Abstracts Book of the 2015 Doctoral Conference for Young Researchers at the University of Jaén

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Doctoral School
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PREFACE

The University of Jaén is running at present 20 PhD programs under regulation by R.D. 99/2011. These cover all major fields of study: Arts and Humanities, Law and Social Sciences, Health Sciences, Experimental Sciences, Architecture and Engineering. PhD students play a pivotal role in scientific production and innovation, and are expected to become top-leading professionals and be competent to face the challenges of tomorrow´s society.

One of the goals of doctorate studies is to provide highly-quality training of young researchers in specific research fields. Not less important is the acquisition of other, more general capabilities that may also be essential in their professional careers. This conference was conceived as a training activity for PhD students. It aims at promoting the students capacity to critically summarize complex research ideas and results, and to communicate them to the scientific community and the society. It is also an opportunity for students from different disciplines to share their ideas and possibly also to envision multidisciplinary approaches to their research interests.

Antonio Gálvez del Postigo

Director of the Doctoral School of the University of Jaén
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ARTS AND HUMANITIES
Title:

**QR Codes in Archeology: APP Giribaile**

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Abstract:  
*(Your abstract must use Arial 10 pt normal style and must fit in this box and page)*

**Introduction:**

The archaeological intervention carried out the last 2014 in Giribaile, an Iberian city that was destroyed in the Second Punic War by fire, the archaeological survey that continues in Vilches, a part of Giribaile’s territory and laboratory’s work are discovering the past of the great fortified city of Giribaile, a new horizon for Iberian Culture.

**Objectives:**

One of the main objectives of this study is to see knowledge transfer and disclosure of scientific knowledge for citizens in an interactive and easy way for people to participate in their heritage results. That is: to approach archaeological and unknown heritage, like Giribaile, to a population less interested in culture than there are in technology.

**Results and discussion:**

Therefore, we have created a tourist app by means of the use of visitor’s phone. Some QR Codes are set in vinyl panels in various selected points of this archaeological site to guide the visitor. So, the visitor does not stop at an information panel, but interacts through his/her mobile device to access the information. Currently, APP Giribaile is working and the website operating. Within a few months, panels will be placed in the archaeological site of Giribaile so people can go there with a QR’s visit.

Acknowledgements:

**The research proyect: “Innovaciones técnicas aplicadas al conocimiento y puesta en valor de Giribaile” is funding by Junta de Andalucía. Incentivos a Proyectos de Investigación de Excelencia en equipos de investigación. Modalidad Proyectos Motrices y de Innovación (P11-HUM-8113).**

“Programa Estatal de Formación del Talento y su Empleabilidad. Subprograma de Formación de Profesorado Universitario del Ministerio de Educación, Cultura y Deporte (FPU13/01731)".

Research Institute of Archaeology Iberian. University of Jaen

Director(s) of PhD thesis: Luis María Gutiérrez Soler
Title:
The Phoenician – Carthaginian presence in Giribaile archaeological site

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: The aim of this abstract is to explain some of the newest advances on Giribaile’s archaeological research, as result from an I+D+I investigation project called: “Innovaciones técnicas aplicadas al conocimiento y puesta en valor de Giribaile”

Giribaile is an archaeological site placed in Vilches, administrative Centre, in the province of Jaén. It’s dated around IV – III century B.C. and we think it could be an example about Phoenician – Carthaginian occupation.

Objectives:

1. Detailed study of the archeological material documented during archeological intervention creating a ceramic typology.
2. Create a planimetric and thematic cartography based on diverse aspects like chronology, materials distribution...
3. Look up, the biggest quantity possible of bibliographical documentation with the purpose to contrast our finding with the rest of the Phoenician – Carthaginian world.

Results and discussion:

At least for now, we can affirm that the Carthaginian presence in Giribaile archaeological site is demonstrated, We can affirm this conclusion because of the results obtained with a detailed study.

To sum up, results from the present study open an interesting field of investigation about Carthaginian presence in the inside of the Iberian Peninsula, in which Giribaile plays a prominent position.

Acknowledgements: Junta de Andalucía. Universidad de Jaén. Insituto Universitario de Investigación en Arqueología Ibérica.

Director(s) of PhD thesis: Luís María Gutierrez Soler
Title:

Gender perspective in Heritage Interpretation. A case of study: A Journey to the Time of the Iberians

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: In recent years Gender Archaeology in its many variations, is getting interesting results in its knowledge of people through the objects and archaeological contexts, especially in the visibility of women and other different age and gender groups, as childhood and old age. This way, my PhD thesis is part of a research project called Resources for Research into the Archaeology of Women and Gender in Spain *". GENDAR - HUM 1904, which aims primarily to research and generate new discourses from a gender perspective and its dissemination to society.

Objectives: One of the preliminary works is a review of interpretive resources from the archaeological sites and visitor centers. This proposal is a study case focused on “A Journey to the Time of the Iberians", a cultural tourism route around singular places of the Iberian culture into the province of Jaen, to detect if the latest results of archaeological research have been incorporated in interpretive resources from a gender perspective, both in language (the use of generic male has naturalized the absence of women hiding their presence) and images.

Results and discussion: I analyzed three archaeological sites of this route which show three different scenes of life: the oppidum or fortified town of Puente Tablas, the Orientalizing Necropolis of Cerrillo Blanco and Cave Sanctuary of Castellar. Based solely on the outside interpretive panels, the results are significant:

<table>
<thead>
<tr>
<th>Interpretive resources</th>
<th>Nº total</th>
<th>Both genders ♂/♀</th>
<th>Only women ♀</th>
<th>Only men ♂</th>
<th>Without human character</th>
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<tr>
<td></td>
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<td>Text</td>
<td>Image</td>
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<tr>
<td>Oppidum</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>1*</td>
<td>1*</td>
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<tr>
<td>Sanctuary</td>
<td>7</td>
<td>2</td>
<td>4</td>
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<td>5</td>
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*goddess

The results indicate that only in the archaeological site where there has been a preliminary gender view, Cave Sanctuary of Castellar, we see greater equity in the interpretive panels making visible the different social agents of the Iberian societies. So, I consider this a good starting point to work on the establishment of guidelines for the visibility of women and life stages as childhood and old age through different ways: Using non-sexist language that values in the same place the activities of both men and women in the past. Using images with all social agents in it, erasing attitudes like submission and obedience in representations of women in the past. This will allow me develop contents from a gender perspective to strengthen the principles of equality.

Director(s) of PhD thesis : Carmen Rízquez Cuenca y Carmen Rueda Galán

This work was also presented as a poster
Title:

Stages of Power. Feast & Visual Culture in the Modern Age

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Several researchers and critical thinkers have drawn attention to the instrumental and manipulative character of the more opulent festive performances in the Modern Age, the great benefits of a persistent use of luxury and rejoicing, sensorial exaltation for the ruling classes, especially during the period known as Baroque. This culture of celebration, strongly encouraged by political and religious powers and effectively supported by instrumentalized and enslaved Arts, was based on the ostentation and the propaganda of their promoters, on the indecent exposure of power and wealth; a display aimed to institutionalised catharsis and social sedation, cunning promotion of loyalty and perpetuation of privilege.

Objectives: Therefore, the major aim and purpose of this study is the feast –main stage of the Theater of Glory of the uppermost circles of power, spectacular scenic frame used by people and institutions that hold it--. Here, the proposed holistic-based approach will follow other pathways that lead to new stages of power (the feast is not the only stage for their opulent forms and manners), that lead to new ways of displaying the greatness. From the best-known forms (such as palaces and artistic collections), to more subtle and less explicit mechanisms of ostentation (such as certain formal and spatial refinements of architecture, the thorny issue of ceremonial precedences, the proud peer emulation, hospitable virtues of the noblemen, etc.), this research aims to disclose the mechanisms deployed by dominant groups to reinforce their status, as well as to further understand the conflicts among the different factions and power-holding elites.

Results and discussion: Overall, this study has provided further insights and knowledge into the extraordinary stage props used by the power-holding groups; the importance of the ludic practice in shaping Baroque Culture; the acquisition of a global vision of this chorographic set as well as its subsequent reintegration in the historical discourse. In particular, this study has allowed to define the elements that constitute the rhetoric of power (sender, receiver, context, message and code); to determine certain aspects that undertake a clear preponderance and a great semantic value in the context of the feast; to analyse the impact of the feast in the configuration and hierarchical organization of the urban space; and to assess the role played by engineers-stage designers in the establishment and development of the visual culture of the Baroque.

Acknowledgements:
To Pedro Galera, for trusting me, being always there and making it easy.
Director(s) of PhD thesis: Dr. Pedro A. Galera Andreu
Title:

Bread and oil: Industrial architecture in the province of Jaén

A heritage to preserve

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Abstract:(Your abstract must use Arial 10 ptnormal style and must fit in this box and page)

Introduction: The industrial agricultural activity in the province of Jaén during the s.XIX and s.XX century has been based on cereal and olive. Both its production and storage initially in public granary and oil press, such as manufacturing originally in mills and afterwards in factories of flour and oil, make its production cycle a trajectory by architectural pieces of great interest.

Objectives: The purpose of the present study was to develop and add value and content to the heritage of the province of Jaén focusing on studies of industrial architecture, specifically in the field of buildings used to transform foodstuffs.

Furthermore, other objective would be both make a catalogue of existing objects in the province, which is essential to build a map about the heritage, and concluding with some example of reuse as well as thinking about good practices in restoration adapt to new times.

Results and discussion: Starting from the absence and the little attention to date that people have given to this type of buildings, when they represent our culture, our historical evolution and our way of life. As well, due to the fact there isn’t much information on the subject, we start from my protected work of initiation to research upon “Industrial architecture: markets in the province of Jaén”, as well as industrial national and international works.

After that we have made an inventory of more than a dozen interesting cases between factories of oil and flour as well as fourteen SENPA wheat silos. The field work has been really important as well as the archival because we have found some original projects which offer us original information about this heritage.

Furthermore, the analysis of bibliography related to restoration and the study of different cases of reuse have created a complete circle in the productive thread of this two products.

In conclusion, results from the present study shows the interesting and rich architectural heritage in the province given the lack in this type of buildings and we hope to make aware to private and public organizations of the need for conservation and reuse them, after having noted the great fascination that have.

Acknowledgements:

Director(s) of PhD thesis: Pedro A. Galera Andreu and Julián Sobrino Simal.
Title:

The painting in the nineteenth century in Jaen

Presenting author, & affiliation:

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: This work is a detailed study of the painting of the nineteenth century in the province of Jaen, analysing the promoters of art, the artists, their works, and artistic movements in which they developed. The painting of the nineteenth century in Jaen is one of the least known episodes of art of the region. The painting of this century is sufficiently relevant, but there is a lack of a systematic study to recover these works and artists with own personality within the Spanish painting. However, we do not try to make this project a restricted research to a province and to a specific century, we try to recover this part of history and integrate it into a general context. Also, we try to connect our work with other national and international centres beyond the formation of our painters in the Academies and their participation in the national and international Exhibitions.

Objectives:

- To develop a systematic study of artists, patrons, promoters and artworks in Jaen in the nineteenth century.

- To study the projection of artists of Jaen into the Academy of Bellas Artes of San Fernando in Madrid and the Spanish Academy in Rome.

- To connect the painting of the nineteenth century of Jaen with other Andalusian and Spanish realities.

Results and discussion

The result of the research shows that artistic practice in the city is similar to other Spanish centres. The academic painting is the most popular, mainly landscapes, portraits and genre scenes. This reality is mainly understood in it sociological aspect, studying the art market and public and private collectors: the public collectors of the oficial establishment and private collector of a particular social class: the provincial bourgeoisie. Our discussion is about the evolution of taste in the society of the nineteenth century in Jaen.

Acknowledgements:

Director(s) of PhD thesis: Pedro A. Galera Andreu and Felipe Serrano Estrella
Title: ARCHITECTURAL HERITAGE OF STONE "QUARRY" IN OAXACA

Presenting author, & affiliation:

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: The current city of Oaxaca de Juarez is the result of persistent work of reconstruction, overcoming earthquakes, fires and epidemics.

The buildings are located in the historic centre of the city of Oaxaca, it was delimited by decree published in the Official Journal of the Federation on March 19, 1976, the same comprising an area of 252 hectares and declared by UNESCO "Heritage of Humanity" in 1987. Today, tourists/Visitors usually marvel at the churches of colonial and pre-colonial to the surrounding pyramids made by indigenous.

According to data from the municipal civil protection, at least 70 catalogued buildings remain in poor condition in the historic centre of the city of Oaxaca, 458 blocks that comprises the city of Oaxaca, properties of disrepair were detected.

The article discusses the memory architecture seeking to register the historical architectural heritage of the stone quarry in the first quadrant Oaxaca’s city, Mexico.

Objectives: Development of historical and contemporary record of the first quadrant Oaxaca’s city architectural heritage.

Results and discussion:

The result of the certificates of information architecture developed to identify the stone quarry in the first quadrant Oaxaca’s city resulted in the principal agents of environmental degradation in the materials of construction was water as an aggressor agent, living organisms, air pollutants, the solubles salts and man himself.

According to the observations and analysis carried out, a quarry stones of origin are of various types. When they are exposed to the environment and environmental agents undergoes a series of changes and tear; it shows trails of deterioration and present conservation problems, the variety of stones used for the construction of buildings in the city have alterations in stone in color, texture, chemical composition, such as the patina from aging, discoloration, biotic, of Dirt or calls also black scabs. The wear and fracturaciones found: cracks and fragmentations, separation plate, material loss, erosion, sandification or disaggregation.

In conclusion, we mention that it's rebuilt city officials and embellished many of the buildings and public spaces in the city that attract tourists. The construction of modernity depended largely on its representation or "staging" of reality.

Acknowledgements:

Director(s) of PhD thesis: Dr. Pedro Antonio Galera Andreu

This work was also presented as a poster
Title:

Artistic Heritage Studies in the Oriental Andalusia during the Spanish Civil War and Postwar

Presenting author, & affiliation:

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: The development of the thesis comprising a period of war (1936-1939). It lets us know the cultural policies undertaken by the government of the Second Spanish Republic with the objective of safeguarding the national art treasure. For this, the Republic created institutions to protect the artistic heritage of military actions, such as the Defense Board of the National Artistic Treasure.

The innovation of the thesis is that focuses on a geographical area with a wealth of artistic heritage, many of which were transferred to large European cities in order to save them from looting.

Later with the overthrow of the Second Republic and the establishment of the dictatorship of General Francisco Franco, other institutions are responsible for the return and repatriation of exiled artistic heritage. The return of exiled heritage we will analyze through the documentation kept.

Objectives: The purpose of this study contains many objectives, the main one is to know the movements and seizures of art objects done by the Board of Artistic Treasure Seizure, later the return of artistic heritage will be realized through the Defense Service of the National Artistic Heritage. The analysis of the documentation of both institutions allows us to know:

- Private collections of the twentieth century.
- Artistic Objects lost during the Civil War (1936-1939).-Artistic Objects lost during the postwar.
- Agents who participated in the return of exiled heritage.
- The memory of people and witnesses that participated in the protection of the Spanish artistic heritage. - Inventories of artistic assets.
- The artistic assets lost in the churches of Eastern Andalusia. - Among others objectives more.

Results and discussion: In conclusion, the results of this study help us to recover a part of the collective memory and artistic society of the twentieth century. In addition to analyzing the measures undertaken by the different organisms for the protection of Spanish artistic heritage.

These issues contribute to value this historical period, of which there are still many shadows.

Acknowledgements:

Director(s) of PhD thesis: Felipe Serrano Estrella
Title:

**Didactic of the trombone in Spain (1830-2014)**

Presenting author, & affiliation:

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Abstract: (Your abstract must use *Arial 10 pt normal style* and must fit in this box and page)

With the opening of Madrid Conservatory in 1830, the music education has had several changes in normative and law. Also, it has made that this kind of education were recognized by the government as an official education. For this reason it has produced a development in the trombone in all its aspects such as; pedagogy, performance, approach of study, research and interested by the composers.

The purpose of this PhD is to analyze and know how the principals didactic methods and stages have changed for previous years. Furthermore, knowing the main contributions realized by trombone teachers Spain.

Moreover, I'm going to use the historical methodology given that it allows me to get the necessary knowledge with the goal to deliver it to the society and it could contribute the trombone education.

Acknowledgements:

*Director(s) of PhD thesis: Mercedes Ferreira Castillo*
Title:

Art as a means to improve life

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Art as a means to improve life is a research project that seeks, through the study of the behavior of people who are exposed to interact with artistic activities, whether these are the type of activities and having the characteristics that these people have check that the vision of everyday life is altered, increasing the sensitivity and showing a different attitude to the problems.

Objectives: The purpose of this study is to demonstrate that art is totally necessary in the life of whatever person. We must not accept what is happening today in our Educational System, we must give great importance and increase the workload of the subjects related to the creation, interaction and study of art. This is because if we expose our students to a closer relationship with the art they will change their attitude and their focus about life.

Results and discussion: The way to evaluate and check that art is a means to improve life is carried out by performing various artistic workshops that contain many different dynamics. These workshops are aimed at people with different characteristics; children, adolescents, adults, elderly persons, people with various disabilities... In order to prove that people who have a relationship with art either way, get improve your life. Results indicate that people improve their social relationships and their self-esteem when they do this artistic workshops. In addition, they increase their sensibility about the art and about the way that they perceive the life in general.

In conclusion, nowadays the results from the present study are being satisfactory. Although there is still much work ahead, I think the final results of this study can help change the current mindset that much of society has on the role of art in our lives.

Acknowledgements:

Director(s) of PhD thesis: María Isabel Moreno Montoro y Eva Santos Sánchez-Guzmán

This work was also presented as a poster
Photography and video for the development of self-esteem. A project of intervention with special educational needs.

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: This intervention project studies the promotion of self-esteem in groups of children with special education needs through the use of technologies of digital images and video creation. In this case, we worked with boys and girls integrated into a special education classroom of a school for Primary Education. The study proposes the application of some creative and artistic activities using for that means of current media, such as photography and video, which are technologies available to everyone. Furthermore these technologies allow us to obtain interesting results easily, and, for this reason, it is a technique and resource more to become a good professional. Using these imaging technologies, we could help children with difficulties in art such as drawing or painting, in order that they are able to perform work where the analysis of personality and self-esteem are evident. Previously, we check the self-esteem level of these students with difficulties to see if through the use of these technologies and after performing the activities, the self-esteem of these children had improved.

Objectives: The goal of this intervention project, was to test whether through the use of imaging technologies (photography and video), we encourage the self-esteem in a group of children in special education classroom with the intention of obtain conclusions and knowing if the use of these means is suitable for the promotion of the self-esteem truly, or, possibly, it is unsuitable for them.

Results and discussion: By the realization of this intervention project, we could find that generally the art helps children with special educational needs to communicate through images. Children often do not show what they think and they leave it inside, therefore, the art becomes therapeutic, exerting a positive action and promoting the self-esteem in people. In spite of the difficulties that we have found in relation to the issue of handling the device, we have discovered that imaging technologies (photography and video) are appropriate since their use is easier than other technologies oldest. Furthermore, the image rapture offers us results that we hardly would get with other techniques, thus, the satisfaction is high. We have also found that depending on the degree of disability, a type of support is necessary for the student to carry out the activity, as some children are able to work for themselves, but instead, other children find it quite complicated, needing the help from an adult at all times.

Acknowledgements:

Director(s) of PhD thesis: María Dolores Callejón Chinchilla
Title: The Importance of Music in Infant Education

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Music can play a fundamental role in Infant Education, since it offers many advantages to the students in the areas of learning, relaxation, socialisation and behaviour. Musical activities adapted for this age group provide benefits in an entertaining and motivating way.

Objectives: The purpose of the present study was to identify the different roles that music can play in the classroom, and its effects on the students.

Results and discussion: This investigation was evaluated by direct observation, using a rubric. All of the results were registered in an iPad application, where we could check the progress of the pupils after completion of the different activities. We observed that music seemed to help the pupils remember content more successfully; good behaviour was encouraged by working with songs that contained lyrics promoting this; children were more relaxed after participating in musical activities upon returning from the playground, and musical games allowed a greater level of socialisation. In conclusion, the results demonstrate that music offers many benefits in Infant classrooms in many diverse ways, resulting in a more integrated and holistic development of each pupil.

Acknowledgements:

Director(s) of PhD thesis:
Title:

Promoting students’ autonomy: resources to use appropriate vocabulary in EFL contexts

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Using proper vocabulary in its context is a crucial aspect of effective communication. In this regard, the role of the teacher is key to helping students discover how to use different resources, so that they are able to choose the best word in any context and at any time. In this research, we will work with students in the first year of Bachillerato to investigate how they use words before and after doing some integrated skills activities. Students will practise using different resources such as dictionaries; translation tools, which combine editorial dictionaries and search engines; translation glossaries, and corpora and corpus analysis tools, such as Wordsmith.

Objectives: The purpose of the present study is assessing to what extent the students were more able to choose the words most suited to a context after being exposed to various aids, compared with the situation before.

Results and discussion: Students were evaluated using rubrics in an iPad application, which allowed us to check how all the students improved when placing words in specific contexts. The study showed that they were able to use more appropriate words according to the context after practising with the set of activities. They also improved vocabulary and learned how to use new and unfamiliar tools, which they found motivating and appealing. In conclusion, results from this study indicated that sampled resources provided great assistance to students in learning about words and their proper contexts, and helped to promote learner autonomy.

Acknowledgements:

Director(s) of PhD thesis: Dr. Jesús Manuel Nieto García

This work was also presented as a poster
LAW AND SOCIAL SCIENCES
Title: The new constitutional Amparo after the 2007 reform

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction:
The constitutional reform complaint by the Organic Law 6/2007, of May 24th, of the Constitutional Court, has meant an important change in our judicial and constitutional system. My investigation comprises since the creation of the first Constitutional Court in Spain in the Second Republic (1931) until the current remodeling of the Amparo Law. This remodeling has changed completely the Amparo procedure, creating an objectification of this figure. As a result, the way to access to the Constitutional Court has been toughened. I explain that this remodeling has its beginning in the workload that this Court had been suffering in recent years, what made this law necessary. I also carry out research on the consequences that this remodeling has having in the Spanish Legal System in order to verify if the workload of the Constitutional Court has gone down.

Objectives:
The objective of this work is to introduce an overview the past and present situation to the reform of the Amparo procedure operated by the Organic Law 6/2007, of May 24th like so a study the repercussion that, has had from the point of view of judicial guarantees system in the protection of the Fundamental Rights. We also make special reference to the possibility to introduce new mechanisms in the ordinary jurisdiction in order to enforce this guarantee of the Fundamental Rights. Finally, we would like to deepen in the new and abstract concept of the “special constitutional transcendence” through a deep study of the case law post-reform.

Results and discussion:
We pretend to analyze the future perspectives of this figure after the operated reform in order to study the deficiencies that, after eight years of the reform being in force, have been shown in relation to the topic at hand. Until now, with the study of the latest data from the memories of the Constitutional Court, we can see that the number of appeals has diminished; however, we want to deepen in the deficiencies that the reform presents.

Acknowledgements:
Director(s) of PhD thesis: Jorge Lozano Miralles & María José Carazo Liébana.
Title: Current Trends in International Cooperation for Tax Collection

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: The purpose of the present essay is to study the current situation of “Tax Havens”, as well as I will try to make an important analysis in the field of tax collection, not only in a national way, also in an international level, taking into account the important role which plays in this way, the International Cooperation between countries, so this could be the key to begin with the ending of this problem which more or less affect the economy and fundraising systems of all countries. Due to the crucial importance of the International Cooperation, I will tackle it from some different perspectives; some of them are the exchange of information between the different countries, the tax information exchange, mutual assistance, or the revenue cooperation between countries.

Objectives: The main objective is to study the current situation of the problem of all “Tax Havens” that still today exist all over the world, and I will not be only concentrated in the opacity problem that exists in the taxation of savings, I also will make studies in relation with the societies that are constituted in those territories, trying to hide the personality of partners. On the basis of this situation we will address cooperation that exists for the exchange of information, without neglecting the cooperation on fundraising.

Results and discussion: In conclusion, results from the present study can reveal that “Tax Havens” are characterized by two key notes: its low taxation and the fiscal opacity, but is the last of them, the fact of not give information to the outside, the most defining sign of those “Tax Havens”, so it is important to study how can help you, in the way to eradicate this territories, if you get a good cooperation in information exchange, as well as cooperation in the field of fundraising.

Acknowledgements:

Director(s) of PhD thesis: Carlos María López Espadafor
Title: VALUATION OF ANXIETY AND ANALYSIS OF SOCIODEMOGRAPHIC FACTORS IN PATIENTS UNDERGOING SURGICAL PROCEDURES FROM THE GENDER PERSPECTIVE

Presenting author, & affiliation: García Espinosa, Yessica University of Jaén, Department of DERECHO PENAL, FILOSOFIA DEL DERECHO, FILOSOFIA MORAL Y FILOSOFÍA. E-mail: jessicagarciaespinosa@gmail.com

Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Every day more people are turning to surgical techniques to alleviate or cure a disease, or simply to get the longed for beauty and fitness both. In the first case, users of the sanitary system haven’t any option to choose because this type of surgery will depend on improving their health, or healing of their disease. But how do these patients live and perceive during the surgical procedures? Is the same adaptation to this event in men than in women?

Anxiety in patients who have to undergo surgery carries a negative emotional state and generates a physiological activation in preparing the body to face the perceived danger in this operation; this fact could damage to the correct developing in surgical procedures, because it produces a metabolic, endocrine, hemodynamic and immune response which decompensates to the organism.

Objectives: The purposes of the present study are to evaluate preoperative anxiety in men and women undergoing surgery, using validated Spielberger scale; to analyze the sociodemographic variables of men and women undergoing surgical procedures; and to determine if the information provided by the sanitary professionals is adequate.

Results and discussion: The expected results of this study overlapped with different studies by several authors (García Calvente et al1, Campos Serna2, Regitz Zagrosek3, Gómez Gómez4, McGregor5) on the state of women's health is worse, however being the most vulnerable men and presented higher levels of anxiety to surgery.

In conclusion, providing good information to patients by healthcare professionals and the sanitary education are vital and necesary to reduce anxiety states and prevent complications intrasurgical.


Director(s) of PhD thesis: Balza Múgica, Isabel. Gil García, Eugenia.

This work was also presented as a poster
Title: 

**The role of Scientific-Technological Parks in Corporate Social Responsibility**

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Abstract: 

**Introduction:** This work is part of a current research focused on the factors which explain the degree of implementation of social responsibility in organizations. On the other hand, the literature about the role of geographic concentrations of companies (such as clusters, industrial districts or scientific-technological parks) has examined the role they play in business innovation capacity. In this work the influence effect of firms inside Scientific-Technological Parks related to the degree of implementation of Corporate Social Responsibility is investigated.

**Objectives:** With the aim of examining the role of the location of firms in scientific technological parks and the degree of implementation of social responsibility at business level, the following objectives has been defined, based on a literature review:

1. To analyze the influence of the sense of belonging to a scientific technological park on the implementation of social responsibility at business level.  
2. To study the role of the local institutions around scientific technological parks on the implementation of social responsibility at business level.  
3. To investigate the role of transfer of know-how between businesses located in scientific technological parks in the implementation of social responsibility at business level.

**Results and discussion:** In order to achieve the results, a questionnaire from the literature review targeted at higher-level executives of technology companies located in Spanish Scientific-Technological Parks was designed. The survey was administered with a CATI system by a specialized company during the period between July 22 and October 27, 2015. The total number of valid questionnaires was 239, representing a response rate 25% of the total population. With the purpose of controlling the nonresponse bias, the answers of the earliest respondents with those of the later were compared. No significant differences in any of the variables in this study were obtained.  

The results show the convenience of using both the context and the involvement of technology enterprises located in scientific-technological parks in order to explain their social responsibility. Similarly, the use of arguments from the institutional theory when studying the role of scientific-technological parks in corporate social responsibility is emphasized.

Acknowledgements: Research funded by the BBVA Foundation

Director(s) of PhD thesis: D. José Moyano Fuentes and D. Juan José Jiménez Delgado
HEALTH SCIENCES
Title: Metasynthesis experiences of implementation of the evidence-based practice of nursing professionals

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: The concept of clinical practice based on evidence (EBP), supposed health care organized and conduct of best quality that can be offered to users by health professionals. However, health care reality according to the latest research, presents numerous obstacles that make it difficult to implement the scientific evidence to clinical practice; understanding these scientific evidence as best findings from investigations of the nursing profession in general. For this reason, it is essential to discover in depth the perceived factors involved in professional nursing practice, to thus implement strategies that make easier the use of scientific evidence in the care to patients. It is of great importance today the study of implementation of evidence in clinical practice by the impact that has on the quality of professional practice and, therefore, upon the health of the population.

Objectives: The objective of this project is focused on knowing and understanding the experiences of professions of nursing in relation to the implementation of evidence in clinical practice. What perception implementation results have. Detect obstacles in this process. And what are the strategies that understand as facilitators of its setting up in the professional level of care and management practice.

Methodology: This is a meta-synthesis of qualitative primary studies, using model Joanna Briggs Institute (JBI), with the help of Qari software to extract, organize, and synthesize data, and reach a cluster of primary results by the meta-aggregation, to provide an overview of the subject of this investigation.

Results and discussion: In this appraisal process, we have obtained a total of 96 studies, including the years (1996-2015).

The design has been part of the qualitative or mixed; participants were nurses and other health professionals, predominantly from Canada, United States and Australia; and different areas of clinical practice: hospitals, health centers, specialty centers, home care, nursing homes, nursing schools and associations. Each of these types implement research is based on evidence practice (guidelines, tools, programs, procedures, models). The next step of this thesis is the extraction of the results of all studies from the major fractions and accompanied by the original text, related perceptions, barriers / obstacles and facilitators of the implementation of evidence into clinical practice categories. Then it proceeds to their analysis and comparison according to the protocol JBI to meet the objectives of the investigation.

Acknowledgements: I want to thank my tutor Isabel his masters in teaching/research, because it teaches me step by step and never leaves me alone on the road, we are a team.

Director(s) of PhD thesis: Isabel Mª López Medina
Title:

Desing and validation of a scale to measure caregiving dedication in caregivers of dependent older people

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: In recent decades, demographic changes in developed societies are leading to an aging significant increase. Caring for dependent people can be a source of negative consequences for both physical and emotional health. There are not many tools that we to assess the dedication to caring for caregivers of dependent older people although not faced with a construct of easy definition and operationalization.

Objectives: To develop and validate a scale to measure caregiving dedication regarding activities of daily living in caregivers of dependent older people.

Results and discussion:

Results: Cronbach's alpha was 0.86. Intraclass Correlation Coefficient was 0.96 for test-retest reliability and 0.88 for inter-observers reliability. When the sample was divided in two groups according to perceived burden level (presence and absence), the perceived burden was significantly different in each group (p= 0.001). The factor analysis revealed one only factor that explained 64% of the variance.

Discussion: The scale allows a suitable measure of caregiving dedication regarding activities of daily living in caregivers of older people, because this scale allows a quickly, easy administration, is well accepted by caregivers, has acceptable psychometric results and includes the frequency of caregiving, the kind of attended need and the dependence level in each need.

Acknowledgements: Expressing my satisfaction with my Phd Director in getting this studyt has caught the tone and scope result presented here.

Director(s) of PhD thesis: Dr. Rafael del Pino Casado
This work was also presented as a poster
Title:

Physical activity and physical fitness level is associated with psychological health and academic performance in Spanish adolescents

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: The effects of physical activity and physical fitness on physiological health have been researched extensively over the past decade (Gracia-Marco et al., 2011; Lavie et al., 2011; Ortega et al., 2008). Nevertheless, the relationship between physical activity and fitness with psychological health and academic performance (AP) in adolescents have been poorly studied (Ardoy et al., 2014; Erickson et al., 2015; Ruiz-Ariza et al., 2015). Furthermore, adolescence is a key stage for consolidating healthy lifestyles and increasing physical activity levels (Ortega et al., 2008). Moreover, during this period there is a higher grade of brain plasticity that is decisive for stimulating the cognitive function (Ardoy et al., 2014).

Objectives: The purpose was to to investigate the associations of physical activity and different physical fitness components on psychological health and AP in adolescents, taking into account potential confounders.

Results and discussion: Our results showed a positive association of moderate physical activity through active commuting to school, attraction to physical activity practice and physical fitness level with psychological health (happiness or well-being) and AP in Spanish adolescents. Cardiorespiratory fitness, speed-agility, motor coordination, and perceptual-motor skill are the highest measures associated with AP. However, the findings on muscular strength and flexibility are unclear. Finally, confounders as maternal education or Body Mass Index may play a key role in this association. Several mechanisms may explain this association: Physical activity and fitness could stimulate the gene encoding the brain-derived neurotrophic factor (Hillman et al., 2008; Wrann et al., 2013), This is a master regulator of cell survival and a neuroprotector and improves learning memory and neuroelectric functionality (Wrann et al., 2013). Secondly, it increases the level of brain neurotransmitters such as endorphin, serotonin or norepinephrine, which facilitate information processing and increase psychological health (Lojovich, 2010). Thirdly, physical activity and fitness are related to the neuroromotor system and could thus improve the speed of the nerve impulse and therefore influence positively the brain’s processing speed and the cognitive functions (Sardinha et al., 2014). Besides, they improve the microstructure of the brain’s white matter, a part of the central nervous system responsible for transmitting nerve signals from one brain region to another, thus facilitating fast and efficient neuronal activity (Chaddock-Heyman et al., 2014). And fourthly, it favors synaptogenesis and angiogenesis, both process that increases number of synopsis connections, capillary density and brain vascularization, therefore influencing cognition (Esteban-Cornejo et al., 2014). Besides, AP is not affected only by physiological factors. For instance, highly motivated students may aim at maximum performance in fitness tests and in school subjects at the same time. High physical activity and fitness level might optimize attention and behavior in the classroom. And they boosts self-esteem and reduces stress and anxiety, which may improve school performance (Chomitz et al., 2009; Torrijos-Niño et al., 2014).

In conclusion, to promote physical activity and physical fitness from schools and families could be potentially relevant to obtain benefits on psychological health and AP in Spanish adolescents.

Acknowledgements: This PhD thesis is being partly supported by the University of Jaen’s UJA2013/08/29 project funded by the University of Jaen R+D+I programme (R6/8/2013). It was also funded by the Research Group HUM-943. Support was also received from the University Teaching Staff Programme, implemented by the Ministry of Education, Culture and Sport of Spanish Government [grant number AP-2014-01185].

Director of PhD thesis: Dr. D. Emilio J. Martinez Lopez

This work was also presented as a poster
Title:

Temporal Summation of Pain in fibromyalgia: Relation to clinical and cardiovascular variables

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Abstract:

Introduction: The pathophysiology of fibromyalgia (FM) has been related to central pain sensitization. Temporal Summation of Pain (TSP) is an evoked pain measure which has been suggested as a central sensitization index. TSP is defined as a process of increased pain perception due to the frequency of painful stimulation. However, TSP has not been as deeply investigated as pain threshold and tolerance in relation to different clinical factors and cardiovascular parameters typically related to FM.

Objectives: The purposes of the present study were A) to examine the differences between FM patients and healthy subjects in TSP; and B) to determine its relationships with clinical and cardiovascular variables.

Methodology: Twenty-four FM patients and 24 healthy women participated in this study. McGill Pain Questionnaire, Hospital Anxiety and Depression Scale, Fatigue Severity Scale, Oviedo Sleep Questionnaire, Fear of Pain Questionnaire-III, and the Catastrophizing subscale of Coping Strategies Questionnaire were completed by every participant. A baseline of heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP), mean blood pressure (MBP), heart rate variability (HRV), and baroreceptor sensitivity (BRS) was recorded during 5 minutes. To generate pain was used pressure algometry. TSP was evoked through a single series of 9 low intensity stimuli with 5s duration and separated by 30s each one. Each stimulus was calculated through pain threshold and tolerance values, and a visual analogical scale was used to assess the subjective pain intensity of each one.

Results and discussion: The results indicated that TSP was observed in FM patients, but not in healthy participants. Total clinical pain, sensory pain, current pain intensity, fatigue, insomnia, depression, fear of pain and catastrophizing were positively associated with TSP. On the other hand, SBP, DBP and MBP were negatively associated with TSP. Therefore, TSP seems be clearly related to typical FM symptoms. In conclusion, results from the present study indicate that 1) TSP is a sensitive FM marker that it is related to several clinical–psychological factors and cardiovascular parameters; 2) the negative association between TSP and blood pressure suggests an involvement of the Blood Pressure-Antinociceptive mechanism in TSP; and 3) the use of TSP as a evaluative technique could improve FM assessment and diagnosis.

Acknowledgements: This study was funded by the Spanish Ministry of Science and Innovation, Spanish Ministry of Education (FPU program), and FEDER funds. Moreover, it could not have been possible without the collaboration of the Fibromyalgia Association of Jaén.

Director of PhD thesis: Reyes del Paso, Gustavo A.

This work was also presented as a poster.
Fibromyalgia syndrome is associated with reduced cerebral blood flow responses during cognition

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Introduction: There is ample evidence for the occurrence of cognitive deficits in fibromyalgia syndrome (FMS) (Glass, 2008). Current evidence regarding the origin of these cognitive deficits suggests that one of the most important factors relates to the intrusive effect of pain (Duschek et al., 2013; Glass, 2008; Reyes del Paso et al., 2012). As another factor, previous studies with normal populations have shown that deficiencies in task-induced blood flow responses are associated with reduced cognitive performance (Duschek & Schandry, 2004).

Objectives: The present study investigated cerebral blood flow responses during arithmetic processing in FMS patients and its relationship with performance. The influence of clinical factors on performance and blood flow responses were also analyzed.

Method: Forty-six FMS patients and 32 matched healthy controls completed a mental arithmetic task while cerebral blood flow velocities in the middle (MCA) and anterior (ACA) cerebral arteries were measured bilaterally using functional transcranial Doppler sonography (fTCD).

Results: Patient’s cognitive processing speeds were slower versus healthy controls. In contrast to patients, healthy controls showed a pronounced early blood flow response (during seconds 4–6 after the warning signal) in all assessed arteries. MCA blood flow modulation during this period was correlated with task performance. This early blood flow response component was markedly less pronounced in FMS patients in both MCAs. Furthermore, patients displayed an aberrant pattern of lateralization, with right hemispheric dominance especially observed in the ACA. Severity of clinical pain in FMS patients was correlated with cognitive performance and cerebral blood flow responses.

Discussion: Cognitive impairment in FMS is associated with alterations in cerebral blood flow responses during cognitive processing. These results suggest a potential physiological pathway by which psychosocial and clinical factors may affect cognition; that is, cerebral blood flow modulation during cognitive processing.
Body dissatisfaction is associated with deficiencies in the generation of physiological correlates of emotions

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Introduction: It has previously shown dissociation between self-report and psychophysiological measures in high body dissatisfaction (HBD) women exposed to their bodies in a mirror: compared to low body dissatisfaction (LBD) women, HBD women present more negative emotions but reduced physiological reactions in terms of heart rate (HR) and skin conductance (SC).

Objectives: The present study examined the relationship between self-report and psychophysiological responses in women with HBD and LBD exposed to their own bodies in a mirror.

Results and discussion: HBD women experienced more negative emotions and cognitions following body exposure compared to LBD women but a reduced physiological reaction. In LBD extent of negative emotions (VAS scores) for Ugly, Anger, Insecurity, and Fear, as well as negative cognitions, were positively associated with HR, while VAS scores on Sadness were positively associated with SC levels. No such associations were observed in HBD women, where trends towards negative correlations were observed.

In conclusion, results from the present study suggest deficiencies in the generation of physiological correlates of emotion related to body dissatisfaction. This is coherent with the existence of a passive-behavioral inhibited coping style in HBD women.

Acknowledgements: Research group HUM -338, University of Jaen.
Silvia Moreno-Domínguez, and Gustavo A. Reyes del Paso

Director(s) of PhD thesis: Silvia Moreno-Domínguez, and Gustavo A. Reyes del Paso

This work was also presented as a poster
BRAIN ACTIVATION IN A FOOD CHOICE TASK IN ADOLESCENTS WITH OVERWEIGHT. AN fMRI STUDY.

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Introduction: Obesity has become a pandemic and in order to provide a more effective treatment of this condition it is necessary to improve our knowledge of its underlying brain mechanisms. The use of functional brain imaging techniques while participants (clinical and control) perform tasks associated with food processing is a useful strategy for this propose.

Objectives: The aim of the present study was to examine brain activation, through functional magnetic resonance image (fMRI), in overweight adolescents during a task of choosing between foods and evaluate its relationship with the percentage of body fat (% BF). The study included 37 overweight adolescents (OW) and 36 with normal weight (NW). The task performed inside the scan consists of in choosing between appetizing foods (high fat or sugar) and standard foods. T-tests were conducted to compare brain activation between groups and Pearson’ correlations for analysing the associations between brain activation and % BF. Statistical significance was fixed in p < 0.05.

Results and discussion

Main results were:

- During the food choice, hyperactivation in the OW group was observed in prefrontal cortex (dorsolateral, ventromedial and lateral orbitofrontal), striatum, midbrain dopaminergic areas and insula.
- In an analysis with all participants, a positive correlation between % BF and activation of the rostral anterior cingulate, prefrontal cortex (ventromedial, and lateral orbitofrontal) and striatum was found

In conclusion, greater activation of the mechanisms involved in the reward circuit was observed during the task in OW adolescents, relative to NW participants. This brain excitability to food signals has been called "external food sensitivity" (EFS) and it has been associated with an increased risk of obesity when the person is exposed to an environment rich in these cues (e.g. food advertisements) (Passamonti et al., 2007). Furthermore, we found that when % BF increases the brain activation in areas of the reward circuit become greater. Because of advertising and other media may produce increased food intake, identification of the mediating neurobiological EFS mechanisms are crucial to understanding and treatment effectively obesity.

Acknowledgements:
Director(s) of PhD thesis: Gustavo A. Reyes del Paso; Mª José Fernández Serrano y Antonio Verdejo García.
Title:

Bilateral lesions of the lateral habenula interfere instrumental appetitive extinction in rats

Presenting author, & affiliation:

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Organisms exposed to environmental experiences are able to generate outcomes expectancies that enable them to predict both positive and negative events. When an expectancy of reward is violated, that is, when the expectation does not match an actual, but less reinforcing event, a negative emotion (known as frustration [1]) is triggered. Experimental and clinical evidence shows that the loss of expected rewards constitutes a source of discomfort and emotional stress, underlying anxiety, mood, and addiction disorders [2]. Recent studies have highlighted the lateral habenula (LHb) as a critical brain nucleus for the processing of aversive events, including reward loss [3]. However, the specific function of the LHb in the processing of the absolute reward value, the detection of a negative discrepancy between expected and obtained rewards, and the subsequent frustration reaction, is largely unknown. Objectives: The aim of the present study was to analyze the role of the LHb in the extinction (involving reward omission) of a previously reinforced instrumental response. Based on previous studies suggesting that the LHb has a prominent role in situations involving worse outcomes than expected [4], it was predicted that the lesion of this nucleus would interfere the extinction of the instrumental response, compared to sham controls. Methods: Thirty male Wistar rats were used, 18 receiving a neurochemical lesion of the LHb (via infusion of 0.12 M of quinolinic acid, a glutamate-NMDA agonist) and 12 receiving a vehicle infusion (PBS; brain coordinates: AP: -3.1/-3.6; ML: ± 0.7; DV: -4.7/-5, from Bregma, [5]). Once recovered from surgery, animals were food deprived and trained in a runway in which they could receive a 12-pellets reward by running from a start box to a goal box. After 10 acquisition sessions, the reward was removed for 5 extinction sessions (6 trials per session; D.V.: running latency). Results and discussion: LHb lesion animals exhibited lower running latencies during the extinction phase, thus showing a higher resistance to extinction compared to sham animals (extinction session 2, F(1, 28) = 4.305, p < .047). Although awaiting histological confirmation, the present results confirm our predictions and open the door to explore the role of the LHb in frustration tasks, thus extending the knowledge of the brain circuit underlying reward loss.


Acknowledgements: PSI2013-44945-P, HUM-642
Director(s) of PhD thesis: Torres Bares, Carmen (University of Jaén); Morón Henche, Ignacio (University of Granada)
This work was also presented as a poster
Title: The effects of working memory updating training in young adults

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Working memory updating (WMU) is an important memory process related to numerous cognitive abilities. A growing number of studies are focusing in examining the efficacy of WMU training.

Objectives: The purpose of the present study was to investigate the benefits of two WMU training programs with different levels of cognitive demands.

Results and discussion:
The training consisted of practising two numerical WMU tasks in four sessions. Participants were randomly assigned to an adaptive group that performed the tasks with increasing levels of difficulty; and a non-adaptive group that performed the same tasks but with a lower and constant cognitive demand. Transfer effects were evaluated with measures of WMU, working memory and fluid intelligence before and after the training. Maintenance of training benefits was also assessed one month later.

The results indicated that both groups improved on most of the tasks and gains were maintained after a month. Of particular interest, gains in some measures related to the trained tasks were greater in the adaptive group than in the non-adaptive one.

In conclusion, results from the present study suggest that WMU training may produce specific gains and transfer effects to other tasks that share processes with the trained ones. Moreover, the degree of improvement could be related to the WM demands of the trained tasks.

Acknowledgements:
Director(s) of PhD thesis: Santiago Pelegrina López
Title:

THE GEOMETRY OF HANDWRITTEN TEXTS AS AN INDICATOR OF COGNITIVE CONTROL

Presenting author, & affiliation:

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: The present work explores the idea that cognitive demands of the handwriting task would influence the degree of automaticity of the handwriting process, which in turn would affect the geometric parameters of the written texts. In Experiment 1 we compared the heterogeneity of handwritten texts from two different tasks that varied in their cognitive demands; in one task participants were asked to transcribe a given text whereas in the other they were asked to write about an autobiographical episode, but suppressing the use of certain frequent words. The heterogeneity of the texts was analyzed through lacunarity, a non-linear measure. Lacunarity of transcript handwritten texts was significantly lower than lacunarity of the spontaneous handwritten texts. In order to extend these results, in Experiment 2, 64 adults and 49 children were asked to write a true and a fictitious version of their past holidays, under the assumption that cognitive demands of writing a fictitious story would be higher than writing a real story; for children, both tasks would be cognitive demanding. Again, we hypothesized that these differences in cognitive control would be reflected in the heterogeneity of texts.

Objectives: The main aim of the present work was to detect variations in the geometry of handwritten texts depending on the cognitive resources demanded by the writing task.

Results and discussion: Data analysis revealed a significantly lower lacunarity for true texts when compared with fictitious ones in the group of adults. However, no significant differences were observed in children. Thus, differences in heterogeneity of handwritten texts seem to reveal the degree of automaticity of the handwriting process. Our study indicates that analysis of lacunarity may be a valuable indicator of the structure of written texts.

Acknowledgements:

Director(s) of PhD thesis: Sergio Iglesias Parro, Maria Felipa Soriano Peña y Antonio Ibañez Molina.

This work was also presented as a poster.
EXPERIMENTAL SCIENCES
Title: Determination of the safety aspects of potential probiotic lactobacilli isolated from brines of naturally fermented Aloreña green table olives

Presenting author, & affiliation: 
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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Manzanilla Aloreña (or Aloreña) table olives are naturally fermented traditional green olives with a denomination of protection (DOP). The natural and spontaneous fermentation of Aloreña table olives occurs on the raw material by the indigenous microbiota (lactic acid bacteria “LAB” and yeasts) together with a variety of contaminating microorganisms from different sources. A search for LAB with technological properties of interest for possible inclusion in a starter or protective culture preparation or also as probiotics was done by Abriouel et al. (2012). A collection of lactobacilli obtained from Aloreña green table olives naturally fermented were identified by molecular methods as *Lactobacillus pentosus*. Some strains of *Lb. pentosus* showed potential technological and probiotic traits including inhibition of human pathogenic bacteria; survival at low pH (1.5) and bile salt tolerance (3%); utilization of raffinose and stachyose; production of phytase and haeme-dependent catalase activities; growth at 10ºC and in the presence of 6.5% NaCl and also resistance to freezing.

Objectives: The purpose of the present study was to determine the safety aspects of potential probiotic lactobacilli isolated from Aloreña table olives.

Results and discussion: In this study, the safety of lactobacilli was supported by the absence of DNase activity, gelatinase activity, haemolysis and biogenic amine production. On the other hand, molecular screening of virulence determinants commonly found in lactic acid bacteria and especially in *Lactobacillus* sp. revealed the absence of such determinants in all strains tested which confirm their safety under *in vitro* conditions. Furthermore, *Lactobacillus pentosus* strains showed intrinsic resistance to some antibiotics but they were very sensitive to others. However, molecular methods revealed the absence of transferable antibiotic resistance determinants. These results suggest that all lactobacilli isolated from naturally fermented Aloreña green table olives are generally free from known virulence traits and also antibiotic resistance genes. In conclusion, taking into consideration the functional and technological properties besides their probiotic potential, lactobacilli strains could be proposed as good candidates to be used as starter cultures in several fermentations and also as probiotics. However, further in-depth analysis should be done screening the genome of selected strains for new virulence genes or genes coding for undesirable effects.

Acknowledgements: This work was supported by grants AGL2013-43571-P and UJA2014/07/02.

Director(s) of PhD thesis: Hikmate Abriouel, Nabil Benomar, Antonio Gálvez

This work was also presented as a poster
Title:

**Antimicrobial resistance of strains isolated from different fisheries**

Presenting author, & affiliation:

<table>
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<tr>
<th>Romero García, José Luis</th>
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<tr>
<td>University of Jaén, Department of Health Sciences</td>
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<td>E-mail address: <a href="mailto:sierraaltacoloma@hotmail.com">sierraaltacoloma@hotmail.com</a></td>
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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

**Introduction**: One of the main concerns of governments and companies working in the food industry is to get safe and high quality food for a growing world population. Fish is a major global food obtained from capture fisheries or aquaculture. The input of nutrients in the fish does currently is recommended by the most prestigious organizations in nutrition as a protein food choice versus other protein foods of animal origin. The nutrient found in fish makes it recommended by the most prestigious organizations in nutrition as the best protein food with respect to other foods of animal origin. The bacterial microbiota of the fish may come from the environment where it is captured or grown or from contamination by contact with surfaces along the food chain. A high microbial load can reduce the life of the fish in their marketing or producing toxins or substances that make food unsafe. Antimicrobial use in cleaning and daily disinfection of surfaces in contact with fish may develop mechanisms of bacterial resistance to these products.

**Objectives**: Collect fishery products from different sources. Isolate a collection of microorganisms from the different products. Evaluate the susceptibility of different strains to various antimicrobials.

**Results and discussion**: It has been observed that the amount of bacterial load varies greatly depending on the product, between $1.5 \times 10^3$ CFU/ml from fresh mussels to $7.2 \times 10^7$ CFU/ml presented by fresh salmon sliced. 73 strains were obtained of all the tested fish species, most of these are Gram - bacilli, Gram + cocci and Gram + bacilli. From the tests with different antibiotic used as disinfectants in the food industry, the results so far show that a concentration of 0.25% different disinfectants growth of all strains tested inhibited, except for triclosan where 8.22% of strains were able to grow. For a 0.025% concentration only the strains tested with hexachlorophene are inhibited, the growth rate ranging from 1.37 % of the strains for hexadecylpyridinium to 21.92 % for the PHMG. It highlights the percentage of resistant strains from aquaculture products biocide concentration of 0.025 %, especially oxonia, triclosan, and chlorhexidine. Moreover many of these strains are also resistant to other antimicrobial carvacrol, thymol, or trisodium phosphate. These results imply the need for future trials, in order to produce higher quality food and food security, as well as increase the life of highly perishable product like fish.

Acknowledgements: This work was supported by research group AGR230 and the University of Jaén Plan de Apoyo a la Investigación.

Director(s) of PhD thesis: Rosario Lucas López, Mª José Grande Burgos, Antonio Gálvez del Postigo Ruiz
Accurate chromosome condensation and faithful chromosome segregation are crucial factors to the maintenance of a stable genome. The mechanics of condensation and segregation are at the heart of every cell division but a full picture of the process is still elusive. A key goal is to define novel factors that organize the DNA molecules within chromosomes. One of these factors was discovered during genetic screening of patients affected by a rare congenital disorder, namely primary microcephaly (MCPH), which is characterized by a pronounced reduction of brain size, delayed growth and mental retardation. Mutations in MCPH1, one of the genes involved in this syndrome, induce DNA to condense prematurely during mitosis in all cell types. Chromosome structure is also affected in a specific manner, with hypercoiling of chromatid axes, unresolved chromatids and reduced centromeric cohesion as remarkable alterations. Our research aims to determine the functions of this gene as a component of the molecular mechanism regulating the condensation and segregation of mitotic chromosomes.

Here we present data revealing how the process of mitotic chromosome condensation is coupled to mitotic progression by MCPH1. By using live-cell microscopy we have characterized the duration of mitosis in synchronized cells depleted of MCPH1 function by siRNA. Thus, we have precisely determined when MCPH1-deficient cells start to prematurely condense the chromosomes and how long such cells remain in a prophase-like state. Interestingly, subsequent nuclear envelope breakdown occurs on time compared with control cells, but prometaphase is substantially lengthened as consequence of chromosome misalignment. A detailed analysis of chromosome morphology demonstrates that in these cells sister chromatid resolution is delayed and requires nearly all of the prometaphase to be completed.

Taking together, these results suggest that MCPH1 is required for coupling chromosome condensation and organization with cell progression at particular stages during mitosis.
Title:

Pollinator visitation rates and fruit production vary according to land use and habitat fragmentation in Ziziphus lotus (Rhamnaceae)

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Intensive agricultural practices, mainly greenhouse agriculture, are seriously threatening native populations of Ziziphus lotus (arborescent scrubs with Ziziphus, habitat 5520 Habitats Directive) in southeastern Iberian Peninsula.

Objectives: This study seeks to clarify how land-use and fragmentation of this habitat are affecting pollinator visitation rates and fruit production of Z. lotus populations.

Materials & Methods: We chose nine populations in Almería province according to its degree of landuse and habitat alteration. In each population 25 individuals were selected and during May-July pollinator visitation, flowering and fruiting were monitored in censuses conducted in three visits to each population (two 5-minutes censuses per visit).

Results and discussion: Fruiting success was positively related across populations to flower and pollinator visitation rates, which tends to be affected positively by fragmentation, with severe and moderate fragmentation rendering higher pollination and flower visitation rates than low fragmentation and Ramblas. Landuse affected less clearly pollination visitation rates, although populations surrounded by green-houses achieve the highest values; however flower visitation rates reached its maximum at natural habitats and minimum at partially-abandoned croplands. Populations with higher number of floral visits and higher number of ripe fruits had "transient large bees" as dominant floral visitors while the population with a lower number of floral visits and lower production of fruits had the lowest number of visits by this group.

Conclusion: We conclude that pollination and fruiting success are being affected positively by fragmentation and greenhouse agriculture because they are favoring large bee abundance in the landscape, probably associated to the greenhouse practices.

Acknowledgements: I want to thank University of Jaen and Junta de Andalucia the support to develop this study.

Director(s) of PhD thesis: Dr. Pedro J. Rey Zamora and Dr. Antonio J. Manzaneda Ávila.
Title: Tree-line characterization of *Abies pinsapo* forest owing to climate change

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

**Introduction:** The threat of climate change is already a fact for many tree species in the Mediterranean Basin (Doblas-Miranda *et al.*, 2015; Allen *et al.*, 2010). It is widely known that altitudinal and latitudinal edge distributions of woody plants are particularly sensitive to climate (Greenwood *et al.*, 2015; Camarero and Gutiérrez, 2004; Brubaker 1986). Consequently, the forests are adapting their tree line boundaries (Harsch *et al.*, 2009; Camarero and Gutiérrez, 2004) and shifting structural characteristics like tree recruitment, tree establishment and tree density (Haishan *et al.*, 2015; Hagedorn *et al.*, 2014; Kullman *et al.*, 2014; Harsch *et al.*, 2009) according to changes in climate conditions. In this sense, relict conifers are good model organisms to test these shifting processes due to their high exposition and vulnerability (Linares and Carreira, 2009). Therefore, we are interested in the response of altitudinal treelines of ecotones of *Abies pinsapo* Boiss. from Sierra de las Nieves Natural Park (Málaga), a relic conifer species with a small marginal distribution.

**Objectives:** The purpose of the present study is to identify the altitudinal border and the structural biometric of trees as well as the microabitat of their surrounding area by means of georeferencing tree positions along their altitudinal distribution.

**Methodology:** Four hundred and forty-three trees were positioned along three 100-metre-long transects in “Puerto de los Pilones” (1800 m a.s.l., Sierra de las Nieves Natural Park, Málaga) by means of a GPS 1200 device (Leica). We also tagged the trees and collected biometric data like height, width, diameter at breast height (dbh) and information about microhabitat where trees were established on, like bare soil or surrounding species (*Juniper sabina*, *Juniperus communis* or *Festuca granatensis*). We analysed our data using Quantum GIS software for geospatial representation.

**Results and discussion:** The treeline ecotone is a clear boundary in “Puerto de los Pilones” located at 1758 m a.s.l. with slightly altitudinal differences according to variations in the transects aspects. The tree average density of the three transects is 491 tree/ha being the higher tree frequency found between 1738-1740 m a.s.l. Moreover, we have found the most frequent dbh around 4-6 cm for the transects 1 and 2 and 4-8 cm for transect number 3. Also, as we expected, the ratio height/width decreases with the altitude, suggesting that forest expansion is an ongoing process (Hagedorn *et al.*, 2014). Nevertheless, this result is modulated by overgrazing in the highest areas. Finally, 50% of the trees have established surrounded by *J. communis*, which suggests that this is one of the main drivers for the forest advance.

**Acknowledgements:** I would like to thank María Isabel Ramos and Antonio Garrido of Department of Cartographic, Geodetic Engineering and Photogrammetry for their help with GPS measurements. I would also like to thank Victor Lechuga for field work support. I would like to appreciate Bejamín Viñegla and Jose Antonio Carreira for helpful comments on the manuscript and for revising the English. This research is supported by FPI scholarship from the Spanish Ministry of Economy and Competitiveness Project CGL2013-48843-C2-1-R

**Director(s) of PhD thesis:** Viñegla Pérez, Benjamín; Carreira de la Fuente, Jose Antonio

This work was also presented as a poster
Title:

Effects of climate change over enzymatic activity in areas of decay in forests of *Abies pinsapo Boiss*

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

**Introduction:** Relict mountain conifer forest are one of principal affected by climate change in last years due to their specific particularities. Their principal characteristic is their vulnerability to climate differences, and thanks to that, they can be used like a good study model to can understand a bit better how the woods respond to climate change.

**Objectives:** The purpose of the present study is to determine the effect of climate change in different mortality places. To determine this effect we realized a extensive sampling soil in a forest of *Abies pinsapo Boiss* in Sierra de las Nieves (Málaga), differentiating between holes where trees died and zones where trees grow.

**Results and discussion:** To determine the effect of climate change we realized assays of enzymatic activity, percentage of organic matter, water holding capacity and nutrients cycles to determine if one or more of that are affected by climate change and determine what magnitude of the differences is due to change. At last we want determine the possibility of extrapolate to other forests to prevent or minimize the possible negative effects in other forests.

The preliminary results indicated that organic matter produce changes in acid and alkaline phosphomonoesterase activity and N-Acetyl-β-D-Glucosaminidase activity, at the same time the percentage of organic matter is determinated by the canopy.

In conclusion, results from the present study show that soil could be modificated by presence or not of canopy, which is determinated by climate change, and the present of canopy could carry weight differences in enzymatic activity which affect on bioavailability of nutrients, what it is important to implantation of new individuals.

Acknowledgements:

Director(s) of PhD thesis: Jose Antonio Carreira de la Fuente, Benjamín Viñegla Pérez

This work was also presented as a poster
How sustainable managements of olive groves of Andalusia might contribute to climate change mitigation?

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Introduction: Currently, total CO₂ released to the atmosphere due to land-use change is about 3.3 Gt CO₂ yr⁻¹, representing the 9% of the total CO₂ emissions (39.4 Gt CO₂ yr⁻¹) (Global Carbon Budget, 2014). However, only 44% of these emissions remains in the atmosphere, since the other 56% is taken up by the oceans (26%) and vegetation throughout photosynthesis (29%) (Global Carbon Budget, 2014). Lal (2004) estimated that the implementation of sustainable management practices in agriculture could reduce by about 5-15% the amount of the CO₂ in the atmosphere. Considering the 1.5 million hectares of olive groves in Andalusia (Ministerio de Agricultura, Alimentación y Medio Ambiente, 2013), the implementation of environmentally-friendly managements in olive oil cultivation of Andalusian could have a relative great contribution in reducing the concentration of the CO₂ in the atmosphere, at least in comparison to other crops.

Objectives: the aim of the thesis is to assess the influence of plant cover in olive groves on soil organic carbon (SOC) accumulation by increasing the incoming organic carbon (OC) and reducing the losses of CO₂ caused by mineralization processes after reducing tillage and erosion.

Results and discussion: SOC lost by erosion was reduced from 220 to 150 kg C ha⁻¹ yr⁻¹ due to a change from a conventional tillage to a sustainable management consisting of allowing the growth of a plant cover in the intercanopy area of olive groves. Thus, an average of 0.07 t C ha⁻¹ yr⁻¹ was avoided to be lost from the soil by implanting this sustainable management practice. Assuming this average and in the case total area of Andalusian olive groves implement this management, more than 0.1 million t C ha⁻¹ yr⁻¹ could remain within the soil. On the other hand, RothC model (Coleman & Jenkinson, 1996) was applied to assess the SOC turnover after changing from the conventional to the sustainable management. Assuming a mean value of annual aboveground biomass production, SOC was increased by 0.38 t C ha⁻¹ yr⁻¹ during the first 10 years. When combining two managements (plant cover plus application of olive pruning residues to soil) SOC accumulation amounted 1.05 t C ha⁻¹ yr⁻¹ during the first 10 years. Therefore, with these two managements between 0.6 and 1.6 million t C ha⁻¹ yr⁻¹ would be accumulated in Andalusian olive grove soils, and thus reducing CO₂ soil emissions.

In conclusion, environmentally-friendly practices in olive groves, such as plant cover and application of olive pruning residues might increase strongly SOC content by increasing the incoming OC and reducing the losses as CO₂ emissions because of the reduced tillage and a lower erosion, thus mitigating greenhouse effect. Otherwise, is possible that future EU supports of the Common Agricultural Policy would be related to SOC sequestration. This latter is very important due to the critical situation of most of olive grove farms, which profit margins are decreasing.


Director(s) of PhD thesis: Roberto García-Ruiz
This work was also presented as a poster
Title:

Functional responses to drought and genetic expression in the *Brachypodium distachyon* species complex

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Water stress is one of the main abiotic stress that affects plant productivity in Mediterranean areas. Drought has a major importance in ecology because limits the distribution and abundance of plants, and promote their local adaptation. From an socio-economic perspective, drought causes a negative impact in crops productivity. Drought tolerance seems to be related with polyploidy (condition of possessing more than two complete sets of chromosomes) but these mechanisms in polyploids are not well understood. For these reasons studying the resistance/ tolerance responses to drought ant their relation with ploidy level can be a useful tool to generate better crops adapted to dry environments.

The aim of the present study is to analyze the functional and genetic responses (ploidy dependent) to water stress in the *Brachypodium distachyon* grass complex. *Brachypodium distachyon* (B. distachyon) is a cereal plant model and involves three species ecologically differentiated with different ploidy level: *B. stacei* and *B. distachyon* as diploid ancestors and its derived allopolyploid *B. hybridum*. In particular, we are addressing the following goals: (1) to measure functional responses and genetic variation to water stress; (2) to identify candidates genes related with drought responses through the analysis of the transcriptome at whole genome level; (3) to clone and sequence key genes in order to transform the *B. distachyon* reference line Bd21; and (4) to evaluate gene function and fitness of these selected candidate genes in experimental conditions.

Until now only the first goal is concluded and partially the second and third. Our results indicated that *B. hybridum* functional response to drought, in most of the measures taken, is correlated to *B. stacei* one, whereas *B. distachyon* response to drought is differentiated from *B. hybridum* and *B. stacei* response. So the *B. hybridum* functional response is not transgressive which could be expected given its hybrid nature, only in hormonal measures is transgressive.

In conclusion, according to the results of this functional experiment we confirmed that *B. hybridum* functional response to drought is correlated to *B. stacei*, probably given that both species are occur in arid or semi-arid habitats. This is important for explaining the ecological differentiation and speciation of this species, ecological differentiation may be based on a different adaptive response of species to drought. Our next studies on gene expression response to drought will confirm what happen at molecular levels in this species with different level of ploidy. This research will help us understand the mechanisms underlying the variation of drought tolerance in grasses.

Acknowledgements: Spanish Ministry of Economy and competitiveness for the grants obtained.

Director(s) of PhD thesis: Antonio José Manzaneda Ávila, Pedro Rey Zamora and Ana Mª Fernandez Ocaña

This work was also presented as a poster
Title:

Slope stabilization by Mediterranean native plants: geomechanical analysis

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: As a result of the construction of roads in areas with relief, slopes of varying size are elevated along its route. The embankments built on soft soils such as those formed by marl, in Mediterranean environments with a high degree of summer xericity phenomena and torrential rains, often cause problems of erosion and shallow mass movements on slopes. In abnormally wet periods of widespread landslide phenomena they occur, causing large economic and infrastructure losses. Besides the classical engineering solutions, bioengineering (slope stabilization by vegetation) has shown to protect against surface erosion and increases the slip resistance of artificial and natural slopes.

Objectives: This project aims to quantify the effect of the root reinforcement effect of Mediterranean native plants, significantly less studied than other more humid environment. The objective is to observe how soil cohesion increases and the total shear strength by tensile and anchor effect of the roots. For this purpose will be made geotechnical and mechanical strength of Wood test. The ultimate goal is to provide data that can be used in the calculation of the safety factor, and can thus incorporate native plants from the design phases of the slopes.

Results and discussion: In a first phase has performed a literature review of the most desirable features in a plant for optimal stabilization of a slope, being the most influential: the layout, variation size, volume of the root within the slope with respect to inclination, and the composition ratio of cellulose / lignin within the root. We have also made a list of 50 potential usable species for slope stabilization in Mediterranean environments. In conclusion, we do not have results yet, but we have a framework with which to start the research, about in who species we should focus the studies of slope stabilization in Mediterranean environments.

Acknowledgements:

Director(s) of PhD thesis:
Title:

USE OF DIELECTRIC BARRIER DISCHARGE IONIZATION (DBDI) SOURCE WITH LIQUID CHROMATOGRAPHY/MASS SPECTROMETRY FOR THE DETERMINATION OF COMPOUNDS WITH DIFFERENT PHYSICOCHEMICAL PROPERTIES

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Liquid chromatography-mass spectrometry (LC-MS) with electrospray ionization (ESI) is generally used for the analysis of relatively polar compounds. However, the analysis of nonpolar species is commonly undertaken by GC-MS, as they are not effectively ionized in the ESI source. With the aim of extending the applicability of LC-MS coupling towards a wider range of compounds with different physicochemical properties, alternative ionization sources have been proposed. The main alternative to ESI is atmospheric pressure chemical ionization (APCI) source (e.g. fatty acids, acylglycerides, etc). Recently, an ion source for LC-MS based on dielectric barrier discharge principle was reported by Hayen et al. [1]. Due to the different species generated in the plasma jet, the DBDI source offers the ability to generate not only positive but also negative ions, as various mechanisms including electron capture and proton transfer apply at the same time. The eventual combination of this ionization source coupled to a mass spectrometer featuring fast polarity switching (i.e. > 5-10 Hz) may provide a universal method covering a vast range of compounds with different physicochemical properties [2].

Objectives: Coupled this dielectric barrier discharge plasma jet with different LC-MS instruments from three manufacturers featuring atmospheric pressure interfaces with completely different geometry and conditions: AB Sciex (TurboIonSprayTM, QTRAP 4000) Agilent Technologies (orthogonal APCI source, Agilent TOF 6220) and Thermo Fisher Scientific (IonMaxTM, Exactive Orbitrap). The purpose of this study is the application of the HPLC-DBDI-MS coupling in the determination of multiclass lipids (with special interest in lipid extracts from items of archaeological interest), trace analysis of contaminants of emerging concern such as pharmaceuticals in wastewater and pesticide determination in foodstuffs.

Results and discussion: This dielectric barrier discharge plasma jet was coupled successfully with different LC-MS instruments from three manufacturers featuring atmospheric pressure interfaces with completely different geometry and conditions. Compounds with different feature were studied and ionized, in this way, a wider range of compounds were observed than using only ESI or APCI. Even though, an analytical application for the evaluation of multiclass lipids (including mono- and triacylglycerides; and sterols of interest) was developed with the purpose to create an analytical methodology for the comprehensive evaluation of multiclass lipids in real samples like olive oil or items of archaeological interest. Although, applications of the HPLC-DBDI-MS coupling in the trace analysis of contaminants in wastewater and foodstuffs would be developed soon.


Acknowledgements: The authors acknowledge funding from the Spanish MINECO through project CTQ-2012-34297 (partially co-financed by FEDER funds).

Director(s) of PhD thesis: Juan Fco. García Reyes & Antonio Molina Díaz
This work was also presented as a poster
MULTIRESIDUE DETERMINATION OF PESTICIDES IN OLIVE OIL BY UHPLC-MS/MS AND ACETONITRILE PARTITIONING WITH DIFFERENT CLEAN-UP STEPS USING ZIRCONIUM DIOXIDE-BASED SORBENTS

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Abstract:

Introduction: Nowadays the multiresidue analysis of pesticides in changeling fatty matrices such as olives or edible oils it is positively affected by the progress of extraction methods and the use of new sorbents that reduce the matrix effects avoiding undesirable coextractants. The most widely utilized approach for this type of analysis is the use of QuEChERS procedure and its variations followed by GC and LC analysis and tandem mass spectrometry. A clean-up step is necessary to prevent the extraction of unwanted matrix compounds; in this sense zirconium dioxide-based sorbents has been demonstrated as a good choice.

Objectives: The aim of this study is to evaluate two different commercially available sorbents based on zirconium oxide and C18 groups (Supelco Z-Plus and Z-C18 respectively) and their combination with primary secondary amine (PSA) for the multiresidue analysis of 60 multiclass pesticides typically used in olives groves, by UHPLC-ESI-MS/MS.

Results and discussion: Four different approaches were examined (Z-C18, Z-C18+PSA, Z-Plus and Z-Plus+PSA) to evaluate matrix effects and recovery rates of selected pesticide in olive oil.

Regarding the matrix effects study (performed at 5, 10 and 20 μg/Kg), the best results were obtained with Z-Plus sorbent, since a great majority of compounds showed matrix effects below 30%. For the rest of combinations around 80% of the compounds showed a higher matrix effects.

The recovery study was carried out at 20 μg/Kg and six replicates. Using Z-Plus as sorbent the recovery values obtained were similar than those obtained by Z-C18, around 55% and 47% of the compounds respectively were recovered more than 50%.

Bearing in mind these results it can be conclude that the use of Z-Plus sorbent in the clean-up step of olive oil for the analysis of pesticides is more appropriate that the other approaches since leads to cleaner extracts.

Acknowledgements: The authors acknowledge funding from Junta de Andalucía through projects P10-AGR-6066 and P10-AGR-6182

Directors of PhD thesis: Juan Francisco García-Reyes and Bienvenida Gilbert-López

This work was also presented as a poster
Title: In situ Raman study of marble capitals in the Alhambra

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: The Alhambra complex (Granada, Spain), included in the World Heritage since 1984, is one of the most important monuments in Spain. Especially remarkable are the rich Arabic decorations executed with vivid colors. To ensure proper conservation strategies there is a need of scientific investigations to better understand the execution technology and history. To not degrade the work art it is recommended to use non-invasive techniques working in situ. This kind of study, in addition of preserving the artwork, gives a more representative knowledge of the art objects because the measurements are not limited to the amount of samples that can be taken (few and small). A portable Raman micro-spectrometer with a 785 nm laser has been used for this investigation. The microscope with the head was mounted on a tripod motorised in the X–Y–Z axes with remote control to help to reach areas of interest at about 3 meters height and to adjust the position and the focusing of the laser beam on the surface of the artwork.

Objectives: The aim of this work was to characterize the pigments and the possible degradation products present in the marble capitals of three different sites, the Mexuar, the Hall of the Abencerrages and the Court of the Myrtles, in the Alhambra complex by means of portable Raman micro-spectroscopy.

Results and discussion: The data obtained from the Raman spectrum were of good quality despite of the adverse conditions out of the laboratory. The information gathered has given us knowledge of what pigments were used in the past to decorate these halls of the Alhambra. In the Mexuar, some pigments were found applied directly on the stone, marble. Over this pictorial layer, other pigments and gildings were applied above a preparation gypsum layer with a red bole. This suggests that pigments applied directly on the marble are from the Nasrid period whereas the redecoration which seems to hide the originals was made during the Christian occupation and posterior restorations. This second layer appears very degraded which allow to appreciate the original one. The original pigments were identified as natural lapislazuli, carbon black and cinnabar. In the other hand, the blue pigment above the gypsum layer seems to be azurite. The red colour of the red bole is due to the presence of iron oxide in the clay. In the Court of the Myrtles we have found natural lapislazuli and carbon black directly applied on the stone. In the Hall of the Abencerrages the pigments seems to have been applied directly on the marble without a preparation layer but it is necessary to do a more deep investigation to confirm it. Cinnabar and its degradation product, calomel, were found in the red decorations. We have also seen gilding, carbon black and blue areas very well conserved of lapislazuli.

In conclusion, the portable Raman micro-spectroscopy has allowed a completely non-invasive study of both the pigments which are decorating the capitals of the some columns in the Alhambra and some of their degradation materials. Especially interesting was the identification of completely different materials in the original Nasrid art in comparison with the Christian redecoration in the Mexuar.

Acknowledgements: This work was financed by the research projects BIA2013-41686-R (Spanish Ministry of Economy and competitiveness and FEDER funds) and UJA2014/06/12 (Universidad de Jaén, Caja Rural de Jaén).

Director(s) of PhD thesis: Ana Domínguez Vidal y Mª José Ayora Cañada
This work was also presented as a poster.
Title: MPA-CdTe QUANTUM DOTS: NOVEL AND AUTOMATED FLUORIMETRIC METHOD FOR THE ANALYSIS OF RIFAMYCINS

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Rifamycins are a group of antibiotics particularly effective against mycobacteria and they are used for the treatment of important diseases and disorders such as tuberculosis, cancer, hepatic encephalopathy or intestinal infections. Taking into account the great clinical potential of these drugs it is important to develop a rapid, simple and reliable strategy for its quality control. Quantum dots (QDs) are colloidal semiconductor nanocrystals formed from group II–IV, III–V or IV–VI materials, such as those made of CdSe and CdTe. Thanks to recent advances in nanotechnology and nanomaterials they have been proposed as an alternative to conventional organic fluorophores so simple and sensitive fluorescence sensors using QDs have also been developed for the determination of different kinds of analytes that could quench the fluorescence of QDs. The use of automated flow methodologies permits the development of environmentally friendly methods preventing operators from coming into contact with toxic material such as QDs.

Objectives: The objective is the determination of rifampicin and rifaximin by their quenching effect produced on the fluorescence of MPA-capped CdTe QDs. For the first time, a QDs-based flow method has been developed for their quantitation in pharmaceutical formulations and human urine, allowing a simple and fast analysis and obtaining high repeatability and sample throughput as a consequence of the use of Multicommutated Flow Injection Analysis (MCFIA).

Results and discussion: Under the optimized conditions, the relationship between the fluorescence intensity of the quantum dots and rifampicin or rifaximin concentrations were linear in the range of 5-80 and 3-40 µg mL⁻¹, with a detection limit of 1.5 and 1.0 µg mL⁻¹, respectively. Relative standard deviations (RSD) lower than 3% were observed in all cases. A sample throughput of 70 determinations per hour and good recoveries were also achieved. The proposed method was satisfactory applied to the determination of rifamycins in pharmaceutical formulations and human urine.

Results from the present study show an automated, simple, rapid, low-cost and reliable multicommutated QDs-based analytical method, described for the satisfactory determination of rifamycins in these matrices. Due to the use of the multicommutation principles that permits to automate the system and to obtain a high sample throughput, the proposed method can be suitable for the routine analysis of rifamycins being useful for quality control in clinical industry. Moreover, the low consumption of reagents and low waste generation offer an environmental friendly analytical system.

Acknowledgements: J.J.L. acknowledges research scholarship from Spanish Government (Ministerio de Educación y Ciencia).

Director(s) of PhD thesis: Antonio Ruiz Medina / Pilar Ortega Barrales
This work was also presented as a poster
Effects of extreme storage conditions on extra virgin olive oil of the Picual variety

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Introduction: Virgin olive oil is a basic component of the Mediterranean diet. Its production from the different varieties of olives requires storage at manufacturer’s or the final distributor until consumption. During this time, the storage conditions may be affected by weather conditions, especially by the high temperatures in summer in the different production areas.

Two extra virgin olive oil of the Picual variety from the province of Jaen were acquired and stored in optimal conditions until analysis. The samples were packed in polyethylene terephthalate (PET). Extreme storage conditions were simulated by heating treatment in an oven at temperatures of 40, 60 and 80 °C for two and three weeks. Deformations in the container were observed at the highest temperature.

Once each treatment was finished, samples were taken in glass receipt and frozen until analysis. All the test were carried out following the COI legislation (COI/T.20/2007) and the EU Regulation ((CE) nº 299/2013) for the olive oils and olive-pomace oils characterization.

Objectives: The purpose of the present study was to simulate the extreme conditions of storage of extra virgin olive oil, to assess the damage that may suffer quality parameters and other minor components such as fatty acids, polyphenols, pigments and tocopherols; as well as their organoleptic characteristics.

Results and discussion: Minor compounds retained the inherent composition of extra virgin olive oil, maintaining stability against oxidation. Sensory analysis showed that, in general, the characteristics of the term "virgin" are maintained until the temperature of 80°C. These characteristics were also found in the two control samples. The results of all physico-chemical analysis at the simulated conditions confirmed that the AOVE remained as a food with its physicochemical and nutritional properties.

Acknowledgements: Thanks to the Research Group "Bioprocess TEP-138" from the University of Jaén (Spain)

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This work was also presented as a poster
Title: Fabrication and characterization of polymer-matrix composites reinforced with fibers

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Currently, plastic reinforced with fibers is widely used in industrial sectors such as the automotive and aeronautics, due to its excellent properties and low cost. However, the conventional use of polymers from petroleum has associated some disadvantages. On the one hand its density translates into a significant increase in the weight of the polymer matrix. This has a negative effect on the environment in terms of energy consumption. On the other hand, their elimination at the end of the useful life of the product, increases polluting waste. In this sense reinforcing plastic with natural fibers is presented as an alternative to traditional plastics, because it is more respectful with the environment, and these materials are characterized by low density, low cost and easy removal to be inherently biodegradable.

Objectives: The objective of this thesis is to investigate strategies of utilization of natural fibers as reinforcement for thermoplastic matrices, especially of biodegradable polymers. To do this, fibers of different nature and size will be selected and their compatibility with various polymer matrices will be studied. Later composites materials will be manufactured and they will be characterized from the point of the view of the mechanical, thermal, chemical, properties barrier, etc, in order to suggest their possible applications. The hypotheses that can be seen are as follows:
Existence of a multitude of industrial applications of materials and processes to investigate.
Lack of in depth study on the use of vegetable fiber from olive so abundant in our province.

Results and discussion: The mechanical properties of composites made of olive fiber by injection are influenced clearly with the percentage of fiber introduced as well as the size. However, the results indicated that improved minimally in some mechanical properties which can be due to problems of dispersion and compatibility with the polymer matrix used. The improvement of the compatibility between the fiber and polymer is study through the implementation of several pretreatments. In the process of manufacturing of compounds other stages are being introduced to ensure adequate dispersion of the fiber in the matrix. In conclusion, the results of this study seem to indicate that as in the case of the fibers studied by several researchers, the olive tree fiber is a good choice for reinforcing polymers.

Acknowledgements: Technology Center of the plastic (ANDALTEC), group of research BioProcess of the University of Jaen and the directors of this thesis.

Director(s) of PhD thesis: Dña. Mª Dolores La Rubia García y D. Rafael Pacheco Pérez.

This work was also presented as a poster
ARCHITECTURE AND ENGINEERING
Title:

Technical viability of using thermal conductive plastics materials as thermal heat sinks in lighting and signaling LED automotive devices

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Lighting technologies used in automotive industry are changing from the typical halogen/xenon light sources to a different one based on LEDs, due to their multiple advantages: energy saving, higher lifetime, absence of any contaminant substances, more flexible and compact designs, etc. Thermal management of these LED devices is a matter of great concern because its lifetime and light flux emission depends on the reached junction temperature. In the past, active and passive cooling heat sinks for LEDs were usually made of metal. However, several issues related to metals, such as corrosion and high weight, which leads in bigger fuel costs, pushed some investigators to search new reliable solutions.

One of the studied solutions to avoid mentioned problems were plastic heat sinks. The big challenge relay on their low thermal conductivity, that force to use some fillers to improve their performance, such as different forms of carbon (carbon black, graphite...), boron nitride, etc.

Objectives: The purpose of the present study is to develop a CFD simulation method able to predict a reliable temperature distribution on the components of these kind of devices, and to determine the specific conditions where this kind of materials might be used.

Results and discussion: Two commercial thermal conductive materials have been tested in two lighting modules of one mass production Valeo headlamp using a prototype mould, achieving a weight reduction of 44%. Temperatures were measured with thermocouples and thermographic techniques, and compared with original aluminum heat sinks. Results were also simulated with CFD software, showing good correlation:

- High beam module (three white LEDs with 1.6W/LED and FR4 PCB). Tested material has 20W/m·K maximum according to datasheet. Temperature increase was 15ºC and flux loss remain below 2%, but customer requirements are still met.

- Turn indicator module: (nine yellow LEDs with 0.5W/LED and FR4 PCB). Used material has 12W/m·K maximum. Temperature increase was 1ºC, and flux loss is not appreciable.

In conclusion, results from the present study show that thermal conductive materials may be used in low/mid power applications of lighting devices for automotive industry with an acceptable loss of performance in terms of temperature and flux output. Further applications have to be studied in order to check the limitations of these materials.

Acknowledgements: Thanks to my PhD directors and my colleagues in Valeo, specially Carlos Gomez, who has been my mentor and friend. Thanks also to my company, Valeo, for helping me to carry out this research with their technical and economical support.

Director(s) of PhD thesis: Carlos Martínez Bazán, Cándido Gutiérrez Montes
Title:

**Experimental modal analysis using High Speed 3D Digital Image Correlation**

Presenting author, & affiliation:

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Abstract: (Your abstract must **use Arial 10 pt normal style** and must fit in this box and page)

**Introduction:** Accelerometers, strain gauges and laser vibrometers have been traditionally employed for modal characterization in mechanical elements i.e. to experimentally define natural frequencies, mode shapes and damping ratios. Nevertheless, these are pointwise transducers, what implies not enough measurement points in some cases. Some of them are also invasive transducers which may modify the behavior when dynamic events occur, yielding to false results.

3D Digital Image Correlation is a full-field optical technique able to measure displacements by tracking a random speckled pattern on the element's surface. DIC 3D has been especially useful in experimental mechanics aiming for global characterizations. DIC 3D combined with high speed cameras makes it possible to deal with most of dynamic events. However, DIC 3D has not been applied to experimental modal analysis.

**Objectives:** The first target in this study was to determine mode shapes of a beam using DIC 3D in Forced Normal Mode tests, FNM, i.e. under sinusoidal excitation at its resonance frequencies, and correlate them with numerical simulation.

From this point, the objective was to validate Digital Image Correlation 3D for experimental modal analysis contrasting with accelerometer measurements. Numerical simulations were also performed. Both tests were conducted using an electrodynamic shaker.

**Results and discussion:** High speed DIC 3D system has been successfully applied to obtain the different mode shapes from the analysis of the displacements field from the whole surface of a beam during FNM tests. In all the cases a high level of of correlation with numerical results was achieved.

Random excitation tests were performed in combination with using DIC 3D technique to measure the displacement response and, thus, build Frequency Response Functions, FRF, to identify natural frequencies. In addition, the same tests were performed using accelerometers form comparison. As a result, identical natural frequencies results were obtained in FRFs from DIC 3D measurements, accelerometers and numerical simulations.

Thus, High Speed DIC 3D has been validated as a suitable technique for vibration applications.

Acknowledgements:

Director(s) of PhD thesis: Díaz Garrido, Francisco A.; López Alba, Elías
Title: Blunt-body drag reduction through base cavity shape optimization

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: The flow around heavy vehicles, such as trucks or buses, is highly three-dimensional, chaotic and turbulent. Specifically, in the case of blunt bodies, this flow is characterized by the formation of a wake behind the body and the shedding of vortices; phenomena strongly related to high and oscillating aerodynamic forces and, therefore, to the fuel consumption of the vehicle.

Objectives: We intend to enhance and optimize the design of a single-cavity system placed at the body base with the aim of reducing efficiently the drag force.

Results and discussion: To achieve the above mentioned objectives, we have performed a preliminary numerical study on the drag reduction of a two-dimensional, turbulent and incompressible flow around a blunt body with semi-ellipsoidal front, of height H and length L=3.68H at a Reynolds number \( Re = \frac{\rho U_\infty H}{\mu} = 2000 \), where \( U_\infty \) is the turbulent incompressible free-stream velocity, \( \rho \) is fluid density and \( \mu \) the viscosity. In such numerical study, we have used an optimization algorithm, which implements the adjoint formulation, to compute the two-dimensional, incompressible, turbulent and steady flow sensitivity field of axial forces to small local force modifications.

Consequently, we have analyzed the influence of introducing local force disturbances based on the computed sensitivity field, such as control cylinders or small deformations, in order to reduce the drag coefficient of the bluff body. In this regard, we have firstly obtained different geometries of the cavity system using a topological optimization algorithm. Secondly, we have computed the flow around the selected geometries performing three-dimensional, turbulent, incompressible and transient numerical simulations using a IDDES model (Improved Delayed Detached Eddy Simulations) for two different Reynolds number: \( 2 \cdot 10^3 \) and \( 2 \cdot 10^4 \).

Our study shows a significant reduction in the average drag coefficient for the different geometries up to 25 % for the lowest Reynolds number and 45% for the largest one, mainly due to an increase in the base pressure. Not only does the drag coefficient reduce, but the wake behind our bluff body also becomes less chaotic owing to the stabilization effect produced by the deformation of the single-cavity system.

Acknowledgements: This work was supported by the Spanish MINECO under project DPI2014-52929-C3-3-P and by Spanish MECD under pre-doctoral grant FPU014/02945.

Director(s) of PhD thesis: C. Martínez-Bazán, J.I. Jiménez-González, C. Gutiérrez-Montes
Title: A new method to control the bubble formation process in a planar co-flow configuration

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

Introduction: Although the well-known co-flow technique allows the generation of bubbles in a massive way avoiding the frequency and size constraints of the formation in still liquid environments, the process control is highly dependent on both the liquid and gas velocities. Therefore, to generate bubbles with the characteristics required by the modern industrial and medical applications, new control techniques are demanded.

Objectives: The purpose of the present study is to experimentally explore whether the bubbling regime in a particular co-flow configuration with planar geometry, which is naturally established depending on both the liquid and gas velocities and generating monodisperse bubbles at frequency $f_n$, can be controlled by imposed disturbances in the liquid stream at frequencies $f_f > f_n$. Moreover, the volume of the formed bubble, $V_b$, will also be controlled, since $V_b = Q_g / f_f$, where $Q_g$ is the feeding gas flow rate which remains constant in this configuration.

Results and discussion: A novel experimental forcing device was developed and implemented in the feeding liquid vessel of the original planar co-flow set-up. The forcing process is based on the oscillatory deformation of a flexible membrane that produces a modulation of the liquid flow rate. The amplitude of the induced liquid velocity variations, $\varepsilon$, were obtained through the measurements of the pressure fluctuations in the liquid stream meanwhile the forcing effect over the natural bubbling regime has been characterized by registering the pressure in the air stream, as well as by recording high-speed movies for a wide range of modulation amplitudes. The results show that a critical modulation amplitude was needed to properly modify the natural bubbling frequency, $f_n$, promoting the formation of monodisperse bubbles with a smaller size than those generated without forcing. Since the values of the relative amplitude of the modulation, $\xi = \varepsilon / u_n$, being $u_n$ the unforced liquid velocity, are found to be beyond the limits of the linear theory, the disturbances generated by the forcing mechanism can be explained as an effect of the non-linear velocity field induced by kinematic waves which appear due to the liquid velocity modulation. The maximum amplitude of this wave can be described by a one-dimensional theoretical model that provides its downstream evolution, showing a good agreement with the experimental results. In conclusion, the results from the present study reveal that a natural bubbling regime can be controlled by a modulation of the liquid velocity with a relative amplitude, $\xi$, that depends on the Strouhal number of the new forced bubbling regime, $St = f_f h_0 / u_n$, being $h_0$ the thickness of the water stream, and on the unforced liquid-to-gas velocity ratio, $\Lambda = u_n / u_a$, being $u_a$ the gas velocity.

Acknowledgements: Support by the Spanish MINECO, Junta de Andalucía and Universidad de Jaén grants DPI2014-59292-C3-3-P, P11-TEP749 and UJA2013/08/05.

Director(s) of PhD thesis: Bolaños-Jiménez, Rocío and Sevilla, Alejandro.
Title:

Development of a new type of cement clinker which includes by-products from the ceramic industry

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Abstract:

The objective of this work is the recovery and use of industrial by-products from the ceramic industry for use in massive quantities as a substitute for raw material in the cement industry.

Portland cement is composed of four major oxides: lime (CaO) (60-67%), silica (SiO₂) (17-25%), alumina (Al₂O₃) (3-8%) and iron oxide (Fe₂O₃) (0.5-6%). Also Portland cement contains small amount of magnesia (MgO) (0.1-4%), alkalies (Na₂O and K₂O) (0.2-1.3%) and sulfuric anhydrite (SO₃) (1-3%).

The cement industry requires a large power consumption. The energy is the main cost factor, meaning about 30-40% of the total production cost. In addition, the production of 1 ton of cement involves the emission of around 1 ton of CO₂.

The structural ceramic industry generated during its manufacturing process a number of defective pieces of fired clay that milled to small particle size (Chamotte) can be used in the cement production process according to its mineralogical and chemical composition.

For the study of new formulations of cement clinker has come to make first a characterization of raw materials (Limestone and Clay) and the Chamotte. Specifically it has been done a mineralogical analysis by X-Ray Diffraction (XRD) and determining their chemical composition by X-Ray Fluorescence (XRF).

For the clinker formulations design, Bogue equations modified was used. Also we need to use the Lime Saturation Factor (LSF), the Silica Modulus (SM) and the Alumina Modulus (AM), which allow us to identify the maximum percentage of Chamotte that can be added.

Thus it was design five different cement clinker formulations, one based on the typical cement composition (75% Limestone - 25% Clay) and four with variation ranges of 4, 8, 12 and 16.5% by weight of chamotte. This addition of chamotte to the clinker formulation allows us to reduce the required amount of clay until almost a quarter, with consequent savings in raw materials.

Besides getting to increase the percentage of chamotte, reduce alite phase (C₃S) and belite phase increase (C₂S), it can observed that also increase the molten phase, consisting of tricalcium aluminate (C₃A) and tetracalcium aluminoferrite (C₄AF). This fact will have an impact on the mechanical properties of cement, decreasing them at early age but increasing them much at longer term.

Acknowledgements: The authors thank the Materials Science Institute of Sevilla (ICMS), Joint Center Spanish National Research Council (CSIC)-University of Sevilla.

Director(s) of PhD thesis: Dolores Eliche-Quesada and Pedro José Sánchez-Soto

This work was also presented as a poster.
Title:

**Energy self-sufficiency in developing countries under the urban metabolism: case Cuenca, Ecuador. Methodological proposal.**

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Abstract: (Your abstract must use Arial 10 pt normal style and must fit in this box and page)

**Introduction:** In September 2015, the UN General Assembly adopted the 2030 Agenda for Sustainable Development. The member countries pledged to implement 17 objectives. In particular, it seeks to make cities more resilient at climate change with use sustainable technologies. This research proposes a methodology to explore the feasibility of incorporating renewable energy in cities, under the framework of Urban Metabolism. To evaluate the impact of the measures taken, the use of sustainable indicators is proposed. The methodology is applied to the Ecuadorian context, whose energy supply is based on the use of fossil fuels and large hydro.

**Objectives:** The purpose of the research is to show that the incorporation of renewable energy promotes circular metabolism in a city of a developing country.

**Results and discussion:**

Unlike the urban metabolism that evaluates the inputs and outputs of materials, energy has a behavior that differs, since it is not reversible. Energy permits the transformation of materials and although it can be stored, in general it dissipates. An analysis of the internal energy relations in a community must consider both direct and indirect energy. The first type is defined as energy concomitant with economic processes (electricity and fossil fuels), while indirect energy is what is embedded in products.

This research aims to determine the direct energy consumed by industrial, commercial and residential sectors of a city using energy flows analysis (EFA). Energy relations will be established through environmental, economic and social indicators.

It will determine what kinds of technologies are applicable to urban areas, by type of consumer. Also resources for application of the selected technology will be identified. Starting from a base case, scenarios will be built, according to the penetration of renewable energies in the different sectors analyzed. The variation of the chosen indicators will allow us to establish the discussion and substantiate the research hypothesis.

The methodology proposal will respond to research question related to the promotion of renewable energy sources in the urban environment with the purpose of enhance circular metabolism, especially in developing countries.

Acknowledgements:

_Director(s) of PhD thesis: Julio Terrados Cepeda_

This work was also presented as a poster
Title: Updated Probabilistic Seismic Hazard Values for Egypt

Presenting author & affiliation:

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Abstract:

Objectives: Seismic hazard in terms of mean peak ground acceleration (PGA) and spectral acceleration (SA) values has been computed for Egypt using both historical and instrumental earthquake data. In order to carry out this appraisal, a typical zoning method using the CRISIS© software was employed.

Main Inputs: For this purpose, an updated earthquake catalog, spanning the time period from 2200 B.C. to 2013, has been compiled for Egypt and its surrounding regions, and prepared to be used in a new probabilistic seismic hazard assessment. The earthquakes sizes were unified in terms of the moment magnitude scale and the catalog was declustered. A new seismic source model, for the seismic activity in and around Egypt, consisting of a total of 88 seismic zones (for shallow- and intermediate-depth seismicity) was considered in this new assessment. The seismic parameters have been specifically computed for 35 seismic sources covering the Egyptian territory and the Eastern Mediterranean region. A logic-tree design was setup in order to consider the epistemic uncertainty in the Gutenberg-Richter $b$-value, maximum expected magnitude ($M_{\text{max}}$) and the selected ground-motion prediction equations (GMPEs).

Computations: Seismic hazard computations, for rock-site conditions, with 10% and 5% probability of exceedance in 50 years have been carried out. In addition, uniform hazard spectra for twelve, among the most important and populated cities in Egypt, are computed and compared with the most recent Egyptian building code values. Then, the seismic hazard deaggregation results for the most important cities has been performed in terms of distance and magnitude, to help understanding the relative contributions of the different seismic sources. Seismic hazard deaggregation, in particular, was computed for spectral acceleration at periods of 0.0, 0.2, 1.0 and 2.0 s for rock-site conditions, for 10% probability of exceedance in 50 years.

Main Results: It is interesting to highlight that the maximum hazard values are observed at the Gulf of Aqaba region, specifically around the epicentral location of the biggest Egyptian recorded earthquake of 22 November 1995 ($M_W$ 7.2) Aqaba earthquake. The obtained seismic hazard values for Nuweiba city (located in this region), for PGA and SA (0.1-s) are 0.29 g and 0.74 g, respectively, for a return period of 475 years. Moreover, the deaggregation results indicate that distance to the seismic sources which mostly contributes to the seismic hazard is mainly controlled by the nearby sources. However, distant events contribute more to the hazard for larger spectral periods (for 1.0 and 2.0 s). A significant result of this type of works is that seismic hazard deaggregation provides useful data on the distance and magnitude of the contributing seismic sources to the hazard in a certain place, which can be applied to generate scenario earthquakes and select acceleration records for seismic design.

Acknowledgements: This research work was supported by the Egyptian Ministry of Higher Education (Cultural Affairs and Missions Sector, Cairo), and the Spanish Seismic Hazard and Active Tectonics research group.

Director(s) of PhD thesis: Dr. José A. Peláez, Department of Physics, University of Jaén.
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