AREA OF RESEARCH - CHEMICAL AND PHARMACEUTICAL SCIENCES AND BIOTECHNOLOGY

SCHOLARSHIPS FUNDED THROUGH EUREKA PROGRAM

RESEARCH TOPICS LIST

N. Prog.	Title	Area of Research	PhD Curriculum	Company	Tutor UNICAM
1	Sviluppo di processi ecosostenibili per poliuretani ed altri materiali polimerici innovativi termoresistenti - Development of sustainable processes for polyurethanes and other innovative heat-resistant polymers	Chemical and Pharmaceutical Sciences and Biotechnology	Chemical Sciences	ELANTAS Italia srl sede operativa di Ascoli Piceno, Zona Ind.le Campolungo 35 TUTOR: Giovanna Biondi	Enrico Marcantoni
2	EANC Eco Alternative Nano Coating	Chemical and Pharmaceutical Sciences and Biotechnology	Chemical Sciences	DIASEN srl Zona Industriale Berbentina 5 - Sassoferrato (AN) TUTOR: Diego Mingarelli	Claudio Pettinari
3	Tecnologie e sistemi per la produzione modulare di calzature di sicurezza - Technologies and systems for the modular production of safety shoes	Chemical and Pharmaceutical Sciences and Biotechnology	Chemical Sciences	SAFE WAY srl Via del Lampo Zona Industriale Campolungo - Ascoli Piceno TUTOR: Luca Silvestrini	Carlo Santini
4	Monitoraggio della qualità dellâaria con metodologie analitiche avanzate - Air quality monitoring with advanced analytical methods	Chemical and Pharmaceutical Sciences and Biotechnology	Chemical Sciences	Sociatà Analisi Control srl Via San Claudio 5 - Corridonia (MC) TUTOR: Mirko Marangoni	Silvia Zamponi
5	Development of new products of natural origin for the treatment of neuropathic pain	Chemical and Pharmaceutical Sciences and Biotechnology	Pharmaceutical Sciences	FB Health SpA Via dei Sabini 28 - Ascoli Piceno TUTOR: Paolo Carboni	Roberto Ciccocioppo
6	Novel devices for high-throughput/low-impact animal reserch	Chemical and Pharmaceutical Sciences and Biotechnology	Pharmaceutical Sciences	AM MICROSYSTEMS srl Contrada Montedoro 3 - Urbisaglia (MC) TUTOR: Adolfo Russo	Massimo Ubaldi

SCHOLARSHIPS CO- FUNDED BY UNICAM

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1	The need for the pharmaceutical industry to produce a constant stream of new small organic molecules has lead to constant change R&D strategies to improve their drug discovery process. There is the need of new synthetic strategies for the development of the number of compounds requires to ensure continued growth. Heterocyclic small molecules have had and continue to have a profound effect on human health, used as drugs to combat a broad range of diseases and pathophysiological conditions. The ring construction through cyclization of polyfunctionalized acyclic precursors used to obtain a wide range of medicinally relevant heterocyclic compounds represents the main topic of the Ph.D. fellowship.	Chemical and Pharmaceutical Sciences and Biotechnology	Chemical Sciences		Enrico Marcantoni
2	A chemotherapeutic agent must be as effective for the cancer and as non-toxic for healthy tissues as possible, minimizing side effects. The choice of drugs depends on the tumor cells since some are susceptible to a type of compounds, and this topic proposes a research finalized to the design, selective synthesis, and characterization of small organic molecules to be used to prepare new complexes with just effective metals for having a potential cytotoxix activity on cancer cell lines. Practical scientific principles in solving real synthesis problems, and improving own skills in analytical techniques such as Infrared, Mass Spectrometry and Nuclear Magnetic Resonance Spectroscopy are developed.	Chemical and Pharmaceutical Sciences and Biotechnology	Chemical Sciences		Enrico Marcantoni

3	Synthesis and characterization of advanced materials for electrochemical energy storage and conversion. The research activity will be addressed to the synthesis and physicochemical characterization of advanced materials for electrochemical energy storage/conversion devices, as Li-ion batteries, Na-ion batteries and Fuel Cells, mainly targeting toward performance, durability and interfacial stability.The research team includes two assistant professors, one post-doc researcher and several PhD students, collaborates with several national and international partners, and is funded by national and international institutions and companies. (EU ï VII Framework Programme, ENEA, MIUR, AEA-Loccioni, FIB).	Chemical and Pharmaceutical Sciences and Biotechnology	Chemical Sciences		Francesco Nobili
4	The project will focus on the investigation of neurobiological mechanisms responsible for development of drug abuse combining approaches from various disciplines, including behavioral pharmacology, molecular biology and electrophysiology. The candidate will explore, at preclinical level, new mechanisms for development of innovative pharmacotherapeutic approaches to drug abuse.	Chemical and Pharmaceutical Sciences and Biotechnology	Pharmaceutical Sciences		Roberto Ciccocioppo

5	Overconsumption of high-palatable caloric-dense food, readily available in modern societies, is the primary cause for obesity epidemic, which, besides other comorbidities, has been associated to increased incidence of depressive and anxiety disorders and to higher pain levels. Deficits in the brain reward system observed in obese patients are interpreted as addiction-like neuroadaptive changes able to increase the risk for such disturbances. In support to this hypothesis, reward hypofunctionality, compulsive-like eating, anxiety and reduced pain threshold were observed in obese rats and mice that volitionally overate a palatable diet. The endocannabinoid anandamide (AEA) and its two non-cannabinoid analogues, palmitoylethanolamide (PEA) and oleoylethanolamide (OEA) might play an important role in this context.	Chemical and Pharmaceutical Sciences and Biotechnology	Pharmaceutical Sciences		Carlo Cifani
6	**Photoactive Nanomaterials for Energy and Environmental Applications**. This topic propose to synthetize innovative photocatalytic semiconductor-nanomaterials, with controlled composition, morphology, electronic structure and charge-transfer properties in order to increase the performance in the photodegradation processes of environmentally relevant chemical species and in the DSSC solar cell devices. The focus will be directed to the study of nanomaterials properties, prepared at controlled experimental conditions, by studying analytically all the phases, from surface preparation, sorption of target substances, energy production and photodegradation activity in order to obtain the best quality of photocatalyst for the specific applications	Chemical and Pharmaceutical Sciences and Biotechnology	Chemical Sciences		Rita Giovannetti

7	Through the study of the components that generate odors in rooms like the kitchen, it will try to realize the innovative filter systems able to increase efficiency and improve the indoor air quality. During this study the PhD student will mainly use mass spectrometry analysis on various kind of air samples of volatile substances emitted during the cooking of food. He also will use many different instrumental techniques such as GC/MS, HPLC/MS, IR, and NMR. The identification of odoriferous substances will help identify which of them can be transformed chemically to avoid their side effects when present. At the end of the PhD course, the results obtained will allow to develop new biopolymeric materials through which to build new filtering systems capable of ensuring high values of adsorption and the possibilities of regeneration at low temperatures.	Chemical and Pharmaceutical Sciences and Biotechnology	Chemical Sciences		Enrico Marcantoni; Dennis Fiorini