maintenance processes, the roads travelled, the type of behaviour can guide and accelerate the learning processes. The study will exploit the infrastructure of www.Snap4City.org and the data of the DISIT lab unifi.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	03/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	What-if analysis methods for responding to unexpected environmental and non-environmental events, with explainable artificial intelligence and IoT techniques, to increase the resilience of urban and rural systems.			
PRINCIPAL INVESTIGATOR	PAOLO NESI			
SUMMARY OF THE RESEARCH TOPIC	What-If analysis solutions have to cope with highly complex situations of city scenarios addressing unexpected events to increase resilience. The solutions have to be capable to compute multiple predictions and simulations about city evolution such as environmental variables, public transport, parking, people flow, commercial areas, etc. The approaches take into account data which are static, historical, real-time/dynamic, and forecasting information, in a functional model, on which the processes (simulations, predictions, data transformations) are integrated with business logic and user interaction. Despite the large literature of What-If analysis its complexity for managing actual cases of progressively computed results is far to be covered by solutions and tools. So that the classic prediction models cannot be used, since they have a limited performance to cope with unplanned events that have to be managed in a short time. Other relevant aspects to be addressed are the performance indicators to assess the results. The study is going to exploit the www.Snap4City.org infrastructure and data of the DISIT lab at Unifi.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	8	No	03/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Power quality improvement in electrical networks for resilience and energy transition			
PRINCIPAL INVESTIGATOR	FRANCESCO GRASSO			
SUMMARY OF THE RESEARCH TOPIC	The project involves the development of methodologies, systems, instruments and devices for power flow control and electrical energy storage. Through these assets, it is possible to maximize renewable energy production and usage, reducing the dependence on fossil fuels and greenhouse gasses emissions. The Ph.D. student will acquire advanced knowledge and practical competence in the field of renewable energy communities (REC) and UVAM (Unità Virtuali Abilitate Miste), Smart Grids, Power Quality, distributed energy generation from renewable sources, distribution and transmission of electric power, energy storage and electric mobility applications.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	03/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Environmental, electrical safety, performance and electromagnetic compatibility qualification and impact on the power supply network of the battery recharging systems of electric vehicles			
PRINCIPAL INVESTIGATOR	CARLO CAROBBI			
SUMMARY OF THE RESEARCH TOPIC	Due to the transformation of the mobility from fossil to electric energy, there will be a mass diffusion of electric vehicle charging systems. These systems have energy conversion devices capable of highly efficient management of the power required to transfer in a short time the required amount of charge. A significant impact is expected on the conducted electromagnetic environment (quality of the energy supplied by the power network) and on the radiated environment (electric and magnetic fields) due to the undesired electromagnetic emissions from the recharging systems. The project plans to quantify, through the measurement and test equipment available to the proponents, the impact of the recharging systems on the electromagnetic environment and to model the mechanisms of generation of the unwanted emissions to identify solutions for their containment while preserving the expected performance and safety requirements.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	03/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Smart distributed sensing for management, monitoring and forecasting of power production and distribution in highly renewable-penetrated systems			
PRINCIPAL INVESTIGATOR	GABRIELE MARIA LOZITO / FRANCESCO GRASSO			
SUMMARY OF THE RESEARCH TOPIC	The core of the PhD program is the power flow study in Smart grid systems of the latest generation, featuring distributed generation from renewable sources. The candidate will develop competencies in the field of data acquisition and management from arrays of sensors for power flow measurement, assessment of produced power from renewable sources, forecasting of load profiles and management of storage systems. Individual competencies will involve sensor interfacing, management of acquired data and post-processing through machine learning techniques. The study will involve a practical application of field data through a private company partnership.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	03/11/2021	Italian/English



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INDUSTRIAL ENGINEERING

Director prof. Giovanni Ferrara

TITLE OF THE SCHOLARSHIP	Analysis and development of new systems for the power unit for micromobility			
PRINCIPAL INVESTIGATOR	DARIO VANGI			
SUMMARY OF THE RESEARCH TOPIC	The perspective of the project is the reduction of polluting emissions in urban areas, through the development of technical solutions to encourage micro-mobility, including sharing and last-mile delivery. It involves the study of more durable power unit solutions, addressing the issues of disposal, second life and zero-waste according to the principles of EcoDesign. The accumulator will be based on hybrid systems with lithium titanate cells and supercapacitors, whose composition will be optimized and tested with real driving cycles and with the development of appropriate electronic balancing systems between the elements, charge control and output voltage stabilization and fast charging systems. These hybrid systems make it possible to meet the specific energy and power needs, with a practically infinite useful life, fast recharging and without the use of components such as cobalt, lithium, copper, nickel and rare earths.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Analysis and development of low emission combustion technologies for small size GT operated with 100% hydrogen for power generation, CHP applications and integration with RES			
PRINCIPAL INVESTIGATOR	ANTONIO ANDREINI			
SUMMARY OF THE RESEARCH TOPIC	The project will support the development of innovative combustion systems for small size GT operated with 100% hydrogen for power generation, Combined Heat and Power applications or integration with Renewable Energy Systems. The research will support the development of the prototype by means of thermo-fluid dynamics analyses with increasing levels of complexity and accuracy, from chemical kinetic analysis with 0D/1D tools (chemical reactors/laminar flames), moving to steady-state CFD models up to high-fidelity CFD (LES) using HPC calculation platforms. The objective is to develop a burner with wide margins of stability and high resistance to flashback, while drastically limiting the formation of NOx. The validated calculation tools will represent real digital twins of the device, allowing the candidate to also deal with the development of tools for analysing the performance of the machine that will facilitate the evaluation of its possible application in different scenarios			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Analysis and development of innovative gas turbine combustion technologies for clean and safe use of hydrogen as zero-carbon fuel for future aeroengines			
PRINCIPAL INVESTIGATOR	ANTONIO ANDREINI			
SUMMARY OF THE RESEARCH TOPIC	The research project aims to support the development of innovative combustion systems for future hydrogen-powered aircraft engines. The research will exploit advanced numerical calculation methodologies based on CFD high-fidelity approaches leveraging modern High-Performance Computing architectures (HPC clusters). The adoption of hydrogen as a sustainable zero-carbon fuel by 2050 is one of the paths that will lead to carbon-neutral civil aviation as envisaged by the Green Deal. Detailed investigations of the processes involved in hydrogen combustion will be crucial for the minimisation of non-CO2 pollutant emissions (mainly NOx), contributing significantly to the further reduction of the environmental impact of civil aviation. In addition, aspects related to flame stabilisation and the risks of flashback and autoignition characteristic of hydrogen combustion will be analysed.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Analysis and development of innovative gas turbine cooling technologies for future green aeroengines			
PRINCIPAL INVESTIGATOR	BRUNO FACCHINI			
SUMMARY OF THE RESEARCH TOPIC	The research project aims at supporting the development of future aircraft engines capable of drastically reducing CO2 emissions (Green Engine) through the use of non-conventional thermodynamic cycles and alternative fuels (such as hydrogen or SAF). The aim of the research is to identify innovative solutions with a high heat exchange effectiveness to reduce the air used for cooling high-temperature components of the engine with a direct impact on its performance. The project will evaluate new cooling systems, choosing the most effective solutions from a thermo-fluid-dynamic point of view, leveraging the opportunities of new manufacturing technologies (Additive Manufacturing). The developed solutions will have to be experimentally validated through a dedicated test bench by selecting and developing measurement techniques having adequate accuracy for the evaluation and comparison of the improvement solutions identified.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Advanced numerical and experimental modeling of the next generation of electrolyzers			
PRINCIPAL INVESTIGATOR	ALESSANDRO BIANCHINI			
SUMMARY OF THE RESEARCH TOPIC	The research program aims at training a student with specific competencies in the field of hydrogen production by means of electrolyzers. The student will acquire multidisciplinary skills regarding the experimental testing of electrolyzers, and mostly regarding the numerical modeling of their functioning. These latter analyses will be carried out using a multi-fidelity approach, among which advanced Computational Fluid Dynamics (CFD) techniques including multi-phase flow modeling and electrochemical reactions. Additional elements of the research program could include electromechanical modeling of the electrolyzers with Finite Elements Methods (FEM) and feasibility studies on the coupling of alkaline electrolyzers with renewables.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Sustainability of the supply chain of “One of A Kind” huge production systems			
PRINCIPAL INVESTIGATOR	FILIPPO DE CARLO			
SUMMARY OF THE RESEARCH TOPIC	The PhD project aims to train a professional figure with high specific skills in the field of industrial logistics sustainability. In particular, the issues of logistic-environmental optimisation of the shipment of large industrial plants will be developed, which, depending on how it is managed, can be either a severe environmental problem or an opportunity for innovation and sustainability. The primary objective will be to propose operational models of industrial applicability, capable of reducing polymeric packaging, the wood used and the emissions related to the outbound handling of large industrial machines of which Italy is an important producer. The research project is aligned with improving the sustainability of distribution logistics and related production chains (point 5.3.9 of the SNSI) and is part of Intelligent and Sustainable Industry, Energy and Environment (5.4.2 of the SNSI).			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Energy optimization of rail transport through innovative strategies for electric energy recovery and storage			
PRINCIPAL INVESTIGATOR	ANDREA RINDI			
SUMMARY OF THE RESEARCH TOPIC	<p>The doctoral course will lead to the training of a highly specialized technician who will be trained both in the academic field and through an internship in the company. The future PhD will have solid foundations both at the level of modeling and design of complex railway systems and at the level of realization and design of optimal energy strategies for the conduction and management of railway networks.</p> <p>The PhD student will also strengthen his ability to work in a team and will broaden his knowledge and connections with the corporate world.</p> <p>The PhD student will therefore be able to become a highly specialized technician who is going to contribute to the reduction of the impacts on climate change and the promotion of sustainable development for the new generation railway network.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Innovative and eco-compatible processes in MIM technology and for the surface finishing of metals			
PRINCIPAL INVESTIGATOR	EMANUELE GALVANETTO			
SUMMARY OF THE RESEARCH TOPIC	<p>The proposed activity concerns the development of materials and processes for products in the fashion sector reducing the current environmental impact significantly. The research is part of the current scenario of production of these components in which powder (MIM) and 3D printing manufacturing processes are becoming more relevant also involving the progressive replacement of traditional metal alloys with stainless steel products. In this context, two issues currently require particular attention given their innovative character and the lack of industrial and scientific know-how, namely, the organic filler removal process using aqueous solutions without solvents and the surface finishing process (alternative to galvanic deposition and electropolishing with aggressive acid solutions) which involves vapor phase coatings (PVD) and electrolytic plasma techniques (EPP) in eco-sustainable solutions. The project aims to use non-toxic raw materials and processes characterized by particular attention to the principles of the circular economy reusing all possible scraps/waste generated in the production process.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Design of air conditioning and air treatment systems in industrial and healthcare environments			
PRINCIPAL INVESTIGATOR	DANIELE FIASCHI			
SUMMARY OF THE RESEARCH TOPIC	<p>The research project aims to improve the energy efficiency of air conditioning and air treatment systems through the application of innovative technologies. Analytical, numerical and experimental methodologies will be applied.</p> <p>Possible technological solutions will be compared by analysing energy consumption economic and environmental impacts. Analytical and numerical models (CFD, Computational Fluid Dynamics) of the main components such as microperforated distribution ducts and those in the vicinity of the fans will be developed, allowing their design to be improved. The best configurations will also be analysed with experimental methodologies using the fan test bench.</p> <p>Innovative solutions will also be developed for air treatment systems and energy efficiency of bidirectional recuperative Air treatment Units, through eco-sustainable design aimed at minimising environmental impact (ecodesign).</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Smart energy systems and networks for the Mediterranean area			
PRINCIPAL INVESTIGATOR	ALESSANDRO BIANCHINI			
SUMMARY OF THE RESEARCH TOPIC	<p>The research program aims at training a student with specific competencies in the field of renewable energy production from hybrid energy systems (i.e. including renewables, conventional sources and storage systems), which do represent a key element for the transition toward a smart grid scenario. The student will acquire specific competencies in smart energy systems managing and modeling. Mathematical/statistical methods will be largely used, including Artificial Intelligence (AI) techniques and machine learning. Moreover, thank to the commitment of the industrial partner to a pioneering program of energy exchange between different countries in the Mediterranean area, the candidate will also have the chance to face this frontier research topic.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	05/11/2021	English



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TITLE OF THE SCHOLARSHIP	Study of systems for the sequestration of CO2 on thermal machines and internal combustion engines and implementation of solutions for the methanation of carbon dioxide in an energy transition perspective			
PRINCIPAL INVESTIGATOR	MAURIZIO DE LUCIA			
SUMMARY OF THE RESEARCH TOPIC	<p>The research project aims to study innovative and low environmental impact solutions for Carbon Capture & Sequestration in geothermal plants but also traditional primary generators (TV, TAG, MCI) typically used for the power solution.</p> <p>The research topic is very topical both for environmental problems and climate change but also for the energy transition underway. The project represents an important and clear opportunity to deepen the knowledge in the field of CCS in machines. It is an extremely current sector, seen with increasing attention, both for the technological implications in the entire electricity generation sector and for the social importance of the unstoppable growth of emerging countries. For these, the need to refer to lower-cost technologies requires small and flexible solutions such as MCI, which are particularly penalized in more developed countries.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Numerical and experimental study of the "Auto Cascade Refrigeration" technology with the development of systems and components for ultra-low temperature solutions			
PRINCIPAL INVESTIGATOR	MAURIZIO DE LUCIA			
SUMMARY OF THE RESEARCH TOPIC	<p>The research program aims at training a figure with specific skills in cryogenic system production. The research project aims to study innovative and low environmental impact solutions for providing cooling energy at temperatures in the "Ultra Low Temperature" and cryogenics categories. The research topic is "Auto Cascade Refrigeration" technology.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Development of Circular Design methodological approaches to improve the eco-sustainability of Oil&Gas systems			
PRINCIPAL INVESTIGATOR	MASSIMO DELOGU			
SUMMARY OF THE RESEARCH TOPIC	The research project is aimed at the development and application of Circular Design methodologies and tools for the design and assessment of eco-sustainable design solutions for Oil&Gas systems. The approach, which will be implemented in a specific framework, shall be holistic and integrated since the early stages of product design and development, covering the entire product life cycle according to the green transition and Circular Economy policies. In particular, the framework shall support the designer in identifying technical and technological solutions that favour the reduction of material and energy resources in the production phase; the reduction of energy consumption in the use phase; the extension of product life; the reduction of waste by favouring the generation of secondary raw materials.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian

TITLE OF THE SCHOLARSHIP	Development of innovative hydrokinetic turbines for small watercourses			
PRINCIPAL INVESTIGATOR	ALESSANDRO BIANCHINI			
SUMMARY OF THE RESEARCH TOPIC	The research program aims at training a student with specific competencies in the field of renewable energy production from small watercourses and artificial channels. The student will acquire multidisciplinary skills regarding the experimental testing of hydrokinetic rotors, and mostly regarding the numerical modeling of their functioning. These latter analyses will be carried out using a multi-fidelity approach, among which advanced Computational Fluid Dynamics (CFD) techniques. The research program will include fluid-dynamic optimization studies of a single rotor or multiple rotors on the same axis or clustered into arrays. Power augmentation techniques will be studied also, including both passive devices and active techniques like a variable pitch.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Development of methods and their application for right-sizing of electric and hybrid-powered Two-Wheelers			
PRINCIPAL INVESTIGATOR	NICCOLÒ BALDANZINI			
SUMMARY OF THE RESEARCH TOPIC	The research project aims to develop specific design methods for electric and hybrid Powered Two Wheelers. The small size and mass of these vehicles, as well as their different usage, require an integrated design, which is not necessarily pursued in four-wheeled vehicles with the same powertrain. Starting from considerations related to the recharging system, the dimensioning of the powertrain (using real driving cycles), the distribution of weights in the vehicle and its influence on handling, and aspects of electrical safety in the event of an accident will be addressed from an integrated perspective. In this context, the principles of EcoDesign will also be applied both to evaluate the presence of CRM - Critical Raw Materials - in the powertrain components and to design the end-of-life phase of the product.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Development of innovative compression systems for hydrogen with reciprocating compressors			
PRINCIPAL INVESTIGATOR	GIOVANNI FERRARA			
SUMMARY OF THE RESEARCH TOPIC	The research program is aimed at training a figure with specific skills in the field of hydrogen compression through alternative compressors. The issue of transport and storage of hydrogen is in fact of primary importance in view of the energy transition. The candidate will therefore acquire multidisciplinary skills in experimental testing and numerical modeling of reciprocating compressors with particular focus on issues such as seals (piston and rod), heat transfer and dynamic behavior of the systems. The objective is to create know-how in the field of development and optimization of these machines for a highly challenging sector.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Development of innovative compression systems for hydrogen with centrifugal compressors			
PRINCIPAL INVESTIGATOR	GIOVANNI FERRARA			
SUMMARY OF THE RESEARCH TOPIC	The research program is aimed at training a figure with specific skills in the field of hydrogen compression through centrifugal compressors. The issue of transport and storage of hydrogen is in fact of primary importance in view of the energy transition. The candidate will therefore acquire multidisciplinary skills in experimental testing with advanced techniques and high-fidelity numerical modeling of fluid-dynamic processes of centrifugal compressors in order to contribute to the development and optimization of their design.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Development of underwater technologies for the monitoring and conservation of coastal biodiversity			
PRINCIPAL INVESTIGATOR	ALESSANDRO RIDOLFI			
SUMMARY OF THE RESEARCH TOPIC	The PhD program will deal with robotics topics, in particular mobile robotics for the marine sector. Innovative underwater technologies will be developed and tested for the protection of biodiversity and, more generally, for environmental monitoring. Robotic systems for the inspection, maintenance and repair of industrial plants represent an essential technology for a sustainable future, for example of systems for the generation of energy from renewable sources at sea (waves, tides, wind). The same robotic systems can be used for ecosystem monitoring (water column, seabed, and coastal environment) to protect and conserve the environment and/or restoration of contaminated sites. The candidate will address both aspects related to hardware and software for the development of innovative technologies in this sector.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Use of computational methods for the multidisciplinary design of fluid machinery that use hydrogen from renewable sources			
PRINCIPAL INVESTIGATOR	ANDREA ARNONE			
SUMMARY OF THE RESEARCH TOPIC	The PhD program is focused on the multidisciplinary design of fluid machinery that uses hydrogen (from renewable resources). The activity will cover the radical redesign of the present generation turbine to use fuels with an increasing quantity (from 70% to 100%) of hydrogen coming from renewable sources. This green conversion requires the development of specific multidisciplinary tools (aerodynamic and aeromechanics) able to capture the effect of non-conventional fuels on vibrations that can cause fatigue failure in the turbine.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	05/11/2021	Italian/English



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INTERNATIONAL DOCTORATE IN CIVIL AND ENVIRONMENTAL ENGINEERING

Director prof. Luca Solari

TITLE OF THE SCHOLARSHIP	Identification and development of strategies to increase the environmental sustainability of the Prato textile district			
PRINCIPAL INVESTIGATOR	RICCARDO GORI			
SUMMARY OF THE RESEARCH TOPIC	The research project is aimed at identifying and developing strategies to increase the environmental sustainability of the Prato textile district. The reference document on Best Available Techniques (BAT) for the textiles industry is under review and an updated version is expected to be published in 2022. The BAT conclusions that will arise from this review, can pose some criticality for all companies subject to the Integrated Environmental Authorization (AIA), including the company GIDA which manages the local facilities for the treatment of industrial and urban wastewaters. The PhD project is therefore aimed at identifying and testing strategies and solutions (managerial and/or technological) capable to guarantee compliance with the discharge limits imposed by the updated BAT, minimizing the impacts on the production system. At the same time, the solution identified should be integrated into the local strategy under development, for promoting the circular economy in the textile sector.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	9	9	04/11/2021	English

TITLE OF THE SCHOLARSHIP	Multi-risk analysis for natural hazards and climate change in urban environments			
PRINCIPAL INVESTIGATOR	GIANNI BARTOLI			
SUMMARY OF THE RESEARCH TOPIC	In the PhD program, with reference to a case study represented by the territory of the Municipality of Florence (preliminary contacts have already been taken with the municipal administration), the issue of conducting a multi-risk analysis on a territorial scale will be addressed. The analysis will initially focus on the correct definition of the probability that extreme or significant events may occur (i.e., hazard analysis, mainly for seismic, hydraulic, wind and hydrogeological events); subsequently on the identification of the vulnerable elements of the territory (vulnerability analysis) and, lastly, at the assessment of the individual risks and the aggregate risk, hence considering the value, in terms of damages and expected losses, due to the single and/or combined action of events of different nature. The research project is highly multidisciplinary and involves the integration of transversal skills in the field of hydraulic, geotechnical and structural engineering.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	9	9	04/11/2021	English



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TITLE OF THE SCHOLARSHIP	Biorefinery in municipal wastewater treatment plants			
PRINCIPAL INVESTIGATOR	TOMMASO LOTTI			
SUMMARY OF THE RESEARCH TOPIC	The research activities are oriented towards a virtuous and green model of circular economy and environmental sustainability in the urban wastewater purification sector, aiming at the recovery of resources such as, mainly, extracellular biopolymers (EPS) and phosphorus from active biomasses in biological purification processes. The project, therefore, aims to promote a real "green transition" from the old linear model of conventional treatment plants (WasteWater Treatment Plant - WWTP), towards a new circular model that sees the treatment plants as biorefineries (Water Resource Recovery Facility - WRRF) from which it is possible to recover resources such as water, nutrients, biopolymers and energy. The research topic will be the development of an innovative wastewater purification technology based on the use of aerobic granular biomass and the recovery and valorization of phosphorus and EPS from excess sludge.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	12	9	04/11/2021	English

TITLE OF THE SCHOLARSHIP	Offshore wind energy: advanced computational models for the simulation of large floating turbines for the Mediterranean Sea			
PRINCIPAL INVESTIGATOR	ENZO MARINO			
SUMMARY OF THE RESEARCH TOPIC	Very large floating wind turbines in deep water are complex systems that are exposed to the combined action of wind and waves. Especially during extreme sea states, nonlinear fluid-structure interaction phenomena need to be properly captured through numerical simulations based on more efficient and accurate discretization techniques than standard approaches. The research is focused on the nonlinear dynamics of platform and mooring lines and their interaction with fully nonlinear waves. The main objective of the project is to develop numerical models based on innovative techniques, such as Isogeometric Analysis (IGA), to improve the trade-off between computational cost and accuracy in the prediction of the structural response.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	9	9	04/11/2021	English



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TITLE OF THE SCHOLARSHIP	Airborne and ground-based remote sensing for monitoring coastal environment			
PRINCIPAL INVESTIGATOR	FRANCESCO MUGNAI			
SUMMARY OF THE RESEARCH TOPIC	The PhD student will deal with monitoring the coastal environment through remote sensing techniques and data analysis based on statistical-mathematical models and artificial intelligence. The PhD student will make use of geospatial data analysis (both satellite and acquired from UAV, aquatic, and terrestrial systems) to monitor the protection and stability of extensive coastal areas and to assess and mitigate the risks related to extreme natural phenomena. The results are aimed both at preserving the coastal environment itself and improving its safety. In addition, UAV, aquatic, and terrestrial acquisition systems will also be used to detect the presence of solid pollutants in the coastal area, both on the coast itself and in the marine environment. Objective indicators will also be used to ensure the measurability and effectiveness of the developed solutions. An example comes from the validation in the field, with ground truth measurements obtained through geodetic/topographic survey tools, of coastal erosion. In the case of solid pollutants detection, the effectiveness of the methods developed will be validated through three case studies.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	10	9	04/11/2021	English

TITLE OF THE SCHOLARSHIP	Optimization of the recovery chain of plastics collected in municipal solid waste			
PRINCIPAL INVESTIGATOR	CLAUDIO LUBELLO			
SUMMARY OF THE RESEARCH TOPIC	The transformation of waste into a resource represents one of the great objectives of modern societies, with the construction of complex industrial chains that involve the production phase of the goods, the collection of waste, the valorisation of waste with transformation into materials ready for subsequent use. Unfortunately, the quantity of non-recyclable plastic waste still represents a significant percentage (around 40%) of the plastic urban solid waste collected. The main causes are to be found in the methods of collection of differentiated waste, which still has large quantities of foreign materials, and in the need to develop new processes of transformation and enhancement of the plastics collected for some specific polymeric components and the heterogeneous mixes produced by the supply chains. selection. The research aims to analyze the overall industrial production chain, from a circular economy perspective.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	12	9	04/11/2021	English



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TITLE OF THE SCHOLARSHIP	Plastics in rivers from cities during flood events			
PRINCIPAL INVESTIGATOR	LUCA SOLARI			
SUMMARY OF THE RESEARCH TOPIC	Rivers harbor some of the highest levels of microplastic contamination and supply most of the microplastics found in the oceans. A key objective in tackling the microplastic problem in both marine and freshwater settings is a better understanding of the complexities of wastewater management and of how, when and where microplastics are released into the environment. In cities, during intense meteoric events, untreated wastewater from the sewer network might directly flow into the watercourses together with the plastic contained in the domestic and meteoric wastewater from street run-off. The aim of the research is to identify the extent and temporal distribution of this contribution in order to provide suitable systems for retaining plastic before it is eventually dispersed in rivers and accumulates on the bottom together with the sediments. The research methodology includes the hydraulic modeling of flood spillways in the case study of Florence.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	9	04/11/2021	English

TITLE OF THE SCHOLARSHIP	Wastewater treatment and resources recovery based on the selection of halophilic and halotolerant microbial communities			
PRINCIPAL INVESTIGATOR	GIULIO MUNZ			
SUMMARY OF THE RESEARCH TOPIC	The objective of the project is to develop biological processes and novel environmental technologies for the treatment and the recovery of resources (i.e. biogas, biopolymers), in the treatment of wastewater characterized by very high salinity and/or salinity time-gradients. The topics of the research include the choice of adequate inocula, the estimation of kinetics and stoichiometry of halophilic and halotolerant microorganisms growing in typical conditions of wastewater treatment bioreactors, the development of monitoring protocol, selection and control strategies aimed at optimizing the metabolic functions and the aggregation forms of the microbial communities, in order to enable their industrial application. The research activity will require an interdisciplinary approach, based on the knowledge of bioprocesses engineering, environmental biotechnologies, mathematical modelling of biological processes and molecular biology.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	9	04/11/2021	English



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TITLE OF THE SCHOLARSHIP	Study and analysis of natural fiber composites for the reinforcement of low-quality wooden structural elements (and for the rehabilitation of existing members)			
PRINCIPAL INVESTIGATOR	MICHELE BETTI			
SUMMARY OF THE RESEARCH TOPIC	The doctoral course is aimed to study and propose the use of innovative products with a reduced impact on the environment (e.g. natural fibers) to promote sustainable development in the wood building field. To this end, will investigate: a) the reinforcement of low-quality wooden structural elements; b) the preservation of the "ecosystem" of the existing wooden structures. The project, hence, which will be developed through a multidisciplinary approach, will investigate the use of natural fibers for the reinforcement of beams and/or wooden structures. It is expected to be articulated around the following three elements: 1) diagnostic investigation techniques; 2) methods for the analysis of the residual life of wooden structures; 3) study and analysis of natural fiber composites for structural rehabilitation and/or retrofitting.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	9	04/11/2021	English

TITLE OF THE SCHOLARSHIP	Development of New Technologies for Sustainable Road Mobility that guarantee fluidity, efficiency, safety in travel and environmental impact mitigation			
PRINCIPAL INVESTIGATOR	MASSIMO LOSA			
SUMMARY OF THE RESEARCH TOPIC	The project is aimed to identify a methodological approach that could allow both to achieve comprehensive knowledge on the state of the art of smart mobility technologies and to integrate this information for the development of specific technologies to be applied in the rehabilitation of existing roads. The project is specifically focused on new technologies to developing sustainable mobility, which is related to travel time reduction, relieving congestion on roads and use of low emission vehicles too; they are a lot and include vision technologies, development of smart sensors embedded in infrastructure as well as the evaluation of the durability of wireless embedded sensors for smart structural health monitoring.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	9	04/11/2021	English



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TITLE OF THE SCHOLARSHIP	Use of low enthalpy geothermal energy through the installation of micropiles			
PRINCIPAL INVESTIGATOR	JOHANN FACCIORUSSO			
SUMMARY OF THE RESEARCH TOPIC	<p>Low enthalpy geothermal energy is a renewable energy source, available and with no emissions into the atmosphere. Recently, research has focused on the use of geothermal energy through structures placed in direct contact with the ground (geostructures) and a very promising application seems to be represented by micropiles, widely used in the recovery of existing buildings and foundation reinforcement. The behaviour of "energy micropiles" is still poorly known and investigated, even if the results of the field tests seem encouraging. The research aims to deepen the knowledge currently existing through experimental field tests and advanced numerical analyses that allow evaluating the energy performance of this solution, the advantages in economic and environmental terms, the effects on the mechanical behaviour of the foundation system and its interaction with the surrounding ground.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	9	9	04/11/2021	English



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AGRICULTURAL AND ENVIRONMENTAL SCIENCES

Director prof. Giacomo Pietramellara

TITLE OF THE SCHOLARSHIP	Effects of treatments with treated wastewater on plants raised in cultivation systems in the absence of soil and under controlled conditions			
PRINCIPAL INVESTIGATOR	STEFANO BIRICOLTI			
SUMMARY OF THE RESEARCH TOPIC	In relation to climate change, the project plans to investigate the behavior of plants in the conditions envisaged by the current forecast models, which could allow us to better understand the adaptive potential of the different crops. Plants with different water requirements will be grown in various cultivation systems (aeroponics and Biochar substrates), irrigated with wastewater treated with innovative reclaiming systems or drinking water, both in varied and non-varied atmospheric conditions. The productive, physiological and biochemical aspects induced by the various treatments and whether these are able to induce any adaptive epigenetic variations will then be studied in depth. The aforementioned research activities are able to induce important scientific, social and economic effects, with reference to the issues of green transition, ecosystem conservation, biodiversity and the reduction of the impacts of climate change			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03-04/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	InGreen - Insect flours and oils as "green" ingredients to increase resilience and sustainability in animal husbandry and aquaculture			
PRINCIPAL INVESTIGATOR	GIULIANA PARISI			
SUMMARY OF THE RESEARCH TOPIC	In agreement with the European Farm to Fork strategy, new feed formulations will be developed for the poultry and aquaculture sector based on the use of protein and lipid sources derived from insects, responding to the objectives of: <ul style="list-style-type: none"> • enhancement of native poultry breeds and fish species for the protection of biodiversity; • use of agro-industry by-products through insect breeding; • creation of new integrated models performing in terms of productivity and environmental sustainability; • reduction of competition in the use of raw materials between direct human (food) and animal (feed) nutrition; • increase in the resilience of the livestock and aquaculture sectors by promoting the use of feed formulations with the use of raw materials of national origin. 			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03-04/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Synergistic integration of eco-sustainable strategies and technologies for the innovative defence of plant health (INCIPIT)			
PRINCIPAL INVESTIGATOR	STEFANIA TEGLI			
SUMMARY OF THE RESEARCH TOPIC	<p>The project has the following objectives:</p> <p>i) the analysis and definition of ozone and "wood distillate" (WD) bioactivity in plant disease control for the reduction/replacement of synthetic and pollutant fertilizers and pesticides;</p> <p>ii) the design and set up of procedures and devices for the application of ozone and WD, and for the synergistic integration of these innovative approaches, in a sustainable and "green" agriculture.</p> <p>The understanding of the molecular mechanisms triggered by ozone and WD will be achieved by experimental activities carried out on model plants at the laboratory, pilot-scale and open field scale, along the entire production chain. This approach will allow the set up of techniques and procedures for the application/treatment of plants with ozone and WD, to monitor their impact, including any ecotoxicological risk, to provide data and tools to support an effective transition towards an authentically sustainable and "eco-friendly" agriculture.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03-04/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	The exploitation of Mediterranean wild plants for pharmacological and nutraceutical purposes: traditional species for new health needs			
PRINCIPAL INVESTIGATOR	FRANCESCO FERRINI			
SUMMARY OF THE RESEARCH TOPIC	<p>The project concerns the sectors of ecology, in particular, the conservation and enhancement of biodiversity and natural environments, pharmacology, medicine and the production of natural-based nutraceutical active ingredients for the production of natural supplements with green procedures. The project, therefore, aims at promoting sustainable development as a contribution to promoting green recovery.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	03-04/11/2021	Italian/English



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SUSTAINABILITY AND INNOVATION FOR THE DESIGN OF BUILT ENVIRONMENT AND SYSTEM PRODUCT

Director prof. Giuseppe Lotti

TITLE OF THE SCHOLARSHIP	Analysis and development of eco-innovative and Design Driven collaborative service models, aimed at improving the quality of life and environmental, social and economic sustainability of communities at the urban level			
PRINCIPAL INVESTIGATOR	DEBORA GIORGI			
SUMMARY OF THE RESEARCH TOPIC	The research is aimed at developing innovative service models capable of reducing the impacts of climate change, promoting the virtuous management of resources and promotion of sustainable development at the territorial level through the use of enabling technologies (IoT, BlockChain, Data Management, AR/VR) and the active involvement of communities through collaborative platforms. The Design-Driven approach is aimed at studying and creating new levels of services in which innovative enabling technologies applied to urban contexts become the application tool. The design process includes the involvement of local stakeholders and the activation of co-design processes to create Green, Smart and Inclusive communities. The research is located within the SNSI and specifically in the area 10 Smart, Secure and Inclusive Communities, with possible integrations with "Technologies for Living Environments", "Sustainable Mobility" and "Energy".			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04/11/2021	Italian

TITLE OF THE SCHOLARSHIP	Analysis and development of design-driven innovation paths with regards to the green and digital transition of soft means of transport, for smart urban micro-mobility of goods and people, and related services			
PRINCIPAL INVESTIGATOR	ALESSANDRA RINALDI			
SUMMARY OF THE RESEARCH TOPIC	The research aims to promote sustainable development and accelerate the green and digital transition of urban mobility, through the development of design driven innovation regarding soft means of transport, for urban micro-mobility of goods and people, and related services, to translate them into mobility-as-a-service solutions. The use of ICT and AI, applied in an urban environment, will be aimed at: a) optimizing the means for urban mobility of goods and people; b) provide additional services; c) incentivize the inclusion and technological acceptability linked to artificial intelligence applied to the field of urban mobility. The project will contribute to the competitive growth of the Automotive, Mechanics and Electrical Engineering sectors, highly competitive production sectors, which will have an important leap forward in the coming years, thanks to the green and digital transition, with a great need to push towards innovation, design and quality of processes.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Comfort of nature and landscape design. Methods for measuring the state of psychophysical well-being and their environmental modeling as tools for the design and adaptive management of critical urban landscapes			
PRINCIPAL INVESTIGATOR	FABIO SALBITANO			
SUMMARY OF THE RESEARCH TOPIC	The research aims at defining a methodological framework concerning the relationships between urban landscapes and the state of human health and well-being. Knowledge will be developed on the potential level of "comfort of nature" in different urban settings in order to define the effectiveness of nature-based solutions allowing the enucleation of fundamental criteria for landscape design. The first phase of research aims at analyzing people awareness of ecosystem services and disservices, particularly referring to the sources of stress and pathological strain such as thermal discomfort, pollution, perceptual discomfort, physical inability. A second phase aims at measuring and modeling (with qualitative-quantitative criteria) the environmental conditions predisposing the states of stress so as to test design and adaptive management scenarios that promote Landscape based solutions. The research will require transdisciplinary guidance and collaborative approaches.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Digital & sustainability. The role of digital technologies in the challenge of sustainability: the contribution of design			
PRINCIPAL INVESTIGATOR	GIUSEPPE LOTTI			
SUMMARY OF THE RESEARCH TOPIC	The research aims to verify the contribution of digital technologies (internet of things, traceability and blockchain, augmented reality and software platforms) to the challenges of sustainability and at the same time to analyze the sustainability of digital solutions (energy consumption, CO2 production, social impact) with particular attention to the contribution of the design discipline (in terms of product, communication and service), in its ability to synthesize and catalyze the various disciplinary contributions, to give meaning to innovation, to guarantee marketability.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04/11/2021	Italian



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TITLE OF THE SCHOLARSHIP	HyPer_Building – High-Performance Building (HPB)			
PRINCIPAL INVESTIGATOR	MARIA ANTONIETTA ESPOSITO			
SUMMARY OF THE RESEARCH TOPIC	The research focuses on social sustainability to safeguard Travel Health within public transportation terminals or mass gathering public areas. The research analyses, designs and evaluates solutions, systems and components utilizing antimicrobial materials and defines an innovative product design performance-based approaches, reengineering the processes to adapt it to the digital environment, valorizing the technologies available in the deep ecosystem. Action design research aims to develop new project solutions to face pandemic threats on frequently touched surfaces. It foresees field tests of adopted solutions and effectiveness measurement, confronted with the threats to be faced like a pandemic. At the conclusion, the research will release design recommendations.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	12	6	04/11/2021	Italian

TITLE OF THE SCHOLARSHIP	Fashion: culture, industry, system. Sustainable innovation strategies for the hyper-connected society			
PRINCIPAL INVESTIGATOR	ELISABETTA CIANFANELLI			
SUMMARY OF THE RESEARCH TOPIC	The research project aims to explore the essence, impact and challenges that the fashion system is going through in its continuous tensions between the industrial system and the cultural system, between technologies and humanities. Green transformations are already affecting products and communication, encouraging the emergence of new business models in which the digitization of processes and phases converges with the need to mature sustainability in an extended sense: environmental, social, economic, but also cultural and creative. In addition to representing a relevant field of research, the fashion system is a strategic sector for Italy, where the culture of design is interconnected with both the artisanal and manufacturing reality, which develop in complex supply chains made of many actors diversified by role and skills.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Open Spaces Systems, Urban Natures, and Climate Change. Adaptive Strategies and tools for planning the city-landscape			
PRINCIPAL INVESTIGATOR	ANNA LAMBERTINI			
SUMMARY OF THE RESEARCH TOPIC	The research aims at experimenting with methods to interpret and map urban natures and green infrastructures in the Euro-Mediterranean cities. Basing on the need of facing climate change issues, the research aims to develop analytical, evaluative and operational planning and designing tools as key in the transition to sustainable urban landscapes. Open spaces system planning will be tested, incorporating the principles of climate-adaptive design and by innovative criteria of planting design, urban ecology, and sustainable mobility. Part of the research will focus on quali-quantitative information and knowledge about ecosystem services. Interactive landscape mapping tools will be tested. The research will be carried out in Florence basing on the transdisciplinary collaboration DIDA/DAGRI (Unifi) on drafting the Municipality Green Plan. Particular attention will be devoted to testing co-design approaches (e.g. focus groups, design workshops, multi-stakeholders inclusiveness).			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Development and integration of innovative envelope systems with low environmental impact for the sustainable renewal of the built environment			
PRINCIPAL INVESTIGATOR	PAOLA GALLO			
SUMMARY OF THE RESEARCH TOPIC	The research aims to promote product and process innovation in response to the growing needs of the construction market concerning the themes of deep energy and functional renovation that has become increasingly attentive to the theme of green economy and eco-labelling. The research work aims to develop innovative technological solutions for buildings envelope, through additive manufacturing processes, with ecological materials and with low environmental impact; the whole integrated with technologies for the production of RES and digital sensors, to use in the context of an innovative approach for the projects management, mainly for the renewal of the built environment.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	6	04/11/2021	Italian/English



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PHILOLOGY, ITALIAN LITERATURE, LINGUISTICS

Director prof. Paola Manni

TITLE OF THE SCHOLARSHIP	Language transparency strategies for increased awareness and sharing of sustainability processes and policies			
PRINCIPAL INVESTIGATOR	MARCO BIFFI			
SUMMARY OF THE RESEARCH TOPIC	The success of sustainability policies is profoundly linked to the level of awareness of citizens, who are asked to take continuous action with a view to making virtuous behaviour natural and widespread. To this end, taking into account the level of education and consequent linguistic competence, it is necessary to prepare clear and transparent communication. It is essential to work on words, characterized by frequent use of technical terms (often in English), but also on language structures. The objective of the research is the development of an effective language of high dissemination on the issues of energy saving, environmental respect, biodiversity. The dissemination of methods, practices and results will take place through an Open Acces digital series specifically designed for the purpose, which will include glossaries and manuals. Collaboration with ENEA is planned.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	6	No	03/11/2021	Italian

TITLE OF THE SCHOLARSHIP	New Humanistic Latin Tools: Lorenzo Valla's Vocabulary			
PRINCIPAL INVESTIGATOR	LUCA BOSCHETTO			
SUMMARY OF THE RESEARCH TOPIC	The project, which aims to develop skills in humanistic philology, lexicography and digital humanities, intends to realise a specialised digital vocabulary of humanistic Latin. The focus will be Lorenzo Valla's (1406-1457) <i>Elegantie lingue latine</i> , a fundamental work for the study of fifteenth-century Latin. On the one hand, the researcher will analyse the <i>Elegantie</i> using a traditional lexicographic approach; on the other hand, he/she will encode the lexicographic material with a markup language, preparing it for digitisation. For each item studied by Valla the Vocabulary, designed for refined queries, will 1. classify the different meanings; 2. provide details on the (classical, medieval, and humanistic) exemplifications used by the author; 3. compare the identified meanings with those attested in the main vocabularies of classical, medieval and humanistic Latin in use today.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
INNOVATION	6	12	03/11/2021	Italian/English



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LANGUAGES, COMPARATIVE LITERATURE AND CULTURES

Director prof. Fernando Cioni

TITLE OF THE SCHOLARSHIP	Conversation design and man/machine interaction in natural language			
PRINCIPAL INVESTIGATOR	MARIA RITA MANZINI			
SUMMARY OF THE RESEARCH TOPIC	<p>The present project fits into the research frameworks of the human/machine interfaces design based on natural language, such as Conversation Interfaces or Voice User Interfaces, i.e. those virtual assistants that the major tech companies use to allow interaction with the end-users.</p> <p>The project focuses on the analysis of human/machine interaction based on the different levels of linguistic representation. Lexicon, morphosyntax, prosody and pragmatics define the linguistic contents suitable for functional interactions (Conversation Design) by enhancing the models provided by the reflection on natural discourse and its rules (Grice).</p> <p>The doctoral course will be aimed at developing skills on the discursive process and its digital implementation within the information structures suited for pragmatic-textual devices and the exchange of information through digital media.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
INNOVATION	9	6	04/11/2021	Italian/English



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EDUCATION AND PSYCHOLOGY

Director prof. Vanna Boffo

TITLE OF THE SCHOLARSHIP	Education, training and skills for the green transition: case studies and selection of best practices on transversal skills development to support the transition to sustainable economies and societies			
PRINCIPAL INVESTIGATOR	GIOVANNA DEL GOBBO			
SUMMARY OF THE RESEARCH TOPIC	Which transversal skills represent an enabling factor for a sustainability mindset? How to develop, evaluate and certify them? which training courses have proved effective in the challenge of the green transition? The research develops three highly integrated areas: definitional, linked to transversal green skills, educational / training and institutional/organizational. The research is aimed at identifying good training practices with attention also to the so-called "Indirect jobs" and "Induced jobs". Qualitative and quantitative approaches could find a balance within a case study and subsequent meta-analysis for the detection of effective training "best practices" for the development of the skills necessary for the transition to sustainable economies and societies. The selected cases will provide ideas and inspiration for policymakers and education and training practitioners.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	12	6	05/11/2021	Italian/English

TITLE OF THE SCHOLARSHIP	Towards a gamified crowdsourced approach to the climate change			
PRINCIPAL INVESTIGATOR	ANDREA GUAZZINI			
SUMMARY OF THE RESEARCH TOPIC	The research is asked to design, develop and validate a gamified web-based social setting devoted to promoting the engagement, knowledge, awareness, and expertise required to face climate change. In particular, the research should provide a validated research-intervention tool with a clear and solid theoretical background, as well as able to activate the collective intelligence potential of the local communities, using a gamified approach promoting local collective actions (e.g., crowdsourcing dynamics). The psychology of virtual environments, social and community psychology, and cognitive psychology will represent the fundamental toolkits to design the methodology of the research, as well as to define the quantitative and qualitative indicators to evaluate the subjective explicit and implicit attitudes towards climate change.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
GREEN	12	6	05/11/2021	Italian/English



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TITLE OF THE SCHOLARSHIP	Immersive digital environment for STEM teaching from a gender perspective			
PRINCIPAL INVESTIGATOR	MARIA RANIERI			
SUMMARY OF THE RESEARCH TOPIC	<p>The research program intends to investigate and develop augmented training tools aimed at improving the teaching and learning processes of technical and scientific disciplines. More specifically, grounding on emerging evidence in the field of educational technology, a prototype of a digital environment for STEM teaching will be designed, implemented and tested using virtual/augmented reality applications or based on the use of 360 video. In the design and testing of the application, a particular target will be privileged, that is female students, who are traditionally less encouraged to study scientific disciplines, assuming a clear gender perspective aimed at expanding the inclusive participation of women in the growth of contemporary societies.</p>			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
INNOVATION	8	No	05/11/2021	Italian/English



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HISTORICAL STUDIES

Director prof. Teresa De Robertis

TITLE OF THE SCHOLARSHIP	Nuovo Pignone: Digital Transformation and museumization of a company archive			
PRINCIPAL INVESTIGATOR	LAURA GIAMBASTIANI			
SUMMARY OF THE RESEARCH TOPIC	The research project “Nuovo Pignone: Digital transformation and museumization of a company archive” involves the development and interchange between the world of archival research and the cultural and productive assets of innovative qualification in the field of digital business archiving and its applicability to communication and virtual and digital museumization strategies to be carried out in sharing and synergy with the company Nuovo Pignone International Srl. The research project will have the following objectives: the design and implementation of an interoperable software for the shared management of archival materials (photo, documents, machinery) and museums; high-definition digitization of documentary material and corporate objects owned; the design and construction of a virtual and interactive museum attraction center within which it will be possible to integrate the contents with augmented reality.			
ACTION	PERIOD IN THE PRIVATE SECTOR (months)	RESEARCH PERIOD ABROAD (months)	INTERVIEW DATE	LANGUAGE OF THE INTERVIEW
INNOVATION	12	No	04/11/2021	Italian