Centre of Physics of the University of Minho

Activity Report 2016

January 2017

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1. Introduction

1.1 General description of the Centre

The Physics Centre of Minho University (CFUM) is a research unit with a multi-disciplinary scientific activity in the fields of Pure and Applied Physics and adjacent areas. It involves both theoretical and experimental research as well as development for applications, and concerns four major scientific areas: (1) Condensed Matter Physics, (2) Nanomaterials and Applications, (3) Molecular Physics and Biophysics, and (4) Optics, Optometry and Vision Sciences. The CFUM is also committed to advanced training of students at the Graduation, Master, and Ph.D. levels (see "Scientific Training"). In addition, CFUM members conduct outreach activities (beyond the walls of the University) aimed at promoting the scientific knowledge acquired within the Centre. These activities take place in close collaboration with the Department of Physics and other teaching departments of the School of Sciences. Finally, the members of the Centre are involved in a range of industrial collaborations, both at the national and international levels.

The CFUM includes most of the teaching staff of the Department of Physics of Minho University, several staff members of other Portuguese higher education institutions, a number of full time researchers contracted in the framework of "Investigador FCT" (FCT Researcher) program, Post-Docs, PhD students enrolled at the School of Sciences, and research students with short-term grants (see Sections 2 and 3 for detailed information). The scientific activity is performed along a number of strategic research lines of the Centre, which are described below.

There are some 30 research laboratories (see "Facilities and Infrastructure" section), of which about 20 are located in Gualtar (Braga) and other 10 in the Azurém campus (Guimarães). Technical support is provided by one specialized engineer supporting mostly film deposition facilities, one electronics technician (who left in 2016 with no replacement so far), one mechanics technician, two general technicians in Gualtar and two general technicians in Azurém. Administrative support is provided by one experienced collaborator. All these collaborators are personnel of the School of Sciences and their duties are not limited to those related to the CFUM. In addition, the CFUM itself contracts an additional collaborator who provides administrative support to several projects in course and helps us in organising scientific events (seminars, colloquia, etc) and activities aimed at attracting external funds.

Since 2015 CFUM is a part of the Centre of Physics of Minho and Porto Universities (CF-UM-UP), a joint research unit officially approved by the Portuguese Foundation for Science and Technology (FCT). The part based in Porto is composed of theorists working within the strategic research line "Quantum Physics and Fields in High Energy and Condensed Matter Theory". The research at the CFUM itself is conducted along the following three lines: (i) Plasmonic, luminescent, magnetic and hybrid nanostructures for optoelectronic, biomedical and environmental applications; (ii) Functional and smart materials and surfaces for advanced applications, and (iii) Assessment and enhancing visual performance.

CFUM's managing bodies are: (i) Director, elected among the Full or Associate Professors of the Physics Department, every three years via direct election, (ii) Deputy Director (appointed by the Director), (iii) Executive Committee, (iv) Scientific Council, composed by all effective members holding a PhD, and (v) Steering Committee, an advisory board constituted by internationally recognized scientists that help to evaluate and improve the Centre's activities.

Traditionally, the CFUM was organised in several research groups (six in 2016). Each group had a coordinator and run certain research facilities by nominating one of its members as responsible for the laboratory. Also the groups handled, when available, some part of the Centre's basic funding provided by the FCT. The Executive Committee was composed by the Director, Deputy Director and the coordinators of the research groups.

In the end of 2016, new Regulation of the Centre was approved that dissolved the groups. Since then, the Executive Committee is composed of Leaders of the Strategic Research Lines, who are nominated by the Director. The responsibility for a research laboratory is now centered on the person who is officially in charge of it. The group coordinators will continue to help handling a part of the Strategic Funding as before during some transition period (until the end of 2018). In the future this mechanism will be replaced by direct handling of funds by the Leaders of the Strategic Research Lines.

1.2 Summary and brief analysis of scientific performance in 2016

The scientific production of the CFUM in 2016 decreased compared to 2015 by some 15% (see Graphs 1 and 2 and Image 1). Even taking into consideration fluctuations from year to year that are most clearly seen from the ISI WoK data (Image 1), the tendency of growth, which was characteristic of the Centre along its history, ceased probably around 2012-13. Clearly, this is a phase-shifted result of the insufficient and irregular funding over a number of recent years. In particular, the Strategic Funding (or any other funding of the Centre as a whole) was interrupted in 2014, being exactly zero in 2015 and in the first semester of 2016, and only in the second semester of 2016 the Centre received roughly one half of the annual amount allocated to the Centre by virtue of the revised decision of FCT concerning its last evaluation (see Sec. 5.4). The number of "individual" projects funded by national agencies (FCT and ANI) has also been declining gradually since 2011 (Graph 1). Currently the average rate of success in national calls (FCT) is quite low (of the order of 5%) and that of the Centre of Physics is similar. Even though, these projects are the major source of funding for the researchers of the Centre (Graphs 4 and 5). Compared to 2015, the situation slightly improved in what concerns international (EU funded and bilateral) projects (see Sec. 5.4). Industry-funded projects continue to have only a marginal weight in the overall budget of the Centre of Physics.

The year of 2016 was rather successful in terms of completed PhD theses (13 against 8 in 2015), also the total number of PhD students affiliated to the Centre of Physics increased (50 against 46 in 2015). However, these numbers should be taken with a caution because many of these PhD students are shared with other research centres and roughly one half of them are enrolled on PhD programs outside the School of Sciences (mostly at the School of Engineering).
Even though the members of the Centre continued to participate in outreach activities organized by the School of Sciences, such as lectures and presentations in secondary schools, collaboration in the framework of the annual Fair of Science and others, owing to the lack of central funding it was not possible to regularly organise Colloquia in Physics, the Centre's brand over a decade until 2014. Nevertheless, one Colloquium still was organized in December of 2016, devoted to this year's Nobel Prize in Physics. We expect to restore the Physics Colloquia as a regular outreach activity in the future.

For the sake of completeness, it is necessary to mention that laboratory activities in the School of Sciences building were interrupted by maintenance works carried out from November 2016 till the end of February of 2017. By virtue of this, one of the previously planned academic visits (that would also include a Colloquim) was cancelled. It is difficult to evaluate the impact of this interruption so far but most likely it will be seen in 2017.

1.3 Brief SWOT analysis

The strongest points of the Centre are related to its interdisciplinary character. There are several members working actively at frontiers between Physics and other disciplines, such as Optometry, Molecular and Cell Biology, Engineering of new sensors, functional (e.g. photocatalytic or antimicrobial) surfaces and systems for energy applications. Some of this research projects involve fundamental Physics along with technology development and advanced characterisation, an ideal combination for the Centre of Physics. Some of these researchers get or enhance international recognition (examples: Nuno Peres is the most cited Portuguese scientist based in Portugal, José Manuel Meijome was nominated Optometrist of the Year by the Universidad Politécnica da Catalunha, Spain). Other facts that witness indirectly the increasing status of recognition of the Centre of Physics

are the number of invited talks at international conferences presented by the CFUM members (58 in 2016 against 49 in 2015) and the average impact factor of the members' journal publications (3.37 in 2016 against 2.67 in 2015). Well established links of collaboration with some foreign universities of reference (Universities of Singapore, Manchester, Hong Kong, DTU in Denmark, ICFO in Barcelona, etc.) are also a clear strength of the Centre.

The weaknesses of the Centre are twofold: (i) a significant part the scientific equipment is not up to date and possibilities of its upgrading are very limited, and (ii) the scientific activity of a considerable part of Centre's researchers reduced during the last years. In fact, the last serious upgrade of the scientific park of the Centre took place in 2006. Since then, only occasional acquisitions have been possible. In particular, with much effort we have been able to buy a new spectrophotometer in 2016 (≈ 60 k€) and this was probably the most expensive purchase over the last decade. Concerning the second point, suffice it to say that some 44% of the members of the Centre with PhD published no more than one article in 2016 and half of them published none. Even recognising a negative impact of the interruption of the laboratory activities caused by the maintenance works in the School of Sciences building in Gualtar, there are more profound reasons for the observed stagnation in the scientific production of the Centre. In fact, academic career progress has virtually been blocked in Portuguese universities for almost a decade and difficulties in obtaining funds (very low approval rate of scientific proposals) have been growing over last 10-12 years. These factors do not promote the expected proactivity of teaching staff members in research. Also, the number of full time experienced researchers (currently called FCT Researchers) allocated to the Centre reduced drastically over the last years (from 10 in 2010 to currently 3). Lack of such researchers is felt in some areas of Centre's activity (e.g. femtosecond spectroscopy).

Opportunities that are seen now include: (i) the creation of the QuantaLab, a joint scientific laboratory involving researchers from the Iberian Nanolaboratory (INL) and the University of Minho (including CFUM), dedicated to research in the fields of Quantum Information and Quantum Materials, and (ii) the recently announced initiative of the government to create Collaborative Laboratories (CoLAB) that would involve several institutions including R&D centres (such as the Centre of Physics), national or international companies and interface structures. Among other favorable effects, the QuantaLab can bring some new staff members to the Centre as a part of a larger program of hiring new teaching and research staff that was very recently announced by the Rector of the University of Minho. Concerning the CoLAB Program, the Centre of Physics is planning to participate in, at least, two such consortia. Another positive factor that can be seen as an opportunity for the Centre is the increasing number of candidates to the UM courses in Physics (BSc in Physics and Master in Engineering Physics), verified in the last years. Moreover, some of our present undergraduate students are very good and if we are able to keep them for our post-graduate courses, it can enhance the dynamics of our research considerably.

Threats are connected mainly with the underfunding, long delays typical of the national funding entities and the slowness of the money handling within the University. The innumerous restrictions, some of which are introduced by the FCT and some by the University, make it very hard to repair the existing scientific equipment when necessary and acquire new pieces even if there is funding allocated to it. Another threat is that, with the overwhelming priority to "earn money" the scientific research is biased towards solely applied research (suffice it to take a look at the titles and journals of our scientific publications listed in the Groups sections). Still another threat is connected with the lack of the "new blood" at the Centre (young and dynamic staff members and full time researchers with post-doctorate experience).

Nuno Peres

Mikhail Vasilevskiy

2. Organization

Members of the Centre

Effective Members with Ph.D	51
Associate Members (all with Ph.D)	3
Post-Docs and Research Fellows with PhD	19
Ph. D Students (Total/Enrolled in the School of Sciences)	(49/31)

Management Entities

Director:
Nuno Peres (till 31/07/2016)
Mikhail Vasilevskiy (since 01/08/2016)

Deputy Director:
Sérgio Nascimento (till 31/07/2016)
Luís Rebouta (since 01/08/2016)

Executive Committee Members:

1. Jorge Jorge
2. Luis Rebouta
3. Maria Elisabete C.D. Real Oliveira
4. Bernardo Gonçalves Almeida
5. Ricardo Mendes Ribeiro
6. Mário António C. de Castro Pereira

Members of the Scientific Council (effective CFUM members):

1. Anabela Gomes Rolo
2. Ana Pinho
3. António Manuel Gonçalves Baptista
4. António Queirós
5. Bernardo Gonçalves Almeida
6. Cacilda Maria Lima de Moura
7. Carlos José de Macedo Tavares
8. Diego Martinez
9. Eduardo Pereira
10. Elisabete Maria Santos Castanheira Coutinho
11. Etelvina de Matos Gomes
12. Filipe Macedo
13. Francisco José Machado Macedo
14. Gueorgui Smirnov
15. João Linhares
16. João Pedro dos Santos Hall de Agorreta de Alpuim

17. Joaquim Alexandre Carneiro
18. Jorge Manuel Martins Jorge
19. José Alberto Diaz Rey
20. José Filipe Vilela Vaz
21. José Luís Pires Ribeiro
22. José Manuel González-Meijome
23. Júlia Maria Simões Dias Barata Tovar Ayres Campos
24. Luís António Carvalho Gachineiro da Cunha
25. Luís Manuel Fernandes Rebouta
26. Luís Manuel Gomes Vieira
27. Luís Silvino Alves Marques
28. Manuel Filipe Pereira Cunha Martins Costa
29. Maria de Fátima Guimarães Cerqueira
30. Maria de Jesus Matos Gomes
31. Maria Elisabete da Cunha Dias Real Oliveira
32. Maria José Sampaio
33. Maria Madalena da Cunha Faria de Lira
34. Maria Teresa Pitta de Lacerda-Arôso
35. Mário António Caixeiro de Castro Pereira
36. Marlene Lúcio
37. Mário Rui da Cunha Pereira
38. Marta Maria Duarte Ramos
39. Martin Andritschky
40. Michael Scott Belsley
41. Mikhail Vasilevskiy
42. Nuno Miguel Machado Reis Peres
43. Paulo José Gomes Coutinho
44. Ricardo Mendes Ribeiro
45. Sandra Maria de Braga Franco
46. Sandra Maria Fernandes Carvalho
47. Senen Lanceros-Méndez
48. Sérgio Miguel Cardoso Nascimento
49. Stanislav Ferdov
50. Teresa Maria dos Santos Ribeiro Viseu
51. Vasco Manuel Pinto Teixeira

Associate Members (emeritus members and teachers of other Portuguese universities):

1. Jorge António Silva Mendes (Polytechnic Institute, Vila do Conde)
2. Li-Jian Meng (Polytecnic Institute, Porto)
3. Vasco Almeida (UBI, Covilhã)

Post-Doctorate Researchers

1. António Francesko –SFRH/BPD/104204/2014 (100%)
2. Armando Ferreira –SFRH/BPD/102402/2014 (100%)
3. Bachu Rama Raju –SFRH/BPD/62881/2009 (until June 30th) (50%)
4. Carlos Costa –SFRH/BPD/112547/2015 (100%)
5. Catalina Mansilla –SFRH/BPD/105068/2014 (100%)
6. Clarisse Ribeiro –- SFRH/BPD/90870/2012 (100%)
7. Isabel Carvalho –- Projeto n° 006684 - Minho-BIO/04469 (50%)
8. Jaime Santos–Project Uminho/Bosch (UMINHO/BI/214/2016) (50%)
9. Joel Borges - UMINHO/BPD/15/2016 (85%)
10. José Pedro Basto da Silva –SFRH/BPD/92896/2013 (50%)
11. Mariana Marques – ERA-SIINN/0004/2013 (UMINHO/BPD/14/2016) (60%)
12. Paulo Rodrigues Botelho Fernandes –SFRH/BPD/92365/2013 (100%)
13. Pedro Costa –SFRH/BPD/110914/2015 (50%)
14. Pedro Libanio Martins–SFRH/BPD/96227/2013 (100%)
15. Sebastian Calderon Velasco – ERA-SIINN/0004/2013 (UMINHO/BPD/11/2016) (100%)
16. Sergey Pyrlin – European project TheLink (UMINHO/BGCT/08/2016) (100%)
17. Vanessa Cardoso – SFRH/BPD/98109/2013 (30%)
18. Vitor Correia – SFRH/BPD/97739/2013 (50%)
19. Yuliy Bludov – European Project Graphene FPA – 649953 (UMINHO/BPD/20/2016) (100%)

PhD Sudents

1 Abbas M.k. AL-Rjoub – Map -Fis Phd Program
2 Alshaarawi M. A. Salem - OCV Phd Program
3 Ana Isabel Amorim de Sousa - OCV Phd Program
4 Ana Rita Oliveira Rodrigues - Map -Fis Phd Program – FCT Fellowship
5 André Chaves - Science Phd Program – CAPES Fellowship
6 Atilla Goren - Science Phd Program – FCT Fellowship
7 Balaji Sompalle - Map -Fis Phd Program
8 César Bernardo - Map -Fis Phd Program – FCT Fellowship
9 Cláudia de Jesus Ribeiro Lopes - Science Phd Program – FCT Fellowship
10 Cristiana Alves - Engeneering Phd Program – FCT Fellowship
11 Daniel António da Silva Miranda - Science Phd Program
12 Diogo Cavaleiro – Engeneering Phd Program – Project Fellowship
13 Edgar Carneiro - Engeneering Phd Program – Project Fellowship
14 Eliana Tiba Gomes Grande - Science Phd Program
15 Filipe André Peixoto Oliveira - Map -Fis Phd Program – FCT Fellowship
16 Filipe da Costa Correia - Engeneering Phd Program – FCT Fellowship
17 Gabriel Mendes - Engeneering Phd Program – FCT Fellowship
18 George Luiz Machado Jr. – Material Engeneering Phd Program – CAPES Fellowship
19 Helena Isabel Ferreira Neves - Science Phd Program – FCT Fellowship
20 Hugo Gonçalves - Map -Fis Phd Program – FCT Fellowship
21 Ícaro Jael Mendonça Moura - Map -Fis Phd Program – CAPES Fellowship
22 Isabel Cristina Azevedo Machado de Araújo - Science Phd Program

23 Jivago Nunes - Engeneering Phd Program – FCT Fellowship
24 Juliana Dias - Science Phd Program
25 Juliana Filipa Gouveia Marques - Engeneering Phd Program – FCT Fellowship
26 Juliana Oliveira - Engeneering Phd Program – FCT Fellowship
27 Laura Hernández Moreno - OCV Phd Program
28 Lina Maria Rodrigues Cely - OCV Phd Program
29 Luísa Fialho - Engeneering Phd Program – Project Fellowship
30 Maria Francisca Pinto e Peixoto - OCV Phd Program
31 Nuno Miguel Teles Oliveira - Science Phd Program – FCT Fellowship
32 Paulo Sousa - Engeneering Phd Program – FCT Fellowship
33 Pedro Martins - Science Phd Program – FCT Fellowship
34 Renato Gonçalves - Engeneering Phd Program – FCT Fellowship
35 Ricardo Sousa - Science Phd Program – FCT Fellowship
36 Rita Ferreira - Engeneering Phd Program – FCT Fellowship
37 Rita Rebelo - Engeneering Phd Program – FCT Fellowship
38 Rute Juliana Ferreira Macedo de Araújo – OCV Phd Program
39 Salmon Landi - Science Phd Program – CAPES Fellowship
40 Santiago Escandón Garcia - OCV Phd Program
41 Sara Filomena Ribeiro Pimenta - Science Phd Program – FCT Fellowship
42 Serguey Roberto Cusato Junior - OCV Phd Program
43 Silvia Reis - Engeneering Phd Program – FCT Fellowship
44 Simone Rodrigues - Engeneering Phd Program – FCT Fellowship
45 Sofia Ferreira - Engeneering Phd Program
46 Stylianos Tsopanidis - Science Phd Program – Project Fellowship
47 Vania Pinto - Engeneering Phd Program – FCT Fellowship
48 Veniero Lenzi - Science Phd Program – Project Fellowship
49 Vitor Vasconcelos - Science Phd Program – FCT Fellowship

3. Research Groups

Research Group	Coordinator
Group of Atomic and Molecular Physics and Optics (FAMO)	Maria Elisabete C.D. Real Oliveira
Group of Cooperative Phenomena in Dielectrics (FCD)	Bernardo Gonçalves Almeida
Group of Physics of Nano Crystalline Materials (FMNC)	Mário António C. de Castro Pereira
Funtional Coatings Group (GRF)	Luis Rebouta
Complexity and Electronic Properties Group (GCEP)	Ricardo Mendes Ribeiro
Group of Optometry and Vision Science (OCV)	Jorge Jorge

4. Facilities and Infrastructure

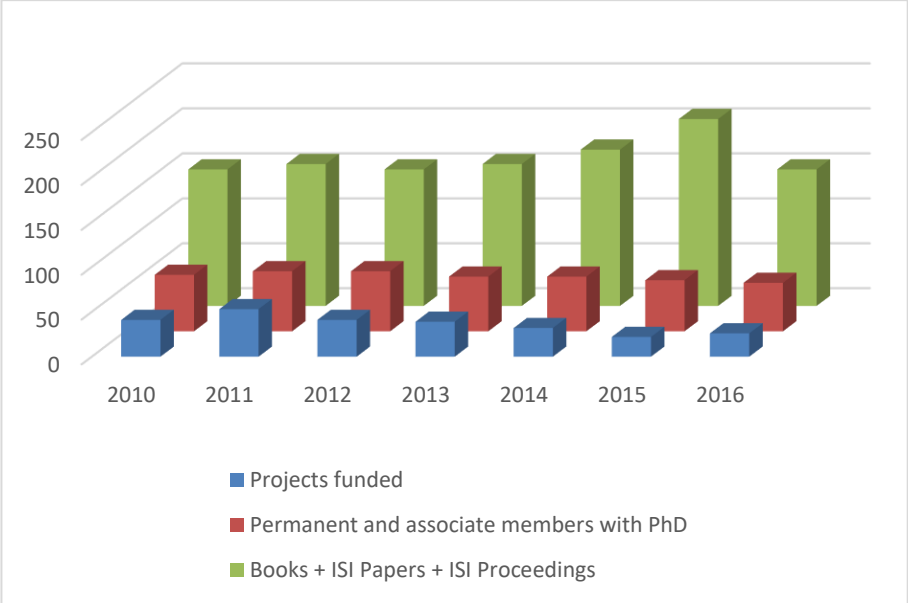
4.1 Research Laboratories

Laboratory – location	Group	Responsable
Biophysics – Gualtar	FAMO	Paulo Coutinho
Ceramics Research – Azurém	FMNC	Mário Pereira
Computational Physics – Gualtar	GRF	Luís Silvino Marques
Corrosion and electrochemical testings – Azurém	GRF	Sandra Carvalho
Crystal Growth – Gualtar	FCD	Etelvina de Matos Gomes
Doelectric Properties – Gualtar	FCD	Bernardo Gonçalves Almeida
Electromechanical properties of materials – Azurém	GRF	Senen Lanceros-Mendez
Femtosecond Laser Spectroscopy –Gualtar	FAMO	Michael Belsley
Fluorescence Lifetime Measurements – Gualtar	FAMO	Mário Rui Pereira
Functional Coatings I – Azurém	GRF	Martin Andritschky
Functional Coatings II – Azurém	GRF	Luis Rebouta
Functional Coatings III – Azurém	GRF	Filipe Vaz
Infrared Spectroscopy – Gualtar	FCD	Luís Vieira
Magnetic and Electromechanical Properties – Gualtar	FCD	Bernardo Gonçalves Almeida
Materials Processing – Azurém	GRF	Stanislav Ferdov
Microtopography – Gualtar	OCV	Manuel Filipe Costa
Visual Optics – Gualtar	OCV	Sandra Maria Braga Franco
Optoelectronics – Azurem	GRF	Carlos Tavares
Photoconductivity – Gualtar	GCEP	Fátima Cerqueira
Photophysics I – Gualtar	FAMO	Elisabete Coutinho
Photophysics II – Gualtar	FAMO	Elisabete Coutinho
Preparation – Azurém	GRF	Sandra Carvalho
Preparation I – Gualtar	FAMO	Elisabete Coutinho
Preparation II – Gualtar	FMNC	Maria de Jesus Gomes
Raman Spectroscopy and Photothermal Measurements – Gualtar	GCEP/GRF	Cacilda Moura / Francisco Macedo
Research in Clinical and Experimental Optometry – Gualtar	OCV	Jorge Jorge/ José Manuel Meijome
Science of Vision and Colour – Gualtar	OCV	Sérgio Miguel Cardoso Nascimento
Surface analysis – Azurem	GRF	Filipe Vaz
Thin Films I – Gualtar	FMNC	Maria Jesus M. Gomes
Thin Films II – Gualtar	FMNC	Mário Pereira
Visual Rehabilitation – Gualtar	OCV	António Baptista

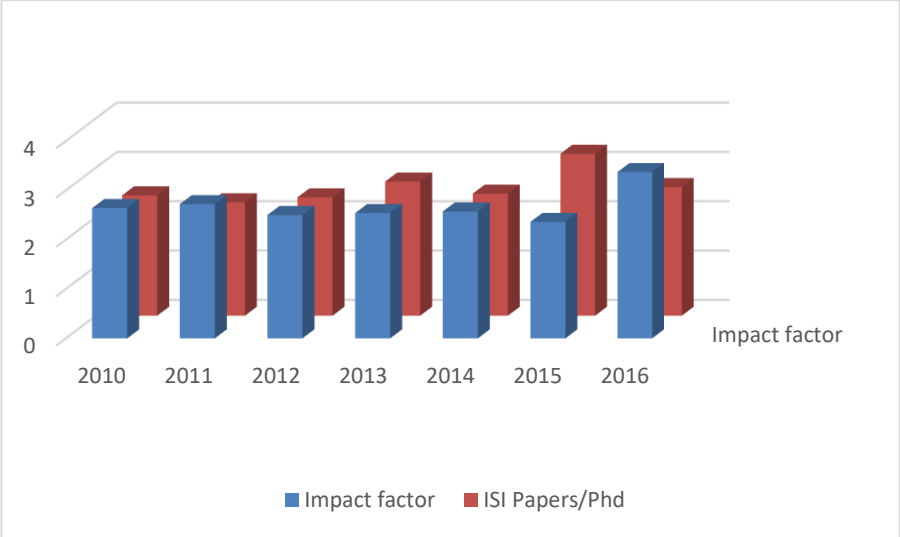
5. Indicators of the Centre Performance

5.1 Publications

Publications	Number
ISI papers (regular journal articles/ conference journal articles)	133/7
Books (Author/Edited)	4 /3
Book chapters	5
Patents (national /international)	1/1
Oral Presentations in Internationa Conferences (total/by invitation)	112/58

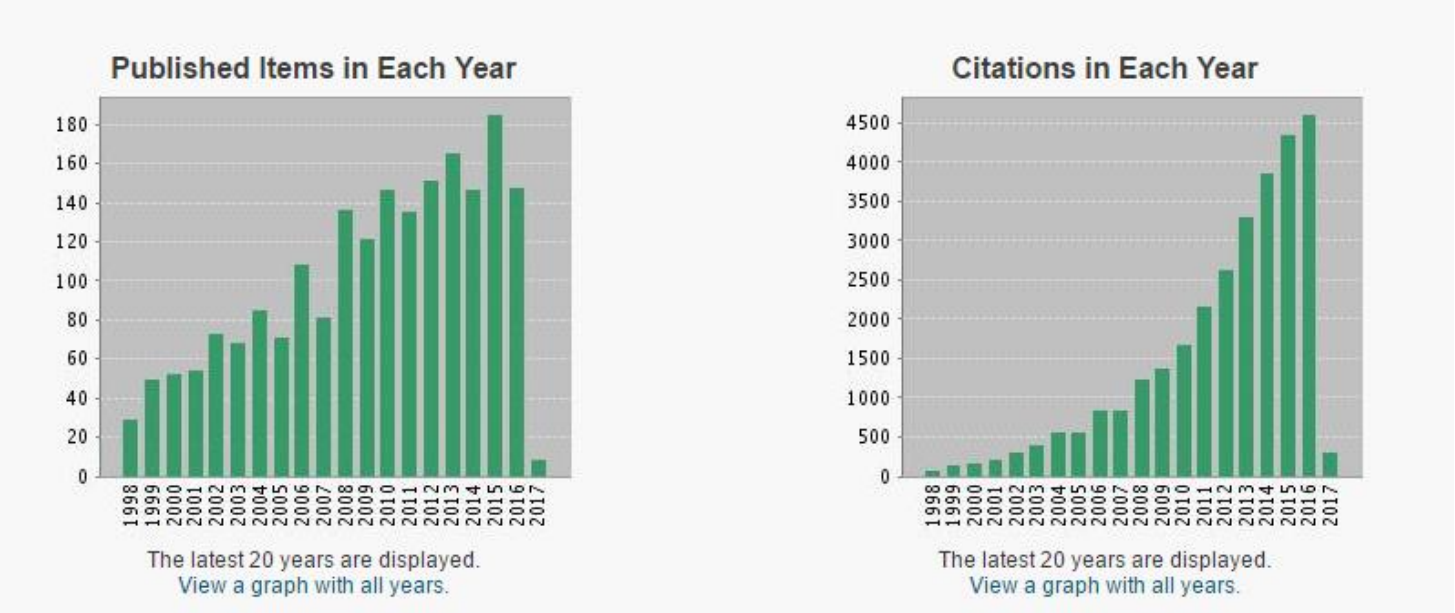


Graph. 1: Scientific production, number of members, and number os funded projects



Graph. 2: Number os Articles published by Phd member and average impact factor os journals where the articles were published

CFUM H-Index – According to Web of Science (ISI)

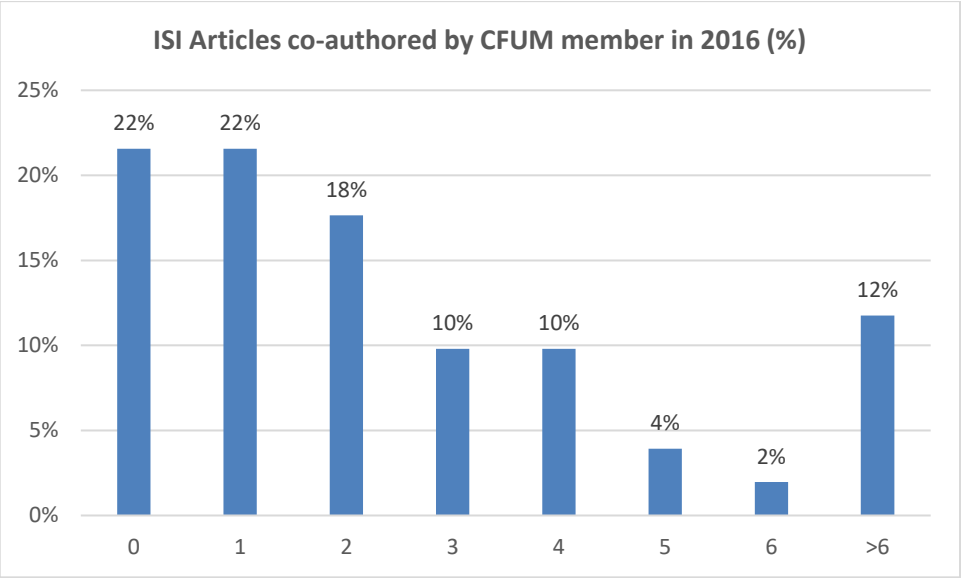


Results found:	2125
Sum of the Times Cited [?] :	29969
Sum of Times Cited without self-citations [?] :	24831
Citing Articles [?] :	21621
Citing Articles without self-citations [?] :	20164
Average Citations per Item [?] :	14.10
h-index [?] :	63

Image 1: Global data on Centre's publications and citations from ISI Web database

Sourse:Http://apps.webofknowledge.com/summary.do?locale=en_US&errorKey=&viewType=summary&SID=U2ynO9U6ROau1BwBVrg&product=WOS&page=1&qid=5&search_mode=CitationReport&colName=WOS

ISI Articles co-authored by CFUM members in 2016



Graph 3: Number of ISI articles co-authored by a Phd member in 2016; statistical frequencies

5.2 Seminars and Colloquia organised by the Centre

Seminar

José Caridad, DTU Nanotech

"An electrical analogy to Mie Scattering";

November 25th

Colloquium

José Luis Ribeiro, Centre of Physics, Uminho

"Topological phase transitions - Nobel Prize in Physics 2016"

December 7th

Scientific Conferences organized in the University of Minho by members of the Centre of Physics

XIII International Congress of Optometry and Vision Sciences. Universidade do Minho; Braga / Universidade do Minho, 23-24 April (Grupo OCV)

26° Encontro Ibérico para o Ensino da Física, Bernardo Almeida, Luís Cunha, Marta Ramos.

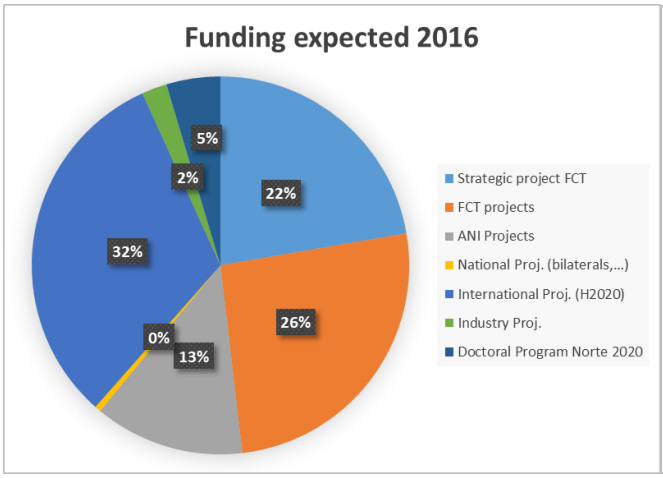
5.3 PhD and MSc degree leading projects at the Centre

MASTERS THESES	ONGOING (70) COMPLETED (64)
PH.D. THESES (ECUM/TOTAL)	ONGOING (31/49) COMPLETED (7/12)

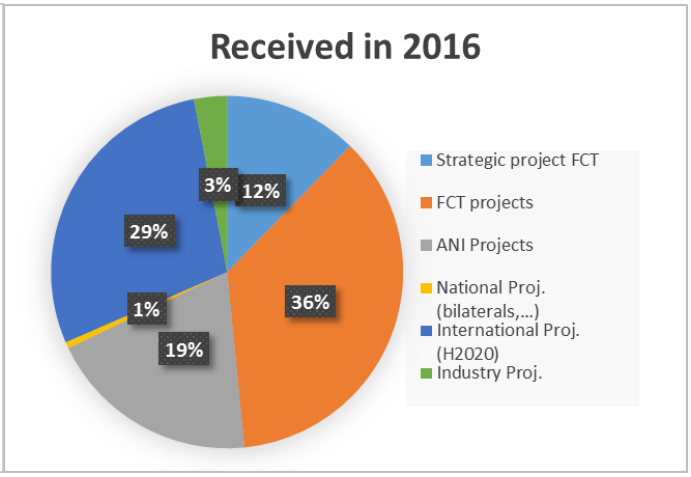
5.4 Funding

5.4.1 Summary

	Global Funding UM	Expected in 2016	Received in 2016	Expenses paied in 2016	Nº of ongoing projects
Strategic project FCT	510 000.00€	170 000.00€	83 809,20 €	57 699,52 €	1
FCT projects	947 260.00€	197 140.64€	245 690,58 €	102 777,73 €	12
ANI Projects	449 358.82€	98 107.44€€	132 395,75 €	27 273,47 €	3
National Proj. (bilaterals,...)	8 000.00€	4 000.00€	4 000,00 €	4 300,00 €	1
International Proj. (H2020)	1 010 830.72€	241 645.01€	193 832,00 €	158 445,21 €	4
Industry Proj.	28 535.42€	16 474.57€	20 585,67 €	20 789,34 €	3
Doctoral Program Norte 2020	317 250.00€	35 250.00€	0€	0€	1
Total	**3 271 234.99€**	**767 209.63€**	**680 313,20 €**	**371 285,27 €**	**26**



Graph. 4: Funding Expected in 2016



Graph.5: Funding received in 2016

5.4.2 Individual projects ongoing

Reference	Title	Researcher	Funding entity	Start date	End date	Global Budget - UM
ReleaseME - 019803	**ReleaseME** - MICRO- OR NANOCAPSULES HAVING PHOTOCATALYTIC PROPERTIES FOR CONTROLLED RELEASE OF DIFFUSING AGENTS AND RESPECTIVE METHOD OF OBTAINMENT	Carlos Tavares	ANI Projects	01-09-2016	31-08-2019	55 859,37 €
PLASCOAT -003493	**PLASCOAT** -PVD (Physical Vapour Deposition) and PECVD (Plasma Enhanced Chemical Vapour Deposition)	Filipe Vaz	ANI Projects	01-01-2016	31-12-2018	236 436,89 €
SAM - 017620	**SAM -** Smart Active Mould	Filipe Vaz	ANI Projects	01-10-2016	30-09-2019	157 062,56 €
Graphene Flagship- 604391	**Graphene - Flagship** - Combination of Collaborative Projects and Coordination and Support Actions – FET Flagships	Nuno Peres	CE	01-10-2013	31-03-2016	275 520,00
THELINK 642890	**THELINK** - European Training Network to Accelerate the Development Chain of Nanostructured Polymers	Marta Ramos	CE	01-11-2014	31-10-2018	443 016,72
Voyage EAC/A04/2014	**Voyage** - Opportunities for the young and graduates employability in Vietnam	Filipe Costa	CE	15-10-2015	14-10-2018	40 306,00 €
GrapheneCore1 - 696656	**GrapheneCore1** - Graphene-based revolutions in ICT and beyond	Nuno Peres	CE	01-04-2016	31-03-2018	251 988,00 €
IF/00498/2012	**NANOTHERAPEUTICS:** DEVELOPMENT OF BIONANOSYSTEMS FOR DRUG DELIVERY	Marlene Lúcio	FCT Projects	02-09-2013	01-09-2018	50 000,00
IF/01516/2013	**DNTOSIETAA** -Design of New Tetrahedral-Octahedral Silicates via Ion Exchange - Towards Advanced Applications	Stanislav Ferdov	FCT Projects	01-01-2015	31-12-2018	50 000,00
IF/00671/2013	**SUPROCOAT** - Super Protective Coatings (SUPROCOAT): MAX/Lubricant nanocomposite coatings deposited at low temperature by magnetron sputtering	Diego Martinez	FCT Projects	01-01-2015	30-06-2017	50 000,00
ERA-SIINN/0004/2013	**NANOSAFELEATHER** - The effect on human health of Ag/TiO2NM-treated leathers for footwear industry	Sandra Carvalho	FCT Projects	01-01-2015	31-12-2017	125 364,00

PTDC/FIS-OPT/0677/2014	**EyElectro** - OPTICAL CUSTOMIZATION OF ELECTRIPHYSIOLOGICAL RETINAL ACTIVITY IN HUMANS	José Manuel Meijome	FCT Projects	01-06-2016	01-06-2019	185 546,00 €
PTDC/FIS-NAN/3668/2014	**LA2D** - Large area two dimensional heterostructures for photodetectors	Ricardo Mendes Ribeiro	FCT Projects	01-07-2016	01-07-2019	58 380,00 €
PTDC/CTM-ENE/2892/2014	**ABSOLAR** - Solar selective absorber for high temperature applications	Luís Rebouta	FCT Projects	01-07-2016	30-06-2019	83 748,00 €
PTDC/CTM-NAN/4242/2014	**ClusterStent** - Clusters bimetálicos para ação antimicrobiana controlada em stents	Sandra Carvalho	FCT Projects	01-07-2016	01-07-2019	100 895,00 €
PTDC/FIS-NAN/1154/2014	**NANOSENSING** - Semiconductor nanocomposite thin films composed of noble metal nanoparticles dispersed in reactive metaloxide matrixes for LSPR gas sensing applications	Filipe Vaz	FCT Projects	01-07-2016	30-06-2019	85 584,00 €
PTDC/CTM-ENE-2349/2014	**HIT-RIB** - Development of heterojunction silicon ribbon solar cells	Fátima Cerqueira/Pedro Alpuim	FCT Projects	01-07-2016	30-06-2018	58 815,00 €
PTDC/CTM-NAN/2418/2014	**NANOCONCOR -** New nanocontainers with extended functionality based on layered double hydroxides for application in corrosion protection	Luís Vieira	FCT Projects	01-05-2016	30-04-2019	20 400,00 €
PTDC/CTM-ENE/5387/2014	**PrintPV** - Large-scale printing of novel photovoltaics based on Cu (In, Ga) Se2 chalcoprite	Senen Lanceros Mendez	FCT Projects	01-06-2016	31-05-2019	78 528,00 €
UID/FIS/04650/2013	Physics Center of Minho and Porto Universities	Mihail Vasilevskiy	Strategic Poject	01-01-2015	01-12-2016	510 000,00 €
Doctoral Program - SURFPROTEC	**SURFPROTEC** - Doctoral Program on Surface and Protection Engineering	Sandra Carvalho	Programa Doutoral - Norte 2020	01-09-2015	31-08-2019	317 250,00 €
Sunshine - Project Bilaterals FCT/DAAD	**SUNShiNE -** Sensing and stimUlatioN System using nano-engineered Electrodes for biomedical muscle feedback applications	Filipe Vaz	FCT Bilaterals	01-01-2016	31-12-2017	4 000,00 €
Hybnanocomb - Project Bilaterals FCT/DAAD	**Hybnanocomb** - Hybrid nanocarriers for combined gene and chemotherapy	Elisabete Oliveira	FCT Bilaterals	01-01-2015	01-12-2016	4 000,00 €

5.5 Scientific Production Indicators by group in 2016

	FAMO	FCD	FMNC	GRF	GCEP	OCV	TOTAL
N° Effective Members with Ph.D.	9	5	2	14	9	12	51
N° Associate Members	0	1	0	1	0	1	3
N° Post-Docs (total in 31/12/2016)	1	7	1	7	2	1	19
Book (Authored-Edited)	0-0	0-1	0 – 0	4 – 0	0 – 0	0-2	4 – 3
Book Chapters	1	0	0	0	0	4	5
Regular articles published in ISI Journals	11 1/2	48	8	22 1/2	20	23	133
Average Impact factor	3.73	3.24	2.54	4.48	4.08	1.80	3.37
Conference Proceedings (ISI)	1	0	2	2	2	0	7
Invited Talks in Scientific Conferences (National/International)	3-1	3-3	0-0	2-14	2-12	4-28	14-58
PhD Theses concluded	1	1	0	5	1	4	12
PhD Theses in progress	4	11	1	16	8	9	49
Externally funded R&D projects (National sourses, FCT, ADI)*	1	2	0	9	2	1	15
Externally funded R&D projects (International sourses, H2020)	0	0	0	1	2	1	4
Bilateral Cooperation Projects	1	0	0	1	0	0	2
Collaboration Projects with Industry	1	0	0	2	0	0	3
Doctoral Program	0	0	0	1	0	0	1
Patents (national/international)	0 – 0	1 – 0	0 – 0	0 – 1	0 – 0	0 – 0	1 – 1

*PE and not included

6 Scientific Performance by Groups

6.1 Atomic, Molecular and Optical Group (FAMO)

6.2.1 Updated composition of the group

Principal investigator	Maria Elisabete C.D. Real Oliveira
Research area	Photophysics, Photochemistry, Biophisics, Nanomaterials
Group Members	Effective members: Elisabete M. S. Castanheira Coutinho – Assistant Professor Eduardo Pereira – Assistant Professor Mário Rui C. Pereira – Assistant Professor Paulo J. G. Coutinho – Assistant Professor Maria Teresa R. Viseu – Assistant Professor Julia B. Tovar Ayres de Campos – Assistant Professor Maria Elisabete CD Real Oliveira – Associate Professor with Habilitation Michael Scott Belsley – Associate Professor with Habilitation Marlene S. D. Lúcio – FCT Researcher and Invited Associate Professor Post Doctoral Researchers and Research Fellows with Ph.D. Bachu Rama Raju – FCT grant PhD and other research students : -Ana Rita O. Rodrigues, MAP-Fis PhD student, FCT grant -Sara F. R. Pimenta, Biomedical Eng. PhD student (30% CFUM) -Hugo Gonçalves, Map-Fis PhD student, FCT grant -César Bernardo, Map-Fis PhD student, FCT gant

6.2.2 Summary description of the scientific work carried out by the group in 2016

- Development of inexpensive processes for production of nanoparticles (quantum dots, metallic and magnetic nanoparticles) based on templating with microheterogeneous media under mild conditions, surface functionalization and coupling with benzophenoxazine derivatives.
- Development of magnetoliposomes (liposomes containing magnetic nanoparticles) as antitumor drug carriers and hyperthermia agents for dual cancer therapy.
- Development of innovative blood analogue fluids based on Giant Unilamellar Vesicles (GUVs).

- Evaluation of new biocompatible peptide-based hydrogels (synthesized at CQUM) as drug nanocarriers.
- Synthesis of perovskites and semiconductor films (by spray pyrolysis) for environmental applications (photodegradation, photoproduction of H2, solar cells).
- Fluorescence and diffuse reflectance measurements on tissue phantoms using specifically fabricated optical filters included in a miniaturized system for early detection of gastrointestinal cancer.
- Development of high-throughput screening methods for in vitro pharmacokinetic profiling of newly synthesized drugs (synthesized by CIQUP) and bioactives after encapsulation in nanocarriers.
- Development and characterization of liposomal based hybrid formulations for cancer treatment, with co-delivery of drugs and siRNA with passive targeting strategies and pH triggering strategies
- Development and characterization of liposomal based hybrid formulations for age related neurodegenerative diseases treatment, with co-delivery of bioactive compounds of natural extracts (extractions made at CBMA of UM).
- Development and characterization of lipid nanoparticles and nanostructured lipid carriers (NLC) as carriers of anti-viral drugs to develop a cosmeceutic formulation.
- Development and characterization of polymeric nanofibers produced by electrospinning for the encapsulation of drugs as antiviral and anticancer therapies.
- Synthesis of carbon dots for cancer theranostics purposes.

6.2.3 Future research

- The synthesis of semiconductor, magnetic and metallic nanoparticles will be continued and surface functionalization towards the production of bionanosensors will be developed.
- The development of magnetoliposomes for dual cancer therapy will be continued, both as hyperthermia agents and antitumor drug nanocarriers. Magnetoliposomes with controlled magnetic response for biomedical applications will be pursued.
- The development of innovative blood analogue fluids based on Giant Unilamellar Vesicles (GUVs) will be continued.
- The application of new biocompatible peptide-based hydrogels as drug nanocarriers will be developed.
- The environmental applications of nanoparticles (quantum dots, perovskites), namely photodegradation and solar energy conversion (Grätzel cells, water splitting), will be investigated.
- The development of lipid based nanocarriers will be continued for the encapsulation of different drugs and bioactives, for pharmaceutical, cosmetical and nutraceutical applications.
- Optimization of graphen oxide dots synthesis.
- Hybrid nanocarriers for cancer therapy will be improved by conjugation of tunable lipid nanocarriers with anticancer therapy, genetic therapy, triggering strategy and diagnostics.
- Polymeric nanofibers fabricated by electrospinning will be produced as a medical device for intravaginal anti-retroviral prophylaxis.

6.2.4 Scientific Production

6.2.4.1 Regular articles published in ISI Journals

Magnetoliposomes based on Manganese Ferrite Nanoparticles as Nanocarriers for Antitumor Drugs", Ana Rita O. Rodrigues, José M. F. Ramos, I. T. Gomes, Bernardo G. Almeida, J. P. Araújo, Maria-João R. P. Queiroz,

Paulo J. G. Coutinho, Elisabete M. S. Castanheira, RSC Advances, 6 (2016) 17302-17313; http://hdl.handle.net/1822/40493

Peptaibolin analogues by incorporation of α,α-dialkylglycines: synthesis and study of their membrane permeating ability", Vânia I. B. Castro, Carina M. Carvalho, Rui D. V. Fernandes, Sílvia M. M. A. Pereira-Lima, Elisabete M. S. Castanheira, Susana P. G. Costa, Tetrahedron, 72 (2016) 1024-1030; http://hdl.handle.net/1822/39800

Interaction of fluorescent quinolin-2-one and coumarin derivatives including dipeptides with lipid bilayers", Ana S. Abreu, Bruno F. C. Hermenegildo, Paula M. T. Ferreira, Maria-João R. P. Queiroz, Elisabete M. S. Castanheira, RSC Advances, 6 (2016) 72141-72148; http://hdl.handle.net/1822/43407

Synthesis, photophysical characterisation and photostability studies of NIR probes with aliphatic, aromatic and chlorinated terminals in 5- and 9-amino positions of benzo[a]phenoxazines", B. Rama Raju, Marcello M. T. Carvalho, Maria Inês P. S. Leitão, Paulo J. G. Coutinho, M. Sameiro T. Gonçalves, Dyes and Pigments, 132 (2016) 204-212 http://hdl.handle.net/1822/44055

Synthesis and photophysical studies of new benzo[a]phenoxazinium chlorides as antifungal agents", M. Inês P. S. Leitão, B. Rama Raju, Sarala Naik, Paulo J. G. Coutinho, Maria João Sousa, M. Sameiro T. Gonçalves, Tetrahedron Letters, 57 (2016) 3936-3941 http://hdl.handle.net/1822/44062

Role of counter-ion and helper lipid content in the design and properties of nanocarrier systems: a biophysical study in 2D and 3D lipid assemblies", A. C. N. Oliveira, S. S. Nogueira, O. Goncalves, M. F. Cerqueira, P. Alpuim, J. Tovar, C. Rodriguez-Abreu, G. Brezesinski, A. C. Gomes, M. Lúcio and M.E. C. D. Real Oliveira, RSC Advances, 6 (2016) 47730-47740, (DOI: 10.1039/C6RA08125H), (impact factor: 3.289)). http://hdl.handle.net/1822/43915.

Protective effect of antigen delivery using monoolein-based liposomes in experimental hematogenously disseminated candidiasis", Catarina Carneiro, Alexandra Correia, Tânia Lima, Manuel Vilanova, Célia Pais, Andreia C. Gomes, M. Elisabete C.D. Real Oliveira, Paula Sampaio, Acta Biomaterialia 39 (2016) 133–145, http://dx.doi.org/10.1016/j.actbio.2016.05.001 http://hdl.handle.net/1822/43915

Counter ions and constituents combination affect DODAX : MO nanocarriers toxicity in vitro and in vivo", Ana Cristina Norberto Oliveira, Marisa Passo Sárria, Pedro Moreira, Joana Fernandes, Lisandra Castro, Ivo Lopes, Manuela Côrte Real, Artur Cavaco Paulo, M. Elisabete C. D. Real Oliveira and Andreia Castro Gomes, Toxicol. Res., 2016, 00, 1–12, DOI: 10.1039/c6tx00074f http://hdl.handle.net/1822/43920.

Monoolein-based nanocarriers for enhanced folate receptor-mediated RNA delivery to cancer cells", Lopes I, C N Oliveira A, P Sárria M, P Neves Silva J, Gonçalves O. Gomes AC, M.ECD Real Oliveira, J Liposome Res. 2016 Sep;26(3):199-210. Doi: 10.3109/08982104.2015.1076463 http://hdl.handle.net/1822/43914

Inducible fluorescent speckle microscopy; Pereira, Antonio J, Aguiar, Paulo, Belsley, Michael, Maiato, Helder; JOURNAL OF CELL BIOLOGY,Volume: 212 Issue: 2 Pages: 245-255 (2016); DOI: 10.1083/jcb.201506128;; http://hdl.handle.net/1822/43632.

Push-pull second harmonic generation chromophores bearing pyrrole and thiazole heterocycles functionalized with several acceptor moieties: Syntheses and characterization; Castro, M. Cidalia R., Belsley, M., Raposo, M. Manuela M.; DYES AND PIGMENTS, Volume: 128 Pages: 89-95 (2016); DOI: 10.1016/j.dyepig.2016.01.015;, http://hdl.handle.net/1822/43862

Synthesis and characterization of push-pull bithienylpyrrole NLOphores with enhanced hyperpolarizabilities; Castro, M. Cidalia R., Belsley, M., Raposo, M. Manuela M., DYES AND PIGMENTS Volume: 131 Pages: 333-339 (2016);DOI: 10.1016/j.dyepig.2016.04.027, http://hdl.handle.net/1822/43863

Long range energy transfer in graphene hybrid structures; Goncalves, Hugo, Bernardo, Cesar, Moura, Cacilda, Ferreira, R. A. S., Andre, P. S., Stauber, Tobias, Belsley, Michael, Schellenberg, Peter; JOURNAL OF PHYSICS D-APPLIED PHYSICS, Volume: 49 Issue: 31Article Number: 315102 (2016); DOI: 10.1088/0022-3727/49/31/315102; http://hdl.handle.net/1822/43630.

6.2.4.2 Book Chapter

Chapter

Advances towards a Miniaturized Optical System for Gastrointestinal Cancer Detection Using Diffuse Reflectance and Fluorescence Spectroscopies", Sara Pimenta, Susana Cardoso, Elisabete M. S. Castanheira, Graça Minas, in Gastrointestinal Cancers: Prevention, Detection and Treatment, Volume 1, Chapter 13, Amit Kumar Tyagi and Sahdeo Prasad (Editors), Nova Publishers, New York, 1 Dec. 2016; ISBN: 978-1-53610-168-3.

6.2.4.3 Conference Proceedings

Spectroscopic Studies as a Biophysical Toolbox for Pharmacokinetic Drug Profiling", M. Lúcio, Biophysical Journal, 110 (2016): 347a, (DOI: 10.1016/j.bpj.2015.11.2015)

6.2.4.4 Master theses completed in 2016

Author	**Supervisor**	**Title**	**Enrollment (ECUM/other school)**
António Manuel Torres Gonçalves	Mario Rui Pereira	Relatório de actividade profissional – Mestrado em Ciências – Formação contínua de Professores	ECUM
Paula Alexandra Ribeiro Faria	Mario Rui Pereira	Relatório de actividade profissional – Mestrado em Ciências – Formação contínua de Professores	ECUM
Elsa Sofia de Poço Mata	Julia Maria Simões Dias Barata de Tovar A. Campos	Relatório de actividade profissional – Mestrado em Ciências – Área de especialização em Física e Química	ECUM
Cristina Tavares Vilela Rasa Ozolina	Julia Maria Simões Dias Barata de Tovar A. Campos Jana Nieder (INL); Marlene Lúcio; Jari Hyttinen (TU Tampere)	Relatório de actividade profissional – Mestrado em Ciências – Área de especialização em Física e Química	ECUM Technological University of Tampere; ECUM and INL
Denise Andreia Mota Carvalho	Rui A. Lima (IPB e EEUM); Elisabete M. S. Castanheira Coutinho	Desenvolvimento e estudo em microcanais de fluidos inovadores análogos ao sangue baseados em vesículas unilamelares gigantes	(08 Jun 2016) ECUM; I. P. Bragança
Sílvia Rodrigues Gavinho	Elisabete M. S. Castanheira Coutinho; Paulo J. G. Coutinho	Desenvolvimento de magneto-lipossomas baseados em nanopartículas de ferrite de cálcio para aplicações na entrega de fármacos antitumorais	(13 July 2016) ECUM

Rasa Ozolina	Jana Nieder (INL); Marlene Lúcio; Jari Hyttinen (TU Tampere)	Smart delivery systems for cancer treatment using advanced liposome formulations: fabrication, spectroscopic characterization and cell internalization studies	Technological University of Tampere; ECUM and INL (08 Jun 2016)

6.2.4.5 Master theses in progress in 2016

Author	**Supervisor**	**Title**	**Enrollment (ECUM/other school)**
Maria Gorete Gomes Afonso	Teresa Maria Viseu	À luz da ótica: atividades experimentais no ensino secundário Relatório de actividade profissional – Mestrado em Ciências – Área de especialização em Física e Química	ECUM
Maria Margarida de Almeida Cautela	Paulo J. G. Coutinho; Senen Lanceros-Mendéz	Dispositivos biossensoriais baseados na associação de biomoléculas a superfícies de ouro	ECUM (since October 2015)
Francisca Carmo Torre Fernandes	Elisabete M. S. Castanheira Coutinho; Paulo J. G. Coutinho	Otimização de formulações magnetolipossómicas	ECUM
Fernando Miguel Gonçalves Costa	Elisabete M. S. Castanheira Coutinho; Paula M. T. Ferreira (CQUM)	Síntese de novos hidrogéis peptídicos e avaliação como nanossistemas de transporte de fármacos	(since October 2015) ECUM
Diogo Manuel Pacheco Teixeira	Paulo J. G. Coutinho	Células fotovoltaicas de Grätzel usando cossensibilização de pontos quânticos de CdSe/CdTe	(since October 2015) ECUM
Jacinto João Lemos Freitas	Paulo J. G. Coutinho	Células fotovoltaicas de Grätzel usando cossensibilização com um filme de CTS (Cu2Sn(S1-x,Sex)3) e pontos quânticos de CdSe	(since October 2015) ECUM
Sara Daniela Pimentel Guimarães	Paulo J. G. Coutinho; Elisabete M. S. Castanheira Coutinho	Fotodegradação de efluentes usando perovskites mistas de (Zn,Co)TiO3 dopadas com flúor	(since October 2015) ECUM

Gustavo Adolfo Coelho Marin	Madalena Lira; Elisabete M. S. Castanheira Coutinho	Influência da Potência e do Material das Lentes de Contacto na Transmitância, Refletância e Índice de Refração	(since October 2015) ECUM (since October 2015)
Celia de Jesus Sousa Barbosa	Hernâni Gerós (CBMA/UM); M. E.C.D. Real Oliveira	Avaliação do potencial terapêutico de nanoformulações contendo resveratrol	ECUM (since October 2015)
Ana Cláudia Rodrigues Candeias	Marlene Lúcio; Alberto Dias (CBMA/UM)	Desenvolvimento de extratos naturais nanoencapsulados como estratégias promissoras na 23ehavior23le23it	ECUM (since October 2015)
Telma Bezerra Soares	M.E.C.D. Real Oliveira; Alberto Dias (CBMA/UM)	Desenvolvimento de nanossistemas para a encapsulação de agentes neuroprotetores	ECUM (since October 2015)
Eduarda Barbosa Fernandes	Marlene Lúcio; Jana Nieder (INL)	Perfil ADMET de parâmetros farmacocinéticos para apoio à síntese de novos fármacos	ECUM, INL (since October 2015)
Juliana Filipa Gomes Silva	Marlene Lúcio; Carla M. Lopes (FCS-UFP)	Desenvolvimento de uma formulação dermocosmética para o tratamento e prevenção de infeções herpéticas	ECUM, FCS-UFP (since October 2015)
Beatriz Dias Cardoso	Elisabete M. S. Castanheira Coutinho; Paulo J. G. Coutinho	Stealth magnetoliposomes based on mixed ferrites for dual cancer therapy	ECUM (since October 2016)
Daniela Sofia Marques Pereira	Elisabete M. S. Castanheira Coutinho; Paulo J. G. Coutinho Elisabete M. S. Castanheira Coutinho	Magnetic drug nanocarriers for breast cancer therapy	ECUM
Carlos Adalberto Brito Magalhães	Elisabete M. S. Castanheira Coutinho	Multifunctional magnetic drug nanocarriers based on peptide-derived hydrogels containing naproxen and/or RGD	(since October 2016) ECUM

Maria Lúcia Miranda Gomes	Paulo J. G. Coutinho; Cacilda Moura	SERS nanotags based on gold or silver nanoparticles decorating superparamagnetic calcium ferrite nanoparticles	(since October 2016) ECUM
Daniela Ferreira Gomes	Paulo J. G. Coutinho; Teresa Castelo-Grande (LEPABE/FEUP)	Magnetoliposomes with controlled magnetic response for biomedical applications	(since October 2016) ECUM, FEUP
Tiago Miguel Castro Costa	Teresa Viseu; Marlene Lúcio	Development of a nanostructured co-delivery scaffold for Acyclovir and omega-3 fatty acids via electrospinning	(since October 2016) ECUM
Tatiana Jorge Torres Vilhena Ventura	Marlene Lúcio; Teresa Viseu	Development of a nanostructured co-delivery scaffold for Doxorubicin and siRNA via electrospinning	(since October 2016) ECUM
Rita Falcão Baptista Ribeiro Mendes	Marlene Lúcio; Susana Freitas (IST-UL)	Graphene quantum dots for a theranostic approach to cancer treatment	(since October 2016) ECUM/IST-UL

6.2.4.6 Ph.D. theses in progress in 2016

Author	**Supervisor**	**Title**	**Enrollment (ECUM/other school)**
Hugo Gonçalves	M. Belsley	Unusual photonic properties of doped nano-structured polymeric fibers	ECUM (Prog. Doutoral MAP-fis)
César Bernardo	M. Belsley e M. Vasilevskiy	Energy transfer dynamics and light-harvesting in Quantum Dots structures	ECUM
Ana Rita Oliveira Rodrigues	Elisabete M. S. Castanheira Coutinho; Paulo J. G. Coutinho	Magnetoliposomes based on nickel, nickel ferrite or manganese ferrite nanoparticles as nanocarriers for potential antitumor drugs	(Prog. Doutoral MAP-fis) ECUM (since March 2013)
Sara Filomena Ribeiro Pimenta	Graça Minas (DEI-EEUM); Elisabete M. S. Castanheira Coutinho (CFUM)	Spectroscopy integrated in a microsystem for early gastrointestinal cancer detection	EEUM; ECUM (Prog. Doutoral Engenharia Biomédica)

6.2.4.7 Ph.D. theses completed in 2016

Author	Supervisor	Title	Enrollment (ECUM/other school)
Ana Cristina Norberto Gonçalves de Oliveira	M. Elisabete C.D. Real Oliveira; Andreia F. Gomes, Kevin Braeckmans (Ughent)	Development of Monoolein-based lipofection vectors for therapeutic siRNA delivery http://hdl.handle.net/1822/40786	ECUM (Prog. Doutoral Biologia Molecular e Ambiental – Especialidade em Biologia Celular e Saúde) (January 2016)

6.2.5 Other scientific activities

Conference organization

International

3rd Conferência internacional Medical Physics & Biophysics, 7th-8th Novembro 2016, Barcelona, Spain. Maria Elisabete C. D. Real Oliveira (Member of the Organizing committee).

6.2.5.1 Invited Lectures/seminars delivered by members of the group in national or international conferences

International

Monoolein based nanocarriers for medical applications" Maria Elisabete C. D. Real Oliveira,Plenary lecture presented at the 3rd International Conference on Medical Physics & Biomedical Engineering, Barcelona (Spain), 07-08 November 2016.

National

Técnicas Biofísicas ao Serviço do Desenvolvimento de Sistemas Nanoterapêuticos", Marlene Lúcio,invited lecture presented at Encontro Nacional de Estudantes de Física (ENEF), Braga (Portugal), 18-21 February 2016.

(Bio)nanosystems based on quantum dots, plasmonic or magnetic nanoparticles", Paulo J. G. Coutinho, CIÊNCIA 2016 – Encontro com a Ciência e Tecnologia em Portugal, Sessão: Nanociências e Nanotecnologias, Centro de Congressos de Lisboa, 4-6 july 2016.

Bionanosystems for therapy purposes: characterizationas part of safe-by-design"Marlene Lúcio, invited lecture presented at Workshop: Bionanosystems characterization, FCT-UNL, Lisboa (Portugal), 19-21 October 2016.

6.2.6 Other information

6.2.6.1 Other conference presentations given by members of the group in national or international conferences

- International

Oral

Permeation of model membranes by Peptaibolin mimetics bearing different a,a-dialkylglycines", Carina M. Carvalho, Vânia I. B. Castro, Sílvia M. M. A. Pereira Lima, Elisabete M. S. Castanheira, Susana P. G. Costa, 15EPI – 15th Iberian Peptide Meeting, Porto (Portugal), 10-12 February 2016.

Magnetoliposomes based on manganese ferrite nanoparticles as nanocarriers for antitumor drugs", Ana Rita O. Rodrigues, José M. F. Ramos, I. T. Gomes, Bernardo G. Almeida, J. P. Araújo, Maria João R. P. Queiroz, Elisabete M. S. Castanheira, Paulo J. G. Coutinho, NanoPT2016 – International Conference in Nanoscience and Nanotechnology 2016, Braga (Portugal), 16-19 February 2016.

Spectroscopic studies as a biophysical toolbox for pharmacokinetic drug profiling", M. Lúcio, 60th Annual Meeting of the Biophysical Society, Los Angeles (USA), 27 February-2 March 2016; http://www.biophysics.org/Portals/57/pdfs/ProgramBook.pdf.

Novel pharmaceutical vehicle for paclitaxel: taking advantage of nanocarriers with increased lipid content for encapsulation of lipophilic drugs", Ana M. Carvalho, M.E.C.D. Real Oliveira, Andreia C. Gomes, M. Lúcio, 5th Portuguese Young Chemists Meeting (5th PYCheM) and 1st European Young Chemists Meeting (1st EYCheM), Guimarães (Portugal), 26-29 April 2016.

Flow behaviour in microchannels of na innovative blood analogue fluid based on Giant Unilamellar Vesicles", Denise A. M. Carvalho, Ana Rita O. Rodrigues, Vera Faustino, Olga Ferreira, Rui A. Lima, Elisabete M. S. Castanheira, XXII Encontro Luso-Galego de Química, Bragança (Portugal), 9-11 Nov. 2016.

Magneto-sensitive liposomes containing manganese ferrite nanoparticles as nanocarriers for new promising antitumor thienopyridin-amine derivatives", Ana Rita O. Rodrigues, Ricardo C. Calhelha, Juliana M. Rodrigues, Isabel C. F. R. Ferreira, Maria-João R. P. Queiroz, Paulo J. G. Coutinho, Elisabete M. S. Castanheira, NanoBio&Med Conference 2016, Barcelona (Spain), 22-24 November 2016; http://hdl.handle.net/1822/43409.

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Biophysical characterization, nanoscale composition and cell uptake studies of pH-sensitive drug delivery systems" Jana B. Nieder, Rasa Ozolina, Ana M. Carvalho, Vânia Vilas-Boas, M.E.C.D. Real Oliveira, Marlene Lucio, Nano-Optics, from Principles to Basic Research and Applications (14th IUVSTA School), Braga (Portugal), 11-15 April 2016.

Development of nanoparticles for antimicrobial protection of leather coatings", Inês Pinheiro, Maria José Alves, P. J. G. Coutinho, E. M. S. Castanheira, 5th Portuguese Young Chemists Meeting (5th PYCheM) and 1st European Young Chemists Meeting (1st EYCheM), Guimarães (Portugal), 26-29 April 2016.

Paclitaxel pharmaceutical profiling aiming the optimization of a novel lipid nanotherapy", Ana M. Carvalho, Justine Demaitre, Jana Nieder, M.E.C.D. Real Oliveira, M. Lúcio, 5th Portuguese Young Chemists Meeting (5th PYCheM) and 1st European Young Chemists Meeting (1st EYCheM), Guimarães (Portugal), 26-29 April 2016.

Development of a lipid based nanoformulation for delivery of acyclovir", Carla M. Lopes, Juliana Silva, M.E.C.D. Real Oliveira, M. Lúcio, The 4th Conference on: Innovation in Drug Delivery, Antibes, Juan-les-Pins (France), 25-28 Setember 2016.

Biophysical characterization, nanoscale composition and cell uptake studies of pH-sensitive drug delivery systems", Jana B. Nieder, Rasa Ozolina, Ana M. Carvalho, Vânia Vilas-Boas, M.E.C.D. Real Oliveira, Marlene Lúcio, International Conference On Nanomedicine And Nanobiotechnology (ICONANO2016), Paris (France), 28-30 September 2016.

The 'nanotherapy' revolution: three different aplications of lipid nanosystems in therapeutics" E. Fernandes, J. Silva, T. Soares, M. Lúcio and M.E.C.D. Real Oliveira, 2rd International Conference on Medical Physics & Biomedical Engineering, Barcelona, 07-08 November 2016

- National

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Estudos biofísicos de fluorescência como uma ferramenta na química-medicinal e no desenvolvimento farmacêutico", Ana M. M. P. Carvalho, César Bernardo, Teresa Viseu, Júlia Tovar, Peter Schellemberg, M.E.C.D. Oliveira, Marlene Lúcio, Encontro Nacional de Estudantes de Física (ENEF), Braga (Portugal), 18-21 February 2016.

Poster

Magnetic liposome-based nanocarriers for dual cancer therapy", Ana Rita O. Rodrigues, Bernardo G. Almeida, J. P. Araújo, Maria João R. P. Queiroz, Elisabete M. S. Castanheira, Paulo J. G. Coutinho, Ciência 2016 – Encontro com a Ciência e Tecnologia em Portugal, Lisboa (Portugal), 4- 6 July 2016.

6.2 Group of Cooperative Phenomena in Dielectrics (FCD)

6.2.1 Updated composition of the group

Research Group Title	Cooperative Phenomena in Dielectrics
Principal investigator	Bernardo Gonçalves Almeida
Research area	Condensed Matter Physics, Materials Science: - Novel dielectric and multiferroic materials: syntheses, dielectric and magnetic properties, cooperative phenomena - Nanoscopic materials: piezoelectric composites, 29ehavior29l, thin films
Group Members	<u>Effective Members:</u> -José Luís Ribeiro – Associate Professor with Habilitation -Etelvina de Matos Gomes – Associate Professor with Habilitation -Senen Lanceros-Mendéz – Associate Professor -Bernardo Gonçalves Almeida – Assistant Professor -Luís Manuel Gomes Vieira – Assistant Professor <u>Associate Member:</u> -Jorge António Silva Mendes, Assistant Professor, Instituto Politécnico do Porto <u>Post-Doctorate Researchers and Research Fellows with PhD:</u> - Pedro Libanio Martins – FCT grant - Vanessa Cardoso – FCT grant - Vitor Correia – FCT grant - Clarisse Ribeiro – FCT grant - Pedro Costa – FCT grant - Carlos Costa – FCT grant - António Francesko – FCT grant <u>PhD and other Research Students:</u> -Atilla Goren - Ph-D in Science, FCT grant -Jivago Nunes - Ph-D in Engineering, FCT grant -Gabriel Mendes - Ph-D in Engineering, FCT grant -Paulo Sousa, Ph-D in Engineering, FCT grant -Silvia Reis, Ph-D in Engineering, FCT grant

	-Vania Pinto - Ph-D in Engineering, FCT grant -Ricardo Sousa – Ph-D in Science, FCT grant -Juliana Dias - Ph-D in Science -Renato Gonçalves, Ph-D in Engineering, FCT grant -Juliana Oliveira - Ph-D in Engineering, FCT grant -Marco Silva - Ph-D in Engineering, FCT grant -Pedro Martins - Ph-D in Science, FCT grant

6.2.2 Summary description of the scientific work carried out by the group in 2016

- The main results obtained from the research performed in the group during 2016 were the following:
- Structural, electrical and piezoresponse microscopy measurements were performed on the non-linear optical meta-nitroaniline and its ferroelectric properties were put on evidence.
- The conditions for phase stabilization on multiferroic antiferromagnets and on colossal 30ehavior30le30ity30e manganites with CE –AFM order were studied by using a Landau model and symmetry considerations. The infrared reflectivity characterization of PrCaMnO3 manganite allowed to determine critical transition temperatures and correlate them with the magnetic and electric transport properties.
- The synthesis of new laser ablated nanohole arrays of manganite antidots was performed by using anodic alumina templates and their structural and magnetic properties were characterized.
- PVDF based magnetic laminate and printed-circuit composites, with CoFe2O4 particles and metglas were developed for sensor and transducer applications as well as energy conversion and organic electronics. They were additionally tested for tissue engineering, along with ionic liquid/PVDF composites.
- PVDF based porous membranes for Li-ion batteries, filtration, photcatalytic and biomedical applications were prepared. The optimization of the filler type in the PVDF membranes was performed. Electrospun polymer membranes were developed for biomedical applications.
- Different PVDF based composites, namely with ionic liquids, TiO2 nanoparticles, ZrO2 nanoparticles and carbon nanotubes, were characterized, for electromechanical actuators, energy harvesting, photocatalytic applications and drug release. A green solvent approach was developed for preparing PVDF based sensors and actuators. The reusability of photocatalytic TiO2 and ZrO2 nanoparticles in PVDF was studied.

6.2.3 Future Research

Processing of complex Ferroelectric nanostructured thin films based on BST-BT-BCZT deposited by PLAD/IBAD on different substrates. Characterization for application as resistive memories, capacitors and solar cells.
(ii) Computational simulations of rechargeable lithium, magnesium and sodium-ion batteries
(iii) Study of new abrasive composites based on polymeric matrix, and mineral loads.

6.2.4 Scientific Production

6.2.4.1 Regular articles published in ISI Journals

A green solvent strategy for the development of piezoelectric poly(vinylidene fluoride-trifluoroethylene) films for sensors and actuators applications", Nunes-Pereira, J., Martins, P., Cardoso, V. F., Costa, C. M., &

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Bacterial cellulose-lactoferrin as an antimicrobial edible packaging”, Dourado F, Padrão, .J., Gonçalves, S., Silva, J.P., (...), Rodrigues, L.R., Food Hydrocolloids 58, pp. 126-140, 2016

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Synthesis of highly magnetostrictive nanostructures and their application in a polymer-based magnetoelectric sensing device", Gonçalves, R., Larrea, A., Zheng, T., Higgins, M. J., Sebastian, V., Lanceros-Mendez, S., & Martins, P. (2016). European Polymer Journal, 84, 685-692. doi: 10.1016/j.eurpolymj.2016.09.055 , http://hdl.handle.net/1822/43495

A green solvent strategy for the development of piezoelectric poly(vinylidene fluoride-trifluoroethylene) films for sensors and actuators applications", Nunes-Pereira, J., Martins, P., Cardoso, V. F., Costa, C. M., & Lanceros-Mendez, S. (2016). Materials & Design, 104, 183-189. doi: 10.1016/j.matdes.2016.05.023 , http://hdl.handle.net/1822/43509

Acetylated bacterial cellulose coated with urinary bladder matrix as a substrate for retinal pigment epithelium. ", Gonçalves, S., Rodrigues, I. P., Padrão, J., Silva, J. P., Sencadas, V., Lanceros-Mendez, S., Rodrigues, L. R. (2016). Colloids-and-surfaces-b-biointerfaces 139, - 9. , http://hdl.handle.net/1822/40309

All-inkjet-printed low-pass filters with adjustable cutoff frequency consisting of resistors, inductors and transistors for sensor applications. Castro, H. F., Correia, V., Sowade, E., Mitra, K. Y., Rocha, J. G., Baumann, R. R., & Lanceros-Mendez, S. (2016). Organic Electronics, 38, 205-212. doi: 10.1016/j.orgel.2016.08.025 , http://hdl.handle.net/1822/43499

Bacterial cellulose-lactoferrin as an antimicrobial edible packaging", Dourado F, Padrão, .J., Gonçalves, S., Silva, J.P., (...), Rodrigues, L.R., Food Hydrocolloids 58, pp. 126-140, 2016 ,

6.2.4.2 Books ans book Chapters

Books (Edition)

20.ª Conferência Nacional de Física e 26.º Encontro Ibérico para o Ensino da Física-Livro Resumos", B. Almeida, J. Agostinho Moreira, M.J. Marques.

6.2.4.3 National Patents

Magnetic levitation system for doors and 37ehavio; EP 2995761 A1; 16 Mar 2016; Rui Fernando Branco Teixeira, Carla Sofia Carvalho da Rocha, Senen Lanceros Méndez, Vítor Manuel Gomes Correia, EP20140732029; PCT/PT2014/000024;

6.2.4.4 Master Theses completed in 2016

Author	**Supervisor**	**Title**	**Enrollment (ECUM/other school)**
Luísa Filipa Mota Lima	E. de Matos Gomes,Teresa Viseu	Nanofibras biológicas funcionais	EEUM
Vítor Fernandes	Bernardo Almeida, E. de Matos Gomes	Nanofibras de metais por electrospinning	EEUM
Vasco Gomes	Bernardo Almeida, E. de Matos Gomes	Nanofibras multiferroicas	EEUM
Bruno Martins Magalhães	Senentxu Lanceros-Méndez, Gianaurelio Cuniberti; Pedro Martins	PHOTOCATALYTIC PROCESSES WITH OPTICAL FIBERS FOR WATER PURIFICATION	EEUM
Diogo Coelho da Silva	Senentxu Lanceros-Mendez, Pedro Martins	Estudo do efeito magneto-dielétrico em nanocompósitos poliméricos	ECUM
Henrique Miguel Ribeiro Rodrigues	S. Lanceros-Méndez; Carlos Miguel Costa	Baterias de Ião-Lítio mais amigas do ambiente	ECUM
Henrique Mora	Vanessa Cardoso; Senentxu Lanceros-Méndez	Development of photocatalytic materials based on TiO2 and magnetic nanoparticles	EEUM
João Luís Teixeira	Senentxu Lanceros-Mendéz e Vanessa Cardoso	Desenvolvimento de membranas poliméricas baseadas em poli(fluoreto de vinilideno) para filtração de materiais biológicos	ECUM
Jorge Hélder de Castro Vieira Pinto Mendes	Senentxu Lanceros-Mendez; Carlos Miguel da Silva Costa	Desenvolvimento de Cátodos Para Baterias de Lítio Impressas	ECUM
Marta Maria da Silva Maciel	Senentxu Lanceros-Méndez; Clarisse Ribeiro	DESENVOLVIMENTO E OTIMIZAÇÃO DE ESTRUTURAS CONDUTORAS DE BASE	ECUM

		POLIMÉRICA PARA ENGENHARIA DE TECIDOS	
Ricardo José Silva Lima	Senentxu Lanceros-Méndez; João Nunes-Pereira	Novas membranas poliméricas compósitas para a remoção de poluentes químicos da água	ECUM
Carlos Eduardo Fernandes Matos	José Gerardo Vieira da Rocha; Senentxu Lanceros-Méndez	Teclado touch capacitivo reconfigurável baseado em tecnologias impressas	EEUM
João Barbosa	José Gerardo da Rocha; Senentxu Lanceros-Méndez; Hélder Castro	Development of X-rays detection system based on polymer-based scintillator composites	EEUM
Rafael José Gomes da Silva	Senentxu Lanceros-Méndez;	Desenvolvimento de soluções para instrumentalizar um endoscópio através de sensores piezoresistivos impressos	EEUM
Ricardo Jorge Martins de Amorim	Vítor Correia; Pedro Costa Vítor Manuel Gomes Correia; Senentxu Lanceros-Méndez	Tapete Capacitivo para Deteção de Movimento e Posição de Animais na Experimentação Biomédica	EEUM
Ricardo Martins Author	Senentxu Lanceros-Méndez; Stanislav Ferdov; Carlos Miguel da Silva Costa Supervisor	Síntese de nanopartículas para baterias de ião de lítio Title	EEUM Enrollment (ECUM/other school)

6.2.4.5 Ph.D. Theses completed in 2016

Author	**Supervisor**	**Title**	**Enrollment (ECUM/other school)**
Daniela Correia	Senentxu Lanceros-Méndez; Maria Gabriela Botelho; José Luis Gómez Ribelles	Three dimensional scaffolds based on electroactive polymers for tissue engineering applications	Eeng

6.2.4.6 Ph.D Theses in progress in 2016

Author	Supervisor	Title	Enrollment (ECUM/other school)
Atilla Goren	S. Lanceros-Mendez	Development of new organic electrodes for Lithium-ion rechargeable batteries	ECUM
Jivago Nunes	S. Lanceros-Mendez	Polymer based sensors fabricated by printing technologies	EEUM
Gabriel Mendes	S. Lanceros-Mendez	Magnetotransfection – Exploring new ways to improve Clostridium pasteurianum for better butanol yield	EEUM
Paulo Sousa	S. Lanceros-Mendez	Development of all polymer sensor materials and systems for in-body biomedical applications	EEUM
Silvia Reis	S. Lanceros-Mendez	Development and characterization of sensor and actuator applications based on polymer based Magnetoelectric Nanocomposites	EEUM
Daniela Correia	S. Lanceros-Mendez	3D Scaffolds based on biodegradable electroactive nanofibers for tissue engineering applications	EEUM
Vania Pinto	S. Lanceros-Mendez	Development and implementation of a portable lab-on-a-chip for salivary biomarkers detection.	EEUM
Ricardo Sousa	S. Lanceros-Mendez	Polymer based batteries fabricated by printing technologies	ECUM
Juliana Dias	S. Lanceros-Mendez	Electrospun ionic electroactive polymers for artificial muscle applications	ECUM
Juliana Oliveira	S. Lanceros-Mendez	Radiation detectors based in inkjet printing technologies	EEUM

Renato Gonçalves	S. Lanceros-Mendez	High performance low dimensionality magnetoelectric nanocomposites for advanced applications	EEUM
Pedro Martins	S. Lanceros-Mendez	New generation of photocatalytic nanocomposites: production, characterization and environmental application	ECUM

6.2.4.7 Master Theses in progress in 2016

Author	**Supervisor**	**Title**	**Enrollment (ECUM/other school)**
Pedro Rego	Bernardo Almeida	Micro e nanofibras à base de ferrite de níquel	EEUM
João Rodolfo	Bernardo Almeida	Filmes compósitos para junções de efeito túnel	ECUM
João Oliveira	Bernardo Almeida	Modelização de espectros de raios-X em filmes finos	ECUM

6.2.5 Other scientific activities

Conference organization
Intenational

26º Encontro Ibérico para o Ensino da Física, membros da comissão organizadora e comissão Cientifica: Bernardo Almeida, Luís Cunha, Marta Ramos.

Workshop: New Materials for a Better Life: Smart and Functional Polymers, 18/11/2016; Bilbao, Spain, S. Lanceros-Mendez

8th European Workshop On Structural Health Monitoring (EWSHM 2016); New concepts and sensors based on micro and nanotechnologies (BCMaterials, Spain; Uminho, Portugal); meeting: 5-8 July 2016, Spain, Bilbao, S. Lanceros-Mendez.

National

20.ª Conferência Nacional de Física Universidade do Minho, 8-10 Setembro de 2016, Comissão Organizadora e Comissão Cientifica: Bernardo Almeida, Luís Vieira.

6.2.6 Invited Lectures/seminars delivered by members of the group in national or international conferences

International

Smart and Functional Polymer Based Materials for a Better Life; Workshop: New Materials for a Better Life: Smart and Functional Polymers, Lanceros-Mendez 18/11/2016; Bilbao, Spain

Development of tissue engineering strategies based on piezoelectric polymers; Red d Excelencia para el Desarrollos de Implantes de Titanio Funcionalizado, Lanceros-Mendez 9/11/2016; Valencia, Spain

Microfluidic systems for biomedical applications. V. F. Cardoso. New Materials for a better life. BCMaterials, Bilbao, Spain. November 2016.

National

Nanoestruturas magnéticas, Bernardo Almeida, seminário no "Encontro Nacional de Estudantes de Física – ENEF2016" , Universidade do Minho, 20 de fevereiro 2016

Tuning of the magnetic-electric nanostructure response through strain interactions, B.G. Almeida, seminário apresentado nas "Workshop on Quantum Materials and Quantum Interactions", INL, Braga, 13-14 Setembro, 2016

Electroactive polymers: main challenges and applications, S. Lanceros-Mendez, presentation on the ENEF2016; 18/2/2016

6.2.7 Other information

6.2.7.1 Other conference presentations given by members of the group in national or international conferences

International
Oral

Composite Multiferroic Nanofibers by Electrospinning, V. Gomes, P. Rego, E. de Matos Gomes, A.G. Rolo, B.G. Almeida, comunicação oral apresentada na "11th International conference on surfaces, coatings and nanostructured materials – NANOSMAT 2016", Aveiro, 6-9 Setembro, 2016

Magnetoliposomes based on manganese ferrite nanoparticles as nanocarriers for antitumor drugs, A.R.O. Rodrigues, J.M.F. Ramos, I. T. Gomes, B.G. Almeida, J.P. Araújo, M.J.R.P. Queiroz, E.M.S. Castanheira, P.J.G. Coutinho, comunicação oral apresentada no "NanoPT International Conference – NanoPT 2016",Porto, 16-19 Fevereiro, 2016

"Tailoring elastomeric matrices for stretchable piezoresistive composites using green chemistry and printing technologies", Pedro Costa, S. Lanceros-Mendez, EuroEAP 2016, International conference on Electromechanically Active Polymer (EAP) transducers & artificial muscles, 14-15 June, Helsingør, Denmark

Large deformation piezoresistive sensors based in thermoplastic elastomers matrixes and nanoparticles reinforcemen"; P. Costa, V. Correia, J. Vicente, J.M. Abete, A. Iturrospe S. Lanceros-Mendez; 8th European Workshop On Structural Health Monitoring (EWSHM 2016) 5-8 July 2016, Spain, Bilbao

Development of actuators based on poly(vinylidene fluoride)/ionic liquid blends, R. Mejri, J. Dias, A. C. Lopes, S. Bebes Hentati, G. Botelho, J. Esperança and S. Lanceros-Mendez, "Science and Engineering of Polymeric Materials-SEMP 2016" congress at the Royal Thalassa Monastir Hotel, Skanes-Tunisia.

Poster

r1−xCaxMnO3 thin films deposited on lithium niobate, I.T. Gomes, J. Oliveira, A.G. Rolo, C.T. Sousa, J.P. Araújo, B.G. Almeida, comunicação apresentada no "8th European Mangnetic Symposia – JEMS2016", Glasgow, Scotland, 21-26 Agosto 2016

Tailoring electroactive polymer morphology and wettability for tissue engineering applications, G. Botelho, D.M. Correia, C. Ribeiro, J.L. Ribelles, S. Lanceros-Méndez, 9th International Conference on Modification, Degradation and Stabilization of Polymers, Poland, 4-8 September, 2016.

Tailoring elastomeric matrices for stretchable piezoresistive composites using green chemistry and printing technologies, Pedro Costa, S. Lanceros-Mendez; EuroEAP 2016, International conference on Electromechanically Active Polymer (EAP) transducers & artificial muscles, 14-15 June, Helsingør, Denmark

Effect of ionic liquid anion and cation on the physical properties of poly(vinylidene fluoride)/ionic liquid blends, R. Mejri, J. Dias, A. C. Lopes, S. Bebes Hentati, G. Botelho, J. Esperança and S. Lanceros-Mendez, "Science and Engineering of Polymeric Materials-SEMP 2016" congress at the Royal Thalassa Monastir Hotel, Skanes-Tunisia.

National
Oral

Nanofibers as sub-wavelength nonlinear materials, H. Gonçalves, I. Saavedra, E. de Matos Gomes, FÍSICA 2016 – 20ª Conferência Nacional de Física, Braga, 8-10 Setembro 2016.

Composite BaTiO3-CoFe2O4 nanofibers by electrospinning, V. Gomes, E. de Matos Gomes, A.G. Rolo, B.G. Almeida, comunicação oral apresentada na 20ª Conferência Nacional de Física – FÍSICA 2016, Braga, 8-10 Setembro, 2016

Multiferroics, B.G. Almeida, comunicação oral apresentada nas "Jornadas da Linha Plasmonic, 42ehavior42le42, magnetic and hybrid nanostructures do CFUM", Braga, 20 Julho, 2016

Approaches for enhanced photocatalytic activity, H. Mora, J. Ribeiro, B. Magalhães, P. M. Martins, S. Teixeira, K. Kühn, G. Cuniberti, S. Lanceros-Méndez; at the 20th National Conference of Physics and 26th Iberic Meeting for the Physics Teaching – Physics 2016; from 08/09/2016 to 10/09/2016

Estudo de nanocompósitos de dióxido de titânio e grafeno para aplicações fotocatalíticas, C. Ferreira, A. R. Silva, P.M. Martins, M. Melle-Franco, S. Lanceros-Méndez.. 20ª Conferência Nacional de Física, Universidade do Minho – Braga, 8 a 10 de setembro de 2016

Hydrogels Loaded With Electroactive Spheres For Tissue Engineering Applications; B. Hermenegildo, A. R. Guimarães, C. Ribeiro, D. M. Correia, S. Lanceros-Méndez; 20th National Conference of Physics, Minho University and 26° Encontro Ibérico para o ensino da Física. Escola de Ciências (Braga, Portugal), 8-10 September 2016.

Development of functionalized magnetic nanoparticles for biomedical applications, L.S.C. Fernandes, V.F. Cardoso, S. Lanceros-Méndez, 20th National Conference of Physics, Minho University and 26° Encontro Ibérico para o ensino da Física. Escola de Ciências, Universidade do Minho, Braga, Portugal, 8-10 Setembro 2016

Green 43ehavior approach for lithium-ion battery screen printed electrodes; A. Gören, J. Mendes, H. M. Rodrigues, R. E. Sousa, J. Oliveira, Loic Hilliou, C. M. Costa, M. M. Silva, S. Lanceros-Méndez; Physics 2016 – 20th National Conference on Physics; University of Minho, Braga; 8-10 September, 2016

Development of composite membranes and printed sensors for water pollutants purification and detection; J. Nunes-Pereira, P.M. Martins and S. Lanceros-Mendez, Green Business Week; Lisboa; March 1-3, 2016.

Poster

Energy Harvesting With Amino Acids Polymer Nanofibers, E. de Matos Gomes, T. Viseu, M.M. Costa, L. Lima, M. Belsley, B. Almeida, D. Isakov, comunicação apresentada na 20ª Conferência Nacional de Física – FÍSICA 2016, Braga, 8-10 Setembro, 2016.

Dielectric and non-linear optical properties of KDP nanofibers, V. Gomes, H. Gonçalves, E. de Matos Gomes, A.G. Rolo, M. Belsley, B.G. Almeida, comunicação apresentada na 20ª Conferência Nacional de Física – FÍSICA 2016, Braga, 8-10 Setembro, 2016.

X-Ray diffraction modelling of trilayer nanostructured thin films, J. Oliveira, B.G. Almeida, comunicação apresentada na 20ª Conferência Nacional de Física – FÍSICA 2016, Braga, 8-10 Setembro, 2016.

Tailoring piezoresistive polymers based inks for printing technologies, J. Oliveira, P. Costa, B. F. Gonçalves, V. Correia, G. Botelho, G. Rocha, S. Lanceros-Méndez, FÍSICA 2016 – 20.ª Conferência Nacional de Física, Universidade do Minho, Campus de Gualtar, 8 a 10 de setembro de 2016.

Optimization of magnetodielectric coefficients on polymer based composites, D. Silva, R. Fonseca, M. Silva and S. Lanceros-Mendez and P. Martins, ENEF 2016, September 8-10, University of Minho, Braga, Portugal

Approaches for enhanced photocatalytic activity, H. Mora, J. Ribeiro, B. Magalhães, P.M. Martins, Sara Teixeira, Klaus Kühn, Gianaurelio Cuniberti, S. Lanceros-Méndez. 20ª Conferência Nacional de Física, Universidade do Minho – Braga, 8 a 10 de setembro de 2016

Tailoring piezoresistive polymers based inks for printing technologies, J. Oliveira, P. Costa, B. F. Gonçalves, V. Correia, G. Botelho, G. Rocha, S. Lanceros-Méndez, FÍSICA 2016 – 20.ª Conferência Nacional de Física, Universidade do Minho, Campus de Gualtar, 8 a 10 de setembro de 2016.

Da experimentação à simulação: Baterias recarregáveis de ião-lítio; A. Gören, D.Miranda, C.M.Costa, M.M.Silva, S. Lanceros-Méndez; Physics 2016 – 20th National Conference on Physics; University of Minho, Braga; 8-10 September, 2016

Active nanoparticles for removal of fluoride ion from aqueous solutions; R. Lima, J. Nunes-Pereira, G. Botelho and S. Lanceros-Mendez; IV Encontro em Técnicas de Caracterização e Análise Química; Braga; June 21th, 2016.

6.3 Group of Physics of Nano Crystalline Materials (FMNC)

6.3.1 Updated composition of the group

Research Group Title	Physics of Nanocrystalline Materials
Principal investigator	Mário A. C. Castro Pereira
Research area	Nanomaterials Physics and Nanotechnology
Group Members	Effective members: -M. Jesus M. Gomes – Full Professor -Mário A. C. Castro Pereira – Assistant Professor Collaborator with PhD António Mário Almeida Post-doctorate researchers and Research Fellows with Ph. D : -José Pedro Basto da Silva,– FCT grant (50% - University of Porto) PhD and other Research Students: -Daniel Miranda - Ph-D in Science

6.3.2 Summary description of the scientific work carried out by the group in 2016

- Ferroelectric phase transitions studies in 0.5Ba(Zr0.2Ti0.8)O3 – 0.5(Ba0.7Ca0.3)TiO3 ceramics. Development of thin films by PLAD. Study of the resistive switching in ferroelectric lead-free 0.5Ba(Zr0.2Ti0.8)O3 – 0.5(Ba0.7Ca0.3)TiO3 thin films.

Light controlled resistive switching and photovoltaic effects in ferroelectric 0.5Ba(Zr0.2Ti0.8)O-3-0.5(Ba0.7Ca0.3)TiO3 thin films.

- Preparation of bilayered HfAlO/HfAlOx materials by IBAD. Study of the Enhanced resistive switching and multilevel behavior in bilayered HfAlO/HfAlOx structures for non-volatile memory applications.

- Ferroelectric polarization and resistive switching characteristics of ion beam assisted sputter deposited BaTiO3 thin films. Study of incorporation of silver nanoparticles in thin films and application of these films in SERS detection.

- Synthesis and structural/luminescence studies of TiO2:Dy3+ produced by solid-state reaction method, for light applications.

6.3.3 Future Research

Processing of complex Ferroelectric nanostructured thin films based on BST-BT-BCZT deposited by PLAD/IBAD on different substrates. Characterization for application as resistive memories, capacitors and solar cells.
(ii) Computational simulations of rechargeable lithium, magnesium and sodium-ion batteries
(iii) Study of new abrasive composites based on polymeric matrix, and mineral loads.

6.3.4 Scientific Production

6.3.4.1 Regular articles Published in ISI Journals

Computer simulations of the influence of geometry in the performance of conventional and unconventional lithium-ion batteries" Miranda, D. Costa, C. M. Almeida, A. M. Lanceros-Méndez, S. Applied Energy 165 (2016) 318–328 http://hdl.handle.net/1822/43523

Computer simulation evaluation of the geometrical parameters affecting the performance of two dimensional interdigitated batteries" Miranda, D. Costa, C. M. Almeida, A. M. Lanceros-Méndez, S. Journal of Electroanalytical Chemistry Volume 780, 1 November 2016, Pages 1–11 http://hdl.handle.net/1822/43494

Influence of substrate temperature on the properties of pulsed laser deposited silver nanoparticle thin films and their application in SERS detection of bovine serum albumin", K. Kamakshi, J. P. B. Silva, K. C. Sekhar, G. Marslin, J. Agostinho Moreira, O.Conde, A. Almeida, M. Pereira, M. J. M. Gomes, Appl. Phys. B – Lasers and Optics 122 (2016) 108 doi: 10.1007/s00340-016-6385-0
https://repositorium.sdum.uminho.pt/handle/1822/43595
http://link.springer.com/article/10.1007/s00340-016-6385-0

Resistive switching in ferroelectric lead-free 0.5Ba (Zr0.2Ti0.8)O3-0.5(Ba0.7Ca0.3)TiO3 thin films", J. P. B. Silva, K. Kamakshi, K. C. Sekhar, E. C. Queirós, J. Agostinho Moreira, A. Almeida, M. Pereira, P. B. Tavares, M. J. M. Gomes, Journal of Physics D: Applied Physics 49 (2016) 335301. Doi: 10.1088/0022-3727/49/33/335301 http://iopscience.iop.org/article/10.1088/0022-3727/49/33/335301/meta
https://repositorium.sdum.uminho.pt/handle/1822/43598

Light-controlled resistive switching in laser-assisted annealed BST thin films". J. P. B. Silva, K. Kamakshi, K. C. Sekhar, J. Agostinho Moreira, A. Almeida, M. Pereira, and M. J. M. Gomes, Physica Status Solidi A 213 (2016) 1082–1087. Doi: 10.1002/pssa.201532636.
http://onlinelibrary.wiley.com/doi/10.1002/pssa.201532636/abstract
http://repositorium.sdum.uminho.pt/handle/1822/39409

Ferroelectric polarization and resistive switching characteristics of ion beam assisted sputter deposited BaTiO3 thin films", J. P. B. Silva, K. C. Sekhar, K. Kamakshi, J. Agostinho Moreira, A. Almeida, M. Pereira and M. J. M. Gomes, Journal of Physics and Chemistry of Solids 92 (2016) 7-10. Doi:10.1016/j.jpcs.2016.01.012
http://www.sciencedirect.com/science/article/pii/S0022369716300129
https://repositorium.sdum.uminho.pt/handle/1822/43602

Synthesis, Structural and Luminescence Studies of Pyrochlore Phase Free TiO2:Dy3+ Produced by Solid-state Reaction Method", Arup Kumar Kunti, Koppole Chandra Sekhar, Mario Pereira, Maria Jesus Matos Gomes, Shailendra Kumar Sharma, International Journal of Applied Ceramic Technology, 1–10 (2016) 1139-48. DOI:10.1111/ijac.12573 http://onlinelibrary.wiley.com/doi/10.1111/ijac.12573/abstract
https://repositorium.sdum.uminho.pt/handle/1822/43605

Study and Optimization of the Drying Process of a Ceramic Abrasive Composite", Paulina Capela, Luis Faria, Anibal Guedes, Delfim Soares, Correia Junior, Luis Carvalho, Mario Pereira, International Journal of Applied Ceramic Technology, vol.13 [2] (2016) 08-315. DOI: 10.1002/pssa.201532636

Light controlled resistive switching and photovoltaic effects in ferroelectric 0.5Ba(Zr0.2Ti0.8)O3-0.5(Ba0.7Ca0.3)TiO3 thin films". J. P. B. Silva, K. Kamakshi, K. C. Sekhar, X. R. Nóvoa, E. C. Queirós, J. Agostinho Moreira, A. Almeida, M. Pereira, P. B. Tavares, M. J. M. Gomes Journal of European Ceramic Society 37, 583-591 (2017) http://dx.doi.org/10.1016/j.jeurceramsoc.2016.09.011 https://repositorium.sdum.uminho.pt/handle/1822/43592

6.3.4.2 Conferences Proceedings published in ISI Journals

Special matrices for visco-elastic systems, Forjaz, M. A.; Almeida, A.M.; Lacerda-Arôso, T.; Pamplona, J., Proceeding of the 13th International Proceedings of the International Conference on Numerical Analysis and Applied Mathematics 2016 (Vol. 1738).

Evaluation and optimization of the performance of frame geometries for lithium-ion battery application by computer simulation, D. Miranda, F. Miranda, C. M. Costa, A. M. Almeida, and S. Lanceros-Méndez, Proceedings of the International Conference on Numerical Analysis and Applied Mathematics 2015 (Vol. 1738). Outro Grupo: Fenómenos Cooperativos em Dieléctricos | Cooperative Phenomena in Dielectrics http://hdl.handle.net/1822/43516

6.3.4.3 Master theses completed in 2016

Author	Supervisor	Title	Situation
Ivone Filipa Pereira Ferrete	A. Mário Almeida	Relatório de Atividade Profissional	ECUM

6.3.4.4 Master theses ongoing in 2016

Author	Supervisor	Title	Situation
Marcelo Dias	José Pedro Basto da Silva /M. Pereira	Produção e caracterização de filmes finos ferroeléctricos com nanopartículas metálicas incorporadas para aplicações na microelectrónica	ECUM/EEUM
Sónia Marisa Andrade Lopes da Cunha	A. Mário Almeida	Relatório de Atividade Profissional	ECUM
Joaquim Martins da Costa	A. Mário Almeida	Relatório de Atividade Profissional	ECUM

6.3.4.5 Phd theses ongoing in 2016

Author	Supervisor	Title	Situation
Daniel Miranda	A. Mário Almeida, S. Lanceros-Mendez	Optimizing performance of rechargeable lithium-ion batteries through computer simulations	ECUM

6.3.5 Other information

6.3.5.1 Other conference presentations given by members of the group in national or international conferences

International
Oral

Visco-elastic systems as a quadratic eigenvalue problem, ICNAAM 2016 – 14TH INTERNATIONAL CONFERENCE OF NUMERICAL ANALYSIS AND APPLIED MATHEMATICS , Maria Antónia Forjaz, António Mário Almeida, Luís M. Fernandes, Jorge Pamplona and T. de Lacerda–Arôso

National
Oral

Ferroelectric Based Structures for Memory Applications, José Pedro Silva, 1st CeFEMA workshop on graphene and other 2D materials, 5th December 2016, Lisbon

6.4 Functional Coatings Group (GRF)

6.4.1 Updated composition of the group

Research Group Title	Functional Coating Group (GRF)
Principal investigator	Luis Rebouta
Research area	Materials Physics of Thin Films
Group Members	Effective Members: -Martin Andritschky, Full Professor -Luís Rebouta, Associate Professor with Habilitation -Filipe Vaz, Associate Professor with Habilitation -Marta Ramos, Associate Professor with Habilitation -Vasco Teixeira, Associate professor -Cacilda Moura, Assistant Professor -Carlos Tavares, Assistant Professor -Joaquim Carneiro, Assistant Professor -Luís Cunha, Assistant Professor -Luis Silvino, Assistant Professor -Sandra Carvalho, Assistant Professor -Teresa Aroso, Assistant Professor Researchers: -Stanislav Ferdov, FCT Researcher and Invited Associate Professor (0%) -Diego Martinez, FCT Researcher Associate Member: -Li-Jian Meng (ISEP) Post-Doctorate Researchers and Research Fellows with PhD: - Sergey Pyrlin – Project grant - Isabel Carvalho –Project grant - Sebastian Calderon – Project grant - Mariana Marques – Project grant - Catalina Mansilla – FCT grant - Armando Ferreira – FCT grant - Joel Borges - Project Grant PhD Students: Abbas M.k. AL-Rjoub – Map-Fis Ph-D program

	Filipe da Costa Correia - PhD in engineering, FCT grant, Juliana Filipa Gouveia Marques - Ph-D in engineering, FCT grant Veniero Lenzi - Ph-D in Science, TheLink Project grant Stylianos Tsopanidis - Ph-D in science, TheLink Project grant Cristiana Alves - Ph-D in engineering, FCT grant Rita Rebelo - Ph-D in engineering, FCT grant Simone Rodrigues - Ph-D in engineering, FCT grant Edgar Carneiro - Ph-D in engineering, Project grant Diogo Cavaleiro - Ph-D in engineering, Project grant Luísa Fialho - Ph-D in engineering, Project grant Rita Ferreira - Ph-D in engineering, FCT grant Salmon Landi - Ph-D in science, CAPES grant Vitor Vasconcelos - Ph-D in science, FCT grant Cláudia de Jesus Ribeiro Lopes - Ph-D in science, FCT grant Sofia Ferreira - Ph-D in Engineering

6.4.2 Summary description of the scientific work carried out by the group in 2016

- Simulation of carbon nanotube – polymer composite properties
-Titanium-based nitride/oxide and intermetallic thin films, Ti(N,O) – Me, deposited on flexible polymeric substrates for (bio)sensors and (bio)electrodes;
- Noble nanoparticles dispersed in dielectric matrixes, (Ag,Au): Me(NxOy) with Me = Ti, Zr, Al, Cr, Cu, etc., for Optical and LSPR-Biosensing applications;
- Oxynitride and Oxycarbide thin films for protective and decorative applications [MeINxOy]

6.4.3 Future Research

- - Simulation of carbon nanotube – polymer composite properties
- For the next year, the research will be focused on the development of the 3 mentioned areas. Special focus is being given to the acquisition of a second deposition line (a new PVD equipment was acquired), in order to develop even further the optimization of thin films for bio-sensing and bio-electrode applications. In particular, a new section will be built in the laboratory of functional coatings III, which will be devoted to the test and study of Electromyography, EMG, electrodes. Furthermore, the group invested significantly in the development of a testing protocol and equipment for thin film-based biosensors optimization, namely in what concerns to gas sensors for automotive industry and molecule detection thin film sensors for health sectors. Pressure and temperature sensing devices will also be motive of increasing attention in the group, resulting from development of 2 of the mentioned projects that the group is involved in and that are directly related with these types of sensors. Finally, the continuation of the research in protective/decorative thin films systems will also continue, being one of the identity marks in the group.
- For the success of the previously projects, and as already mentioned, new equipment and set-ups are being implemented. The new thin film deposition line, will double the group capacity in the production of different thin film systems, allowing the improvement of our response capacity towards different industrial and scientific opportunities that are appearing in an increasing frequency.

6.4.4 Scientific Production

6.4.4.1 Regular articles published in ISI Journals

Ag fractals formed on top of a porous TiO2 thin film, J. Borges, M.S. Rodrigues, C. Lopes, D. Costa, A. Ferreira, R.M.S. Pereira, M.F. Costa, M.I. Vasilevskiy, F. Vaz, Physica Status Solidi – Rapid Research Letters, 10 (2016) 530-534.; http://hdl.handle.net/1822/43375

Ag:TiN-Coated Polyurethane for Dry Biopotential Electrodes: From Polymer Plasma Interface Activation to the First EEG Measurements, P. Pedrosa, P. Fiedler, C. Lopes, E. Alves, N.P. Barradas, J. Haueisen, A.V. Machado, C. Fonseca, F. Vaz, Plasma Processes and Polymers, 13 (2016) 341-354.; http://hdl.handle.net/1822/43593

Antibacterial Ag/a-C nanocomposite coatings: The influence of nano-galvanic a-C and Ag couples on Ag ionization rates, N.K. Manninen, S.V. Calderon, I. Carvalho, M. Henriques, A. Cavaleiro, S. Carvalho, Applied Surface Science, 377 (2016) 283-291, , http://hdl.handle.net/1822/41588

Baselines for lifetime of organic solar cells", Gevorgyan, Suren A., Espinosa, Nieves, Ciammaruchi, Laura, Roth, Bérenger, Livi, Francesco, Tsopanidis, Stylianos, Züfle, Simon, Queirós, Sara, Gregori, Alberto, Benatto, Gisele Alves dos Reis, Corazza, Michael, Madsen, Morten V., Hösel, Markus, Beliatis, Michail J., Larsen-Olsen, Thue Trofod, Pastorelli, Francesco, Castro, António, Mingorance, Alba, Lenzi, Veniero, Fluhr, Daniel, Roesch, Roland, Ramos, Marta M. D., Savva, Achilleas, Hoppe, Harald, Marques, L., Burgués, Ignasi, Georgiou, Efthymios, Serrano-Luján, Lucia, Krebs, Frederik C., Adv. Energy Mater. 6 (2016) 1600910, http://hdl.handle.net/1822/43827

Bioactivity response of Ta1-xOx coatings deposited by reactive DC magnetron sputtering, C. F. Almeida Alves, A. Cavaleiro, S. Carvalho, Materials Science and Engineering C: Materials for biomedical applications, 58, 110-118 2016, URL: doi:10.1016/j.msec.2015.08.017 http://hdl.handle.net/1822/43998

Broadband Optical Absorption Caused by the Plasmonic Response of Coalesced Au Nanoparticles Embedded in a TiO2 Matrix, J. Borges, R.M.S. Pereira, M.S. Rodrigues, T. Kubart, S. Kumar, K. Leifer, A. Cavaleiro, T. Polcar, M.I. Vasilevskiy, F. Vaz, Journal of Physical Chemistry C, 120 (2016) 16931-16945.; http://hdl.handle.net/1822/43374

CHARACTERIZATION OF SURFACE AG NANOPARTICLES IN NANOCOMPOSITE A-C:AG COATINGS BY GRAZING INCIDENCE X-RAY DIFFRACTION AT SUB CRITICAL ANGLES OF INCIDENCE, N. K. Manninen, J. C. Oliveira, S. Carvalho, A. Cavaleiro, Applied Physics A, Springer, (2016), http://hdl.handle.net/1822/43985

Comparative Efficiency of TiO2 Nanoparticles in Suspension vs. Immobilization into P(VDF-TrFE) Porous Membranes, P.M. Martins, R. Miranda, J. Marques, C.J. Tavares, G. Botelho and S. Lanceros-Mendez, RSC Advances 6 (2016) 12708-12716. http://hdl.handle.net/1822/43527

Contribution of the solar systems to the nZEB and ZEB design concept in Portugal – Energy, economics and environmental life cycle analysis", Sandra Monteiro Silva, Ricardo Mateus, Luís Marques, Marta Ramos, Manuela Almeida, Solar Energy Materials and Solar Cells 156 (2016) 59-74. http://hdl.handle.net/1822/42405

Electrochemical characterization of nanostructured Ag:TiN thin films produced by glancing angle deposition on polyurethane substrates for bio-electrode applications, P. Pedrosa, D. Machado, P. Fiedler, B. Vasconcelos, E. Alves, N.P. Barradas, N. Martin, J. Haueisen, F. Vaz, C. Fonseca, Journal of Electroanalytical Chemistry, 768 (2016) 110-120. http://hdl.handle.net/1822/43912

Functional behavior of TiO2 films doped with noble metals, M.S. Rodrigues, J. Borges, C. Gabor, D. Munteanu, M. Apreutesei, P. Steyer, C. Lopes, P. Pedrosa, E. Alves, N.P. Barradas, L. Cunha, D. Martínez-Martínez, F. Vaz, Surface Engineering, 32 (2016) 554-561; http://hdl.handle.net/1822/43386

Functional properties of ceramic-Ag nanocomposite coatings produced by magnetron sputtering, S. Calderon. V, A. Cavaleiro, S. Carvalho Progress in Materials Science, 84 (2016) 158-191, http://hdl.handle.net/1822/43984

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Optical and microstructural properties of Au alloyed Al-O sputter deposited coatings, N.M. Figueiredo, F. Vaz, L. Cunha, Y.T. Pei, J.M.T. De Hosson, A. Cavaleiro, Thin Solid Films, 598 (2016) 65-71. http://hdl.handle.net/1822/43631

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Poly(vinylidene fluoride hexafluoropropylene)/bayerite composite membranes for efficient arsenic removal from water. Salazar, H., Nunes-Pereira, J., Correia, D.M., Cardoso, V.F., Gonçalves, R., Martins, P.M., Ferdov, S., Martins, M.D., Botelho, G., Lanceros-Méndez, S. Materials Chemistry and Physics, (2016) 183, 430-438

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Visible Light Induced Enhanced Photocatalytic Degradation of Industrial Effluents (Rhodamine B) in Aqueous Media Using TiO2 Nanoparticles". J. O. Carneiro, A. P. Samantilleke, P. Parpot, F. Fernandes, M. Pastor, A. Correia, E. A. Luís, A. A. Chivanga Barros, V. Teixeira. Journal of Nanomaterials, Volume 2016 (2016), Article ID 4396175, 13 pages.

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Functional properties of ceramic-Ag nanocomposite coatings produced by magnetron sputtering, S. Calderon. V, A. Cavaleiro, S. Carvalho Progress in Materials Science, 84 (2016) 158-191,

Microencapsulation of 53ehavior53 oil for solar-activated controlled release as na insect 53ehavior53, António D. Ribeiro, Juliana Marques, Marta Forte, Filipe C. Correia, Pier Parpot, César Oliveira, Ana I. Pereira, Luísa Andrade, Cátia Azenha, Adélio Mendes, Gonçalo M. Alves, Carla A. Sousa, Carlos J. Tavares, Applied Materials Today 5 (2016) 90-97., http://hdl.handle.net/1822/43675

Aliphatic isocyanurates and polyisocyanurate networks", Driest, P. J., Lenzi, V., Marques, L. S. A., Ramos, M. M. D., Dijkstra, D. J., Richter, F. U., Stamatialis, D., and Grijpma, D. W., Polym. Adv. Technol. (2016). Link: http://hdl.handle.net/1822/43682

6.4.4.2 Conferences Proceedings published in ISI Journals

Smart road paint and road signs with the ability to change colour at low temperature". F. Fernandes, E. Freitas, J. O. Carneiro, M. Pastor, E. Luís, A. A. Chivanga Barros, A. P. Samantilleke, V. Teixeira. Conference Proceedings of the 1st European Road Infrastructure Congress (2016). /Centre for Territory, Environment and Construction (CTAC) and ISPTEC.

"Special matrices for visco-elastic systems",M. A. Forjaz, A.M. Almeida, T. de Lacerda-Arôso and J. Pamplona, in T. E. Theodore E. Simos & C. Tsitouras (Eds), International Conference on Numerical Analysis and Applied Mathematics 2015, AIP Conference Proceedings

"Visco-elastic systems as a quadratic eigenvalue problem"; Forjaz, M. A., Almeida, A.M.; Fernandes,L.M., Pamplona, J., Lacerda-Arôso, T.. Proceeding of the 14th International Conference on Numerical Analysis and Applied Mathematics (ICNAAM 2016), Rhodes, Greece, September 19– September 25, 2016.

6.4.4.3 Books

Física 11 (Manual de Física A 11º Ano),Agostinho Oliveira, Cacilda Moura, José Costa Leme, Luís Cunha, Paula Cristina Silva, Raiz Editora, Lisboa (2016) ISBN 978-989-744-204-9

Física 11 (Livro do Professor), Agostinho Oliveira, Cacilda Moura, José Costa Leme, Luís Cunha, Paula Cristina Silva, Raiz Editora, Lisboa (2016)

Física 11 (Caderno de Atividades), Agostinho Oliveira, Cacilda Moura, José Costa Leme, Luís Cunha, Paula Cristina Silva, Raiz Editora, Lisboa (2016), ISBN 978-989-744-320-6

Física 11 (preparar o exame), Agostinho Oliveira, Cacilda Moura, José Costa Leme, Luís Cunha, Paula Cristina Silva, Raiz Editora, Lisboa (2016)

6.4.4.4 National and International Patents

International

MICRO- OR NANOCAPSULES HAVING PHOTOCATALYTIC PROPERTIES FOR CONTROLLED RELEASE OF DIFFUSING AGENTS AND RESPECTIVE METHOD OF OBTAINMENT, PCT/IB2016/054027, 05.07.2016.

6.4.4.5 Master theses completed in 2016

Author	Supervisor	Title	Situation
Rosa Maria Lopes Rey Monteiro	Teresa de Lacerda-Arôso	"Electromagnetismo: Uma Abordagem Experimental" (Mestrado em Ciências – Formação Contínua de Professores)	ECUM
Ana Isabel Campos Oliveira da Silva	Cacilda Moura	Relatório de atividade profissional, ao abrigo do Despacho RT-38/2011	ECUM
Joana Paulo	Luis Marques	Stability of Intrinsically Disordered Regions of two Transcription Factors by Molecular Dynamics	ECUM
Sara Flôr	Luis Marques	Modelação da Interacção da Glicoproteína E do Vírus do Dengue com Ligantes de Interesse Farmacológico.	ECUM
Ricardo António Gomes Martins	Stanislav Ferdov	Síntese de nanopartículas para baterias de ião de lítio	EEUM
Bruno Gomes	Sandra Carvalho, Sebastian Velasco	Desenvolvimento de Nanopartículas Bimetálicas ZnFe para Sensores de Oxigénio Aplicáveis em Embalagens Alimentares	EEUM

Catarina Fernandes	Isabel Carvalho, Sebastian Velasco	Filmes Finos à Base de Carbono Depositados em Substratos Biodegradáveis para Embalagens Alimentares Inteligentes	EEUM
Nuno Soares	Isabel Carvalho, Stanislav Ferdov	Antimicrobial properties of leather modified by TiO2:Ag nanoparticles	EEUM
Tiago Oliveira	Sandra Carvalho, Cristiana Alves	Nanoestruturação de Tântalo para aumento da osteointegração em implantes dentários	EEUM
Ayesha Khalid	Sandra Carvalho , Albano Cavaleiro	Tribological Behavior of Micro/Nano Structured Tantalum Surfaces by Anodization Method	University of Coimbra (TRIBOS – Joint European Master in tribology of surfaces and interfaces)
Cristiano André Silva	Joaquim Carneiro	Study of self-cleaning and photocatalytic road pavements	EEUM
Marco Pires Sampaio M. Rodrigues	José Filipe Vaz, Joel Borges	Filmes finos de nanopartículas de ouro dispersas numa matriz dielétrica de TiO_2 com efeito de ressonância de plasmão de superfície localizado	ECUM
Beatriz Duro de Freitas	José Filipe Vaz, Cláudia Lopes	Otimização das propriedades físicas fundamentais de filmes fios intermetálicos do tipo Ti-Me (Me= Al, Au) na funcionalização de elétrodos/sensores do tipo polimérico, para aplicação em dispositivos biomédicos	ECUM
João Duarte Pereira de Sousa	Luis Rebouta	Sistema ótico baseado em nitretos e oxinitretos para conversão fototérmica da radiação solar	EEUM

6.4.4.6 Ph.D. theses completed in 2016

Author	Supervisor	Title	Situation
Cibeli Navarro Belleti Garcia	Carlos Tavares, Edith Ariza	Estudo da utilização da microscopia eletrónica de varrimento em materiais com aplicações emergentes em nanotecnologia – caso particular de filmes finos de óxido de zinco para aplicação em sistemas fotovoltaicos	EEUM
Sandra Mariana Marques	Sandra Carvalho	Development of multifunctional coatings deposited on polymers	EEUM

		based sensors for biomedical applications	
Sebastian Calderon Velasco	Sandra Carvalho Abano Cavaleiro	Production and characterization of Zr-C-N-Ag coatings deposited by magneton sputtering	EEUM /University of Coimbra
Isabel Ferreri	Sandra Carvalho, Mariana Henriques	Antibacterial properties of multifunctional coatings Ag-ZrCN for biomedical devices: a novel approach	ECUM/ Engineering school
Sergey Pyrlin	Marta Ramos	Modelling the physical properties of nanostructures and composites	ECUM

6.4.4.7 Master theses in progress in 2016

Author	Supervisor	Title	Situation
Teresa Manuela Ferreira Rocha Martins	Teresa de Lacerda-Arôso	"Efeitos do Campo Eletromagnético" (Mestrado em Ciências – Formação Contínua de Professores)	ECUM
Marlene Correia de Alpoim Calheiros	Carlos Tavares	Estudo de filmes finos TiO_2:Bi2O_3 para aplicações fotocatalíticas	EEUM
Clara Catarina Pereira Gonçalves	Carlos Tavares e Rosa Bessada (ZF TRW)	Funcionalização de tecidos airbag com microcápsulas para absorção de impacto	EEUM
Joana Oliveira	Sandra Carvalho e Sebastian Velasco	Deposição de nanopartículas de ZnO em nanoestruturas de Ta	EEUM
Sara Pires	Sandra Carvalho,	Incorporação de Ca, P e Mg em óxido de tântalo anódico nanoestruturado: caracterização da biocompatilibidade e citotoxicidade	EEUM
Hugo Moreira	Mariana Marques,	Mechanical and biological characterization of tantalum oxide thin films deposited by magnetron sputtering for dental implants	EEUM
Mostafa Faraji	Sandra Carvalho, Albano Cavaleiro	Friction and wear studies of Ag,Au-alloyed DLC coated biomedical devices	University of Coimbra (TRIBOS – Joint European Master in tribology of surfaces and interfaces)

Reza Bayat	Sandra Carvalho, Albano Cavaleiro	Corrosion and Tribocorrosion response of Ta based coatings in artificial saliva	University of Coimbra (TRIBOS – Joint European Master in tribology of surfaces and interfaces...)
Filipe Machado	Joaquim Carneiro; Mário Pereira	Development of Capacitive Touch Sensor Using the Nanoporous Anodic Aluminium Oxide (AAO) Structure	ECUM
Vladimiro José Pires	Joaquim Carneiro, Anura Samantilleke	TiO2 Nanorod Heterostructures for Photo-electrochemical Water Splitting under Visible light	ECUM
Pedro Neiva Dias	Joaquim Carneiro; Vasco Teixeira	Desenvolvimento de um Kit Didático de Energia Eólica	ECUM
João Pedro Costeira	Joaquim Carneiro, Vasco Teixeira	Desenvolvimento de um Kit Didático de Energia Solar Fotovoltaica	ECUM
Diogo Emanuel Carvalho Costa	Ana Paula Sampaio (DB), Joel Borges	Desenvolvimento de filmes finos com efeito LSPR, constituídos por nanopartículas de metais nobres dispersas numa matriz dielétrica, para aplicações biológicas	ECUM
Rui Pedro Pereira Domingues	José Filipe Vaz, Joel Borges	Desenvolvimento de filmes finos coloridos constituídos por nanopartículas metálicas (Au, Ag, Cu) dispersas numa matriz dielétrica	ECUM
Maria Manuela Carvalho Proença	Ana Paula Sampaio (DB), Joel Borges	Desenvolvimento de filmes finos nanoplasmónicos para deteção de moléculas gasosas	ECUM
Rosa Isabel Pimenta Martins	Madalena Lira, Armando Ferreira	Síntese, ativação e funcionalização de materiais para lentes de contacto	ECUM
Cátia Sofia Aires Rodrigues Teixeira	Madalena Lira, Armando Ferreira	Módulo de Young: caracterização de lentes de contato e alterações induzidas por soluções de manutenção	ECUM

6.4.4.8 Ph.D. theses in progress in 2016

Author	Supervisor	Title	Situation
Filipe da Costa Correia	Carlos Tavares, Adélio Mendes (Uporto)	Desenvolvimento de filme finos na forma de multicamadas de TiO2 e ZnO com propriedades termoelétricas, para aplicação em células solares DSC	EEUM
Juliana Filipa Gouveia Marques	Carlos Tavares	Difusão controlada de compostos ativos do interior de microcápsulas mediada por ativação solar	EEUM
Veniero Lenzi	Luis Marques	Simulation of phase structured polymer composites.	ECUM
Stylianos Tsopanidis	Luis Marques	Simulation of carbon nanotube – polymer composites electrical and optical properties	ECUM
Cristiana Alves	Sandra Carvalho	Desenvolvimento de superfícies bioativas para o crescimento ósseo em implantes dentários	EEUM
Rita Rebelo	Raúl Fangueiro Mariana Henriques	Fibrous Braided Stents with Antibacterial Properties	EEUM
Simone Rodrigues	Albano Cavaleiro Sandra Carvalho	Develoment of hydrophilic/oleophobic treatments for self-cleaning and anti-greasy surfaces	University of Coimbra/UM
Edgar Carneiro	Sandra Carvalho	Desafios REACH: revestimentos alternativos ao Cr hexavalente	EEUM
Diogo Cavaleiro	Sandra Carvalho, Filipe Fernandes	The importance of Ag content for optimizing the machining performance of Ti-Si-(Ag)-N coatings	EEUM/University of Coimbra
Luísa Fialho	Sandra Carvalho, Maria Helena Fernandes	Design of new biocompatible osseointegrated implants	EEUM /University of Porto
Rita Ferreira	Filipe Samuel Sandra Carvalho	New processing technologies for improved compression piston rings performance	EEUM / Leaders for Technical Industries Doctoral Program
Salmon Landi	Joaquim Carneiro	Tratamento de efluentes industriais através de processos fotocatalíticos com dióxido de titânio	ECUM
Vitor Vasconcelos	Jorge Pacheco/ Marta Ramos	Emergence and Self-organization of Cooperation.	ECUM
Cláudia de Jesus Ribeiro Lopes	José Filipe Vaz	Advanced thin film architectures for enhanced biomedical sensing performance	ECUM
Abbas M.k. AL-Rjoub	Luis Rebouta, Senen Lanceros Mendéz	Design, fabrication, characterization and aging studies	ECUM MapFis

		of selective solar selective absorber surfaces	
Sofia Ferreira	Rodrigo Martins, Luis Rebouta,	Multifunctional metal oxides semiconductor presenting simultaneously transparency, conductivity and luminescent properties – Luminescent-TCOs	New University of Lisbon/UM

6.4.5 Other scientific activities

Conference organization

International

26° Encontro Ibérico para o Ensino da Física, membros da comissão organizadora e comissão cientifica: Luís Cunha, Marta Ramos.

20th International Vacuum Conference, IVC-20/ICSS-16/ICN+T2016/VASSCAA-8/25th KVS/ITC2016/ISPB2016 (http://www.ivc20.com), Busan, Korea, August 22 to 26, 2016, member of the international program and scientific committee of the Applied Surface Science. Session-Chair for EMP-02: Transparent Electrodes and Carrier Transport Part I. – C. Tavares

15th International Conference on Plasma Surface Engineering (PSE 2016), September, 12 – 16 2016, Garmisch-Partenkirchen, Germany. Session-Chair for Session 13 – Energy Harvesting and Optical Coatings. (www.pse-conferences.net/pse2016) – C. Tavares

PSE2016 – 15th International Conference on Plasma Surface Engineering, Garmisch-Partenkirchen, Germany, September 2016 Sandra Carvalho, Membro do International Scientific Committee.

Junior Euromat, The Main Event for Young Materials Scientists, Lausanne, Switzerland, 10-14 July 2016. Sandra Carvalho; Topic Chair: Functional Materials.

National

20.ª Conferência Nacional de Física Universidade do Minho, 8-10 Setembro de 2016, Comissão Organizadora e Comissão Cientifica: Luís Rebouta and Carlos Tavares.

V Meeting Nacional of Material Students, University of Beira Interior, Covilhã, 29 e 30 September 2016, Sandra Carvalho.

11ª JORNADA TÉCNICO-CIENTÍFICA DE CONTACTOLOGIA (CONTACTUM2016) -; Universidade do Minho. Braga (Portugal), 15 de February 2016 (Grupo OCV).
Conferência Nacional de Física; Members of the organizing comitte; Luis Cunha, Luis Rebouta, Carlos Tavares

14th IUVSTA School on Nano-Optics from Principles to Basic Research and Applications, April 11-15 2016, INL, Braga Portugal. Local Organizer. (http://nanoopticsschool.org/) – C. Tavares

122th IUVSTA Executive Council Meeting ECM-122, April 15-17, INL, Braga, Portugal. Local Organizer. (http://www.iuvsta.org/) – C. Tavares

- Dia Mundial dos Materiais 2016, 2 de Novembro, Universidade do Minho, Guimarães Sandra Carvalho.

6.4.5.1 Invited Lectures/seminars delivered by members of the group, in national or international

International

Effective protection with DLC coatings of elastomers used in ball bearings: preparation, characteristics and performance. D. Martinez-Martinez, J.Th.M. De Hosson. 5th International Conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems (IC4N2016), Porto Heli (Greece). 26-30 June 2016 (Invited Conference).

Influence of 60ehavior60le60ity on the frictional performance of DLC-coated elastomers. D. Martinez-Martinez, J.Th.M. De Hosson. NANOSMAT 2016 Conference, Aveiro (Portugal). 6-9 September 2016 (Invited Conference).

Effective protection with DLC coatings of elastomers used in ball bearings: preparation, characteristics and performance. D. Martinez-Martinez, J.Th.M. De Hosson. 5th International Conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems (IC4N2016), Porto Heli (Greece). 26-30 June 2016 (Invited Conference).

Influence of 60ehavior60le60ity on the frictional performance of DLC-coated elastomers. D. Martinez-Martinez, J.Th.M. De Hosson. NANOSMAT 2016 Conference, Aveiro (Portugal). 6-9 September 2016 (Invited Conference).

How to turn a SEM into a AFM: 3D surface reconstruction using SEM images. Diego Martinez-Martinez, E. Faber, C. Mansilla, J. Th. M. de Hosson. 11th International Conference on Plasma Surface Engineering (PSE2008), Garmisch-Partenkirchen (Germany). 12-16 September 2016 (Keynote lecture).

Microencapsulation of Citronella Oil for Solar Activated Controled Release as an Insect Repellent, 4th Latin-American Congress on Photocatalysis (4th LACP), Carlos Tavares, April 25-30 2016, Universidade Industrial de Santander, Bucaramanga, Colombia

Thin films as electrodes for biosensors, Sandra Carvalho, ICAMS 2016 – 6th International Conference on Advanced Materials and Systems, Bucharest, Romania, 2016, 20-22 October

Sputtering as a surface engineering tool, Sandra Carvalho, International Workshop on Surface Engineering – 9 e 10 de dezembro 2016, Jaipur, Índia

Coatings for biomedical applications, Sandra Carvalho, International Workshop on Surface Engineering – 9 e 10 de dezembro 2016, Jaipur, Índia.

Biotribological behavior of Ag-ZrCxN1-x coatings against UHMWPE for joint 60ehavior60l device, Sandra Carvalho, Fifth International Conference on Tribo Corrosion, 12-13 de dezembro de 2016, Hyderabad, Índia.

Electrodes Deposited on Piezoelectric PVDF Substrates for Biomedical Sensor Application, Sandra Carvalho, First International Conference on Coatings, Thin Fims, Multi-layer devices & Systems-I, 14 – 16 de dezembro 2016, Hyderabad.

Photocatalytic performance of cotton coated with SiO2-TiO2-HY: Emphasis on the calcination role", S. Landi Jr. The 3rd International Congress on Water, Waste and Energy Management (EWWM), 18-20 July 2016, Rome, Italy.

Thin Films for Biomedical Applications: from Sensors to Electrodes, F. Vaz, 43th International Conference On Metallurgical Coatings and Thin Films – ICMCTF 2016", Town and Country Hotel, San Diego, California, EUA, 25 a 29 de abril de 2016.

Solar selective absorber coatings for high temperature applications, L. Rebouta, C.J.Tavares, 37th CBRAVIC- The Brazilian Congress on Vacuum Applications in Industry and Science, October 9-12, 2016, Universidade Estadual Paulista, UNESP, Bauru, Brazil

National

Sputtering as base technique for production of coatings for biomedical applications, V Meeting Nacional of Material Students, Sandra Carvalho,University of Beira Interior, Covilhã, 29 e 30 Setember 2016.

Effect of Fe on the oxidation mechanism of Zn Nanoparticles Produced by DC-Pulsed Magnetron Sputtering, Sandra Carvalho,Workshop VÁCUO 2016 no âmbito da 20ª Conferência Nacional de Física – Física 2016

6.4.6 Other information

6.4.6.1 Other Conference Presentations given by members of the group in national or international conferences

International
Oral

Microencapsulation of Citronella Oil for Solar Activated Controled Release as an Insect Repellent, 4th Latin-American Congress on Photocatalysis (4th LACP), April 25-30 2016, Universidade Industrial de Santander, Bucaramanga, Colombia.

Advanced Photocatalytic Heterostructered Materials for the Controlled Release of Active Compounds upon Solar Activation, J. Marques, F.C. Correia, P. Parpot, C.J. Tavares, nanoPT 2016 International Conference, February 16-19 2016, International Iberian Nanotechnology Laboratory (INL), Braga, Portugal.

Thin film metal-oxide transparent and conductive electrodes deposited by magnetron sputtering, Filipe C. Correia, Luís Rebouta, Pedro Alpuim, Maria Benelmekki, Carlos J. Tavares, 13th EXMATEC - Expert Evaluation and Control of Compound Semiconductor Materials and Technologies, June 6-10 2016, Aveiro, Portugal

TiO2-functionalized Microcapsules as a Novel Controlled Release System for Mosquito Repellents, J. Marques, A.D. Ribeiro, P. Parpot, G.M. Alves, B. Pires, C.A. Sousa, C.J. Tavares, 9th European meeting on Solar Chemistry and Photocatalysis: Environmental Applications (SPEA), June 13 – 17 2016, Strasbourg, France.

Thermoelectric ZnO:Al,Ga thin films (EMP-02-6-O-M), Filipe Correia, Luis Rebouta, Maria Benelmekki and Carlos Tavares, 20th International Vacuum Congress (IVC20), August 21-26 2016, Busan – Bexco, Korea.

ZnO:Ga,Al,Bi transparent and conductive thin films for photovoltaic electrodes (3j1039-OR), Filipe Correia, Luis Rebouta, Maria Benelmekki and Carlos Tavares, 15th International Conference on Plasma Surface Engineering (PSE 2016), September, 12 – 16 2016, Garmisch-Partenkirchen, Germany.

Influence of oxygen content on the antibacterial effect of Agx-Ox coatings deposited by magnetron sputtering, R. Rebelo, R. Fangueiro, M. Henriques, S. Carvalho, Junior Euromat, Lausanne, Switzerland, 2016

Wettability control of AA6016-T4 aluminum alloy surfaces under anodization process, S- Rodrigues, A. Cavaleiro, S. Carvalho, EUROMAT Junior 2016, Lausanne, Switzerland, 10-14th July 2016.

Growth of highly ordered anodic tantalum oxide nanostructures: control from nanopore to nanotube arrays, C. F. Almeida Alves, J. Oliveira, S. Pires, A. Cavaleiro and S. Carvalho; FEMS Junior Euromat 2016, Lausanne, Switzerland, 10-14 July 2016.

Measurement of residual stress by slit milling method at the local microscale". C. Mansilla, V. Ocelík, J.Th.M. De Hosson. HEFIB 2016. Luxembourg (Luxembourg). 8-10 June 2016.

Influence of the oxygen content on the properties of Ta1-xOx bioactive coatings: an experimental and ab-initio study, C. F. Almeida Alves, L. Marques, F. Paumier, T. Girardeau, D. Schneider, A. Cavaleiro and S. Carvalho, 43th International Conference on Metallurgical Coatings and Thin Films (ICMCTF), 25 29 Apr 2016, San Diego, California, USA.

Structure- property relations in ZrCN coatings for tribological applications, S. Carvalho , M. Rebelo de Figueiredo, R. Franz , R. Escobar Galindo, C. Palacio , C. Mitterer, 2nd Workshop on Multifunctional Coatings 2016, 10-12nd October, 2016, Nantes, France

Tribological testing of leather treated with Ag/TiO2 nanoparticles for footwear industry, Marisa Rebelo de Figueiredo, Isabel Carvalho, Sandra Carvalho, Carmen Gaidau, Robert Franz, 63rd AVS International Symposium & Exhibition, Nashville, Tennessee, USA, 06-11 November 2016.

Antibacterial Ag/a-C nanocomposite coatings: The influence of nano-galvanic a-C and Ag couples on Ag ionization rates, N.K.Manninen, S.Calderon V., I.Carvalho, M.Henriques, A.Cavaleiro, S.Carvalho, ICAMS 2016 – 6th International Conference on Advanced Materials and Systems, Bucharest, Romania, 2016, 20-22 October

Development of electrodes deposited by magnetron sputtering on polymers based sensors for biomedical applications, S.Marques, Lanceros-Mendez, M. Henriques, P. Rico, S.Carvalho, 15th International Conference on Plasma Surface Engineering (PSE), Garmisch-Partenkirchen, Germany, 12-16th September 2016.

Photocatalytic performance of cotton coated with SiO2-TiO2-HY: Emphasis on the calcination role, S. Landi Jr., J. O. Carneiro, P. Parpot, A. M. Fonseca, F. Fernandes, I. C. Neves, V. Teixeira. The 3rd International Congress on Water, Waste and Energy Management (EWWM), 18-20 July 2016, Rome, Italy.

Functionalization of Textiles by TiO2-Reduced Graphene Oxide Nanocomposite as Advanced Photocatalytic Materials". S. Landi Jr., J. O. Carneiro, P. Parpot, F. Fernandes, V. Teixeira. 7th International Conference on Advanced Nanomaterials (ANM2016), 25–27 July 2016, Aveiro, Portugal.

Smart road paint and road signs with the ability to change colour at low temperature". F. Fernandes, E. Freitas, J. O. Carneiro, M. Pastor, E. Luís, A. A. Chivanga Barros, A. P. Samantilleke, V. Teixeira. 1st European Road Infrastructure Congress (ERICLeeds16), 18-20 October 2016, Leeds, United Kingdom.

Thin films for biomedical applications: from sensors to electrodes, J. Borges, M.S. Rodrigues, D. Costa, A. Cavaleiro, F. Vaz, 43th International Conference on Metallurgical Coatings and Thin Films (ICMCTF) – 2016

Development of plasmonic thin films composed of metallic nanoparticles (Au, Ag, Cu) dispersed in AlN, M.S. Rodrigues, R.P. Domingues, D. Costa, F.J. Oliveira, R.F. Silva, S. Koneti, L. Roiban,P. Steyer, J. Borges, F. Vaz, 15th International Conference on Plasma Surface Engineering (PSE) – 2016

Electromechanical performance of nano-architectured piezoresistive Ti1-xCux thin films for sensor applications, Armando Ferreira, Joel Borges, Cláudia Lopes, Nicolas Martin, Filipe Vaz, 15th International Conference on Plasma Surface Engineering (PSE) – 2016

Graphene and 63ehavior63le nanoparticles: Looking good together?, M.I. Vasilevskiy, J.E. Santos, R.M. Pereira, Yu.V. Bludov, F. Vaz, N.M.R. Peres, 18th International Conference on Transparent Optical Networks, ICTON 2016, Faculty of Letters and Philosophy of University of Trento, Trento, Italy, July 10-14, 2016.

Solar selective absorber coatings for high temperature applications, L. Rebouta, D.Dias, A. Sousa, P. Costa, M.Benelmeki, M.Andritschky, C.J.Tavares, P.Santilli, K.Pischow, 37th CBRAVIC – The Brazilian Congress on Vacuum Applications in Industry and Science, October 9-12, 2016, Universidade Estadual Paulista, UNESP, Bauru, Brazil

Electrical and optical properties of TixOy;Nb thin films deposited by grid assited magnetron sputtering with pulsed bias, J. Stryhalski, L. Rebouta, C.J. Tavares, D.A. Duarte, J.C. Sagás, L.C. Fontana, 37th CBRAVIC – The Brazilian Congress on Vacuum Applications in Industry and Science, October 9-12, 2016, UNESP, Bauru, Brazil.

Solar selective absorber coatings based on double AlSiOx:W cermet layers, D. Dias, L. Rebouta, M. Benelmeki, M. Andritschky, C. Tavares, P. Santilli, K. Pischow, 15th International Conference on Plasma Surface Engineering (PSE16) –September 12-16, 2016, Garmisch-Partenkirchen, Germany

Special matrices for visco-elastic systems", 13th International Conference on Numerical Analysis and Applied Mathematics (ICNAAM 2016), Forjaz, M. A.; Almeida, A.M.; Fernandes,L.M., Pamplona, J., Lacerda-Arôso, T., Rhodes, Greece, September 19-25.

Poster

How to turn an SEM into an AFM: 3D surface reconstruction using SEM images. C. Mansilla, D. Martínez-Martínez, E. Faber, J.Th.M. De Hosson. 1st International Conference on Helium Ion Microscopy and Emerging Focused Ion Beam Technologies (HEFIB 2016), Luxembourg (Luxembourg). 8-10 June 2016.

Determination of the thickness of the embedding phase in crystalline/amorphous nanocomposites. D. Martinez-Martinez, J.C. Sánchez-López. NANOSMAT 2016 Conference, Aveiro (Portugal). 6-9 September 2016.

Mechanical properties of tough nanocomposites: a computational study by molecular dynamics. D. Martinez-Martinez, O. Faza, J.Th.M. De Hosson. NANOSMAT 2016 Conference, Aveiro (Portugal). 6-9 September 2016.

Decorative Zirconium oxynitride coatings deposited by magnetron sputtering: an attempt to break the chemical and color restrictions. Diego Martinez-Martinez, C.I. da Silva-Oliveira, L. Cunha, M.S. Rodrigues, J. Borges, C. Lopes, E. Alves, N.P. Barradas, M. Apreutesei. 15th International Conference on Plasma Surface Engineering (PSE2016), Garmisch-Partenkirchen (Germany).

Electrical and optical properties of TiO2[Nb] thin films deposited by grid-assisted magnetron sputtering with pulsed bias, J. Stryhalski, D.A. Duarte, J.C. Sagás, L. Rebouta, C.J. Tavares, L.C. Fontana, International Conference on Metallurgical Coatings and Thin Films 2016 (ICMCTF'2016), April 28 –May 2 2016, San Diego CA, United States.

Thin film ZnO:Ga transparent conductive electrodes deposited by magnetron sputtering, Filipe C. Correia, Juliana Marques, Maria Benelmekki, Luis Rebouta, Carlos J. Tavares, To-BE Spring Meeting 2016, April 5-8 2016, Warwick University, Coventry, UK.

TiO2-functionalized Microcapsules as a Novel Controlled Release System for Mosquito Repellents, J. Marques, A.D. Ribeiro, P. Parpot, G.M. Alves, B. Pires, C.A. Sousa, C.J. Tavares, 9th European meeting on Solar Chemistry and Photocatalysis: Environmental Applications (SPEA), June 13 – 17 2016, Strasbourg, France.

Development of thermoelectric ZnO:Al,Ga,Bi thin films, Filipe C. Correia, Miguel A. Neto, Carlos J. Tavares, 13th EXMATEC - Expert Evaluation and Control of Compound Semiconductor Materials and Technologies, June 6-10 2016, Aveiro, Portugal. (Best Poster Award).

Oxygen scavenger nanoparticles for food packaging, UT Austin | Portugal Program, S.Calderon V., P.J. Ferrerira, S. Carvalho, Annual Conference, Lisbon, Portugal, 2016

Study of wettability of magnetron sputtered W-S-C-F coatings onto anodized aluminum alloy substrates, S. P. Rodrigues, S. Carvalho and A. Cavaleiro, 15th International Conference on Plasma Surface Engineering (PSE), Garmisch-Partenkirchen, Germany, 12-16th September 2016.

Influence of oxygen content on the electrochemical behavior of Ta1-xOx coatings", C. F. Almeida Alves, S. Calderon, D. Dias, A. Cavaleiro and S. Carvalho; PSE2016 – 15th International Conference on Plasma Surface Engineering, Garmisch-Partenkirchen, Germany, September 2016

In-situ EBID purification process with a novel concentric nozzle for simultaneous introduction of organic-metallic precursor and oxygen". C. Mansilla, J.J.L. Mulders, P.H.F. Trompenaars. HEFIB 2016. Luxembourg (Luxembourg). 8-10 June 2016.

Roughening and ripple formation on silicon (100) surface during low energy ion bombardment".C. Mansilla, J.J.L. Mulders, P.H.F. Trompenaars. HEFIB 2016. Luxembourg (Luxembourg). 8-10 June 2016.

Storing Matter: a new analytical technique developed to improve the sensitivity and the quantification during SIMS analyses". C. Mansilla, T. Wirtz. HEFIB 2016. Luxembourg (Luxembourg). 8-10 June 2016.

Photocatalytic degradation of petroleum and its derivatives: the use of functionalized textile substrates with TiO2nanoparticles and reduced graphene oxide. J. O. Carneiro, V. Teixeira, F. Fernandes, D. Silva, A. A. Chivanga Barros. NanoPT 2016, 16-19 February 2016, Braga, Portugal.

Preparation and bio-functionalization of Au:TiO2 nanoplasmonic thin films for LSPR-biosensors; D. Costa, J. Borges, M.S. Rodrigues, P. Sampaio, F. Vaz, 15th International Conference on Plasma Surface Engineering (PSE) – 2016

Study of the electromechanical 65ehavior of Ti-Ag coated polymers for biomedical applications, Claudia Lopes, Beatriz Freitas, Marco Rodrigues, Joel Borges, Aurelien Etiemble, Philippe Steyer, Filipe Vaz, 15th International Conference on Plasma Surface Engineering (PSE) – 2016

In situ study of the electromechanical 65ehavior of Ti-Ag coated polymers for bio-sensing applications, Aurelien ETIEMBLE, Claudia LOPES, Jose Bolivar, Lucian Roiban, Beatriz FREITAS, Marco Sampaio RODRIGUES, Julien RETHORE, Filipe VAZ, Philippe STEYER, The 16th European Microscopy Congress (emc2016)

Influence of Cu content on the structural and morphological features of TixCuy intermetallic thin films for biosignals acquisition, C. Lopes, S. Koneti, L. Roiban, J. Borges, T. Epicier, F. Vaz, P. Steyer, The 16th European Microscopy Congress (emc2016)

National

Oral

FILMES FINOS À BASE DE CARBONO DEPOSITADOS EM SUBSTRATOS BIODEGRADÁVEIS PARA EMBALAGENS ALIMENTARES INTELIGENTES, V Meeting Nacional of Material Students, University of Beira Interior, Covilhã, 29 e 30 Setember 2016, Catarina Fernandes, Sebastian Calderon, Isabel Carvalho, Sandra Carvalho

Desenvolvimento de nanoestruturas para implantes osteointegrados, V Meeting Nacional of Material Students, University of Beira Interior, Covilhã, 29 e 30 Setember 2016, Joana Oliveira, S. Calderon, C. F. Almeida Alves, S. Carvalho

Evaluation of macrophage activation promoted by tantalum oxide thin film coatings deposited by reactive DC magnetron sputtering, V Meeting Nacional of Material Students, University of Beira Interior, Covilhã, 29 e 30 Setember 2016, Hugo Moreira, Paula Sampaio, Sandra Mariana Marques, Sandra Carvalho

Ta nanoestruturado para acelerar a osteointegração em implantes dentários, V Meeting Nacional of Material Students, University of Beira Interior, Covilhã, 29 e 30 Setember 2016, S. Pires , C. F. A. Alves , S. Carvalho

Production of Zn/Fe nanoparticles, V Meeting Nacional of Material Students, University of Beira Interior, Covilhã, 29 e 30 Setember 2016.

Poster

AMEC nas empresas: Experimentar ciência em contexto empresarial. Marina Maciel, Alice Dias, Ana Carvalho, Ana Cunha, Arminda Manuela Gonçalves, João Paulo André, Luís Gonçalves, Maria Cláudia Araújo, Maria Manuel Azevedo, Maria Teresa Almeida, Nuno Castro, Nuno Passos, Pedro Pimenta Simões, Sandra Carvalho, Rui Baptista, Estelita Vaz, Sandra Paiva. National Congress SciComPT 2016, Lisbon 26-27 May 2016.

Determinação por espetroscopia de infravermelho da razão Si/Al em compósitos de SiO2/TiO2/HY, S. Landi Jr., J. O. Carneiro, P. Parpot, I.C. Neves, A. M. Fonseca, F. Fernandes. IV Encontro em Técnicas de Caracterização e Análise Química (IV ETCAQ), 17-de Junho de 2016, Braga, Portugal.

The use of textiles functionalized with TiO2/SiO2 particles for anti-stab systems". F. Fernandes, J. O. Carneiro, P.Pinto, B. Oliveira, S. Landi Jr, V. Teixeira, A. P. Samantilleke. IV Encontro em Técnicas de Caracterização e Análise Química (IV ETCAQ), 17-de Junho de 2016, Braga, Portugal.

Nanoplasmonic thin films for LSPR-(Bio)sensing applications, J. Borges, M.S. Rodrigues, D. Costa, P. Sampaio, R.M.S. Pereira, M.I. Vasilevskiy, A. Cavaleiro, F. Vaz, Encontro de Ciência 2016 – Nanociências e Nanotecnologias

6.5 Complexity and Electronic Properties Group (GCEP)

6.5.1 Updated composition of the group

Research GroupTitle	Complexity and electronic properties
Principal investigator	Ricardo Mendes Ribeiro
Research area	Condensed Matter Physics
Group Members	<u>Effective Members:</u> -Anabela G Rolo – Assistant Professor -Francisco J M Macedo – Assistant Professor -João Pedro H A Alpuim – Assistant Professor -Gueorgui V Smirnov– Full Professor -Maria Fátima G Cerqueira – Assistant Professor -Maria José F A F Sampaio – Assistant Professor -Mikhail I Vasilevskiy– Full Professor -Nuno M R Peres– Full Professor -Ricardo Mendes Ribeiro – Assistant Professor <u>Post-Doctorate Researchers and Research Fellows with PhD:</u> Yuliy Bludov – Graphene Flagship Program grant, and Invited Associate Professor (0%) Jaime Santos – Uminho/Bosch Project grant <u>PhD and other research students:</u> -Filipe Oliveira – Map-Fis Phd student - FCT grant - Ícaro Mendonça - Map-Fis Phd student – CAPES grant -André Chaves - PhD in science– CAPES grant -George Junior - PhD in engineering – CAPES grant - Balaji Sompalle – Map-Fis PhD Student - Nuno Oliveira - PhD in science – FCT grant - Isabel Cristina Machado de Araujo – Phd in science - Eliana Tiba Gomes Grande – PhD in science

6.5.2 Summary description of the scientific work carried out by the group in 2016

Graphene plasmonics for sensing and other applications

Optimizing our CVD graphene quality, we used it for the wafer-scale fabrication of electrolytic-gate FETs (EGFETs), which are the transducing elements in label-free highly sensitive biosensors for detection of antigens (proteins) with detection capability down to 100 pg/mL), and DNA with attomolar detection and single nucleotide polymorphism (SNP) detection. We fabricated our first electrochemical graphene DNA sensors based on a microarray design with ability for detection of SNP.

Calculations of surface plasmon properties have been performed for a number of graphene-based structures with potential interest for applications in sensors and THz radiation processing devices, such as graphene-covered dielectric wedge, periodic grid of graphene nanoribbons, and a monolayer of polarizable particles deposited on graphene. Also, out-of-equilibrium plasmons generated by optical pumping were considered theoretically.

Other 2D materials and structures for optoelectronics

Optoelectronic systems based on 2D Van der Waals heterostructures of boron nitride, graphene, and transition metal di-chalcogenides (TMDs) were considered theoretically. Theoretical description of electron tunneling across such structures, DFT calculations of exciton properties of TMDs. Experiments on these structures have begun.

Other plasmonic structures

Theoretical modelling of the optical response of structures including metallic nanoparticles embedded in dieletrics: effects of particles' clustering and non-spherical shape.

Thin film silicon devices

We patterned piezoresistive strain gauges using direct laser writing on a-Si:H by induced crystallization and dopant activation, worked on integrated p-i-n microphotodiodes and started a FCT project for water splitting based on photocathodes using a-Si:H tandem solar cells (collaboration with IK5-Jülich).

Raman analysis and imaging

It has been performed for a number of materials and structures including graphene, gallium nitride, cobalt titanite nanotubes, etc.

6.5.3 Future Research

1. Excitonic effect in transition metal dichalcogenides (TMDs) and other 2D materials. Exciton-polaritons in layered structures including TMDs.
2. Graphene plasmonics for sensing and for optical isolation effect in the THz range. Theoretical studies of new regimes in graphene plasmonics.
3. Theoretical studies of energy transfer processes in systems including quantum dots.
4. Raman spectroscopy studies of nanostructured materials.
5. Further develop our biosensors based on graphene, both using EGFETs and electrochemical electrodes as building blocks. Fabrication of new platforms with multiplexing capability.
6. Fabrication of Large area two-dimensional heterostructures for photodetectors.
7. silicon-based thin-film materials; development of a new method of metallization of polymers; fabrication of micro-diode arrays made of a-Si:H p-i-n junctions to work as photodetectors in integrated biosensing platforms.

6.5.4 Scientific Production

6.5.4.1 Regular Articles Published in ISI Journals

Influence of Copper layer content in the elastic and damping behavior of Glassfiber/Epoxy-Resin composites" V.H. Carneiro, P. Capela, J. C. Teixeira, S. Teixeira, F. Cerqueira, F. Macedo, L. Ribas, D. Soares, Applied Composite Materials (2016)

Ag fractals formed on top of a porous TiO2 thin film", J. Borges, M. S. Rodrigues, C. Lopes, D. Costa, A. Ferreira, R. M. S. Pereira, M. F. Costa, M. I. Vasilevskiy, and F. Vaz, Phys. Status Solidi RRL 10 (2016) p. 530 – 534. http://repositorium.sdum.uminho.pt/handle/1822/43375

Broadband Optical Absorption caused by Plasmonic Response of Coalesced Au Nanoparticles Embedded in a TiO2 Matrix", Joel Borges, Rui Miguel M. S. Pereira, Marco Sampaio S. Rodrigues, Tomas Kubart, Sharath Kumar Manjeshwar Sathyanath, Klaus Leifer, Albano Cavaleiro, Tomaš Polcar, M. I. Vasilevskiy, and F. Vaz, J. Phys. Chem. C 120 (2016) p. 16931-16945. http://repositorium.sdum.uminho.pt/handle/1822/43374

Contact angle measurement of SAC 305 solder: numerical and experimental approach" Nelson Rodrigues, Ana Cristina Ferreira, Senhorinha Fátima Teixeira, Delfim Soares, José Carlos Teixeira, Fátima Cerqueira, Francisco Macedo, Journal of Materials Science: Materials in Electronics 27, pp. 8941-8950 (2016) http://repositorium.sdum.uminho.pt/handle/1822/27989

Electrocatalytic Performance and Stability of Nanostructured Fe–Ni Pyrite-Type Diphosphide Catalyst Supported on Carbon Paper" Costa, José Diogo; Lado, José Luis; Carbo-Argibay, Enrique; Paz, Elvira; Gallo, Juan; Cerqueira, Maria Fátima; Rodriguez-Abreu, Carlos; Kovnir, Kirill; Kolen'ko, Yury, J. Phys. Chem. C 120, pp. 16537-16544 (2016), http://hdl.handle.net/1822/44516

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Graphene Plasmons in Triangular Wedges and Grooves, P.A.D. Gonçalves, E.J.C.Dias, Sanshui Xiao, M.I. Vasilevskiy, N. Asger Mortensen e N. M. R. Peres, ACS Photonics 3, 2176 (2016). https://repositorium.sdum.uminho.pt/bitstream/1822/43419/1/1610.06758.pdf

Impact of D2O/H2O Solvent Exchange on the Emission of HgTe and CdTe Quantum Dots: Polaron and Energy Transfer Effects", Qiannan Wen, Stephen V. Kershaw, Sergii Kalytchuk, Olga Zhovtiuk, Claas Reckmeier, Mikhail I. Vasilevskiy and Andrey L. Rogach, ACS Nano 10 pp. 4301 – 4311 (2016). http://hdl.handle.net/1822/43860

Laser patterning of amorphous silicon thin films deposited on flexible and rigid substrates, P. Alpuim, M. F. Cerqueira, V. Iglesias, G. Machado, Jr., and J. Borme, Phys. Status Solidi A 213, No. 7 (2016) 1717–1727, , http://hdl.handle.net/1822/43627

Lithium cobalt oxide crystallization on flexible polyimide substrate", J. F. Ribeiro, R. Sousa, E. M. F. Vieira, A. G. Rolo, M. M. Silva, L. Dupont, J. H. Correia, L. M. Goncalves, J. Mater. Sci.: Mater Electron, Volume 27, pp 631-636 (2016) http://hdl.handle.net/1822/38152 2015

Modeling the Excitation of Graphene Plasmons in Periodic Grids of Graphene Ribbons: An Analytical Approach, P. A. D. Gonçalves, E. J. C. Dias, Yu. V. Bludov and N. M. R. Peres, Physical Review B 94, 195421 (2016). http://hdl.handle.net/1822/43364

Multiple negative differential conductance regions and inelastic phonon assisted tunneling in graphene-hBN-graphene structures, B. Amorim, R. M. Ribeiro e N. M. R. Peres, Physical Review B 93, 235403 (2016). http://repositorium.sdum.uminho.pt/handle/1822/43420

Numerical calculation of the Casimir-Polder interaction between a graphene sheet with vacancies and an atom, T. P. Cysne, T. G. Rappoport, Aires Ferreira, J. V. Lopes e N. M. R. Peres,Physical Review B 94, 235405 (2016). http://repositorium.sdum.uminho.pt/handle/1822/43422

Ordered La0.7Sr0.3MnO3 nanohole arrays fabricated on a nanoporous alumina template by pulsed laser ablation", M. Kumaresavanji, I. T. Gomes, A. Apolinario, A. G. Rolo, B. G. Almeida, A. M. L. Lopes, J. P. Araujo, Nanotechnology, 27 (12), Article Number: 125303, DOI: 10.1088/0957-4484/27/12/125303 http://hdl.handle.net/1822/43581

Photoluminescence from ultrathin Ge-rich multi-quantum wells observed up to room-temperature: experiments and modeling" T. Wendav, I. A. Fischer, M. Virgilio, G. Capellini, F. Oliveira, M. F. Cerqueira, A. Benedetti, S. Chiussi, P. Zaumseil, B. Schwartz, K. Busch, and J. Schulze, Physical Review B 94, pp. 245304 (2016) http://hdl.handle.net/1822/44522

Pumping electrons in graphene to the M-point in the Brillouin zone: Emergence of anisotropic plasmons, A.J. Chaves, N. M. R. Peres e Tony Low, Physical Review B 94, 195438 (2016). http://repositorium.sdum.uminho.pt/handle/1822/43424

Qubit dynamics at tunneling Fermi-edge singularity, V.V. Ponomarenko and I. A. Larkin, Europhysics letters, 113, 67004 (p.1-5) (2016), http://hdl.handle.net/1822/44355

Resonantly Increased Optical Frequency Conversion in Atomically Thin Black Phosphorus; Manuel J. L. F. Rodrigues, Christiano J. S. de Matos,* Yi Wei Ho, Hélder Peixoto, Rafael E. P. de Oliveira, Hsin-Yu Wu, Antonio H. Castro Neto, and José Viana-Gomes; Advanced Materials 28 (48) , 2016; DOI: 10.1002/adma.201603119

Role of counter-ion and helper lipid content in the performance of nanocarrier systems: a biophysical study in 2D and 3D lipid assemblies" Ana C. N. Oliveira, Sara S. Nogueira, Odete Goncalves, M. F. Cerqueira, P. Alpuim, Julia Tovar, Carlos Rodriguez-Abreu, Gerald Brezesinski, Andreia C. Gomes, Marlene Lucio, M.E.C.D. Real Oliveira, The Royal Society of Chemistry, RSC Advances: RSC Adv. 6, Vol53, pp. 47730-47740 (2016) http://hdl.handle.net/1822/43627

Satellite de-orbiting via controlled solar radiation pressure", R.Deienno, D.M. Sanchez, A.F.B.A. Prado, G. Smirnov, Celestial Mechanics and Dynamical Astronomy, 2016, https://repositorium.sdum.uminho.pt/handle/1822/42831

Scattering of surface plasmon-polaritons in a graphene multilayer photonic crystal with inhomogeneous doping, Yu. V. Bludov, N. M. R. Peres, G. Smirnov e M. I. Vasilevskiy, Physical Review B 93, 245425 (2016). http://repositorium.sdum.uminho.pt/handle/1822/43421

The effect of ionic Co presence on the structural, optical and photocatalytic properties of modified cobalt-titanate nanotubes", B. Barrocas, A. J. Silvestre, A. G. Rolo and O. C. Monteiro, Physical Chemistry Chemical Physics 18 (27) (2016) 18081-18093. DOI: 10.1039/C6CP01889K, DOI: 10.1039/c6cp01889k http://hdl.handle.net/1822/43701

6.5.4.2 Conference Proceedings

Electrochemically Gated Graphene Field-Effect Transistor for Extracellular Cell Signal Recording" Sanaz Asgarifar, Henrique L. Gomes, Ana Mestre, Pedro Inácio, J. Bragança, Jérôme Borme, George Machado Jr., Fátima Cerqueira, Pedro Alpuim, IFIP Advances in Information and Communication Technology: Chapter Technological Innovation for Cyber-Physical Systems, Volume 470, pp. 558-564 (2016). http://hdl.handle.net/1822/43645

Graphene and Polarisable Nanoparticles: Looking Good Together?" M. I. Vasilevskiy, Jaime E. Santos, Rui M. Pereira, Yu. V. Bludov, F. Vaz, and N. M. R. Peres, ICTON2016 Proceedings, IEEE IEEEXplore Digital Library, DOI: 10.1109/ICTON.2016.7550390 (SCOPUS database) http://hdl.handle.net/1822/43861

6.5.4.3 Master theses in progress in 2016

Author	Supervisor	Title	Situation
M S Sharath Kumar	Anabela G. Rolo and Leonard Francis	Electron Microscopy and Spectroscopy Study of Modified Titanate Nanotubes	Master's Internship at INL
Jorge Silva	M. I. Vasilevskiy	Polaritons in multilayer semiconductor structures	ECUM/ Mestrado em Física

6.5.4.4 Ph.D Theses in progress in 2016

Author	Supervisor	Title	Situation
Filipe André Peixoto Oliveira	Mikhail Vasilevkiy & Fatima Cerqueira	Photonic integrated circuit (PIC) devices for inter- and intra-chip optical communication using GeSn alloy layers grown on Si substrates	MAP-Fis
George Luiz Machado Jr.	Pedro Alpuim	Microfabricação de transístores de efeito de campo de grafeno para aplicações em biossensores	(EEUM/Materials Engineering)
Balaji Sompalle	Pedro Alpuim	Fabrication of a photodetector based on 2D Van der Waals heterostructures	(DF/MAP-Fis)
Nuno Miguel Teles Oliveira	Gueorgui Smirnov	Complexidade de métodos de ponto interior aplicados a problemas de optimização de dimensão infinitaDoutoramento em Ciências/Matemática	(ECUM/Doutoramento em Ciências/Matemática)
Isabel Cristina Azevedo Machado de Araújo	Gueorgui Smirnov	Geração automática de exercícios para sistemas de ensino personalizado de Matemática	(ECUM/Doutoramento em Ciências/Matemática)
Eliana Tiba Gomes Grande	Gueorgui Smirnov	Geração automática de exercícios para sistemas de ensino personalizado de Programação	(ECUM/Doutoramento em Ciências/Matemática)

Ícaro Jael Mendonça Moura	R. M. Ribeiro	Estudo de heteroestruturas de materiais bidimensionais	(DF/MAP-Fis)
André Chaves	Nuno Peres	To be defined	ECUM

6.5.4.5 Master theses completed in 2016

Author	Supervisor	Title	Situation
Eduardo Dias	Nuno Peres	Efeitos Plasmónicos em Estruturas Unidimensionais e em Nanoestruturas à Base de Grafeno	ECUM/ Mestrado em Física
António Jorge da Costa Morgado Martins	Anabela Gomes Rolo	Formação Contínua de Professores Área de especialização Física e Química	ECUM/ Mestrado em Ciências –
Patrícia Daniela Cabral da SIlva	Pedro Alpuim	Nanobiosensors based in Graphene Field Effect Transistors for biomarkers detection	ECUM/Mestrado em Biofísica e Bionanossistemas
Paulo Miguel Babo Cunha Salvador	Pedro Alpuim	Development of CdS buffer and ZnO window layer for applications in Cu(In,Ga)Se2 micro solar cells	ECUM/ Mestrado em Física
Fábio André Rodrigues Ferreira	R. M. Ribeiro	Study of the electronic structure of bidimensional materials with the GW approximation and Bethe-Salpeter equation	ECUM/ Mestrado em Física

6.5.4.6 Ph.D Theses completed in 2016

Author	Supervisor	Title	Enrollment (ECUM/other school)
Bruno Amorim	Nuno Peres	PHONONS AND ELECTRONS IN 2D MATERIALS AND LAYERED STRUCTURES	Autónoma de Madrid

6.5.5 Other scientific activities

Conference organization

International

Workshop on Correlations, Integrability, and Criticality in Quantum Systems, Évora, Portugal, October 24-28, 2016 (Yu. Bludov, José Carmelo: members of the organizing committee).

6.5.5.1 Invited Lectures/seminars delivered by members of the group, in national or international

International

Towards graphene-based bio-sensing platforms, P. Alpuim, GraphIn International Workshop (Graphene Industry – Challenges & Opportunities): December 13, 2016, Barcelona, Spain

Graphene-based devices for bio-sensing platforms, P. Alpuim, MAD-NANO16: Madeira International Conference on Emerging Trends and Future of Nanomaterials for Human Health, 17-20 November, Funchal, Madeira, Portugal

PT-symmetric graphene plasmonics, Yu.V. Bludov, 1-st CeFEMA workshop on graphene and other 2D materials, Lisbon, Portugal, December 5, 2016

Graphene-based PT-symmetric structures, Yu.V. Bludov, 7-th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META2016), Málaga, Spain, July 25–28, 2016

Linear and nonlinear plasmonics of graphene multilayers, Yu.V. Bludov, International Seminar "Recent Trends in Modern Optics", Porto, Portugal, June 21-22, 2016

Graphene and nanoparticles: Looking good together?, M. I. Vasilevskiy, International Conference on Transparent Optical Networks (ICTON 2016), Trento, Italy, July 10-14, 2016

Exciton-polaritons in a microcavity with two-dimensional dichalcogenide layers, M. I. Vasilevskiy, International Workshop on Physics of 2D Crystals (IW2DC-2016), Campofelice di Roccella, Palermo, Italy, 29 May – 04 June, 2016.

Influence of the environment vibrational degrees of freedom on the photoluminescence properties of IR emitting colloidal quantum dots: experiment and theory, M. I. Vasilevskiy, VI Conf. on Physical and Physico-Chemical Foundations of Ion Implantation, Nizhniy Novgorod, Russia, October 24-th - 27-th, 2016

Basic notions in graphene plasmonics, N. M. R. Peres, NanoPT-2016, Braga, 17 de Fevereiro de 2016.

Basic notions of graphene plasmonics, N. M. R. Peres, International Symposium: Recent developments on 2D materials research: theory and experiment York, UK, 18 de Maio de 2016.

Orbital manoeuvres using controlled solar radiation pressure, G. Smirnov, 10th Workshop on Spaceflight Dynamics and Control, UBI, Covilhã, Portugal

Mathematical problems of orbital manoeuvres with single-input control, G. Smirnov, XVIII Colóquio Brasileiro de Dinâmica Orbital, Águas de Lindóia, SP, Brasil

National

Studies of GaN:C epitaxial layers using Raman and FIR-ATR spectroscopies, M. I. Vasilevskiy, 20.ª Conferência Nacional de Física e 26.º Encontro Ibérico para o Ensino da Física, Universidade do Minho, Braga, September 8-10, 2016.

Thinking out of the box in electronic structure calculations, R. M. Ribeiro, Computational Approaches to Sciences & Engineering, Aveiro, 7-8 July 2016

6.5.6 Other information

6.5.6.1 Other Conference Presentations given by members of the group in national or international conferences

Internaional

Oral

Resonant and non-resonant Raman spectroscopy study of MOVPE grown GaN:C thin films, F. Cerqueira, A. Alves, R. Correia, M. Huber, A. Andreev, A. Bonanni, M. I. Vasilevskiy - WOCSDICE-EXMATEC 2016 conference (June 2016)

The effect of ionic Co presence on the structural, optical and photocatalytic properties of modified cobalt-titanate nanotubes, B. Barrocas, A.J. Silvestre, A.G. Rolo, O.C. Monteiro, 11th International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT 2016), 6-9 September 2016, Aveiro, Portugal.

In-situ growth and functionalization of graphene for biosensing applications, R. Campos, J. Borme, G. Machado Jr, M.F. Cerqueira, P. Alpuim. GrapheneCanada2016, Graphene & 2D Materials International Conference and Exhibition, October 18-20, 2016, Montreal, Canada

Biosensors based on receded-gate functionalized graphene field-effect transistors, P. Alpuim, J.Borme, G.Machado Jr, P.D.Cabral, E.Fernandes, M.Martins, R.Campos. NanoteC16 – Carbon Nanoscience and Nanotechnology, 31 August – 3 September 2016, Trinity College, Dublin, Ireland

Functionalization of graphene field-effect transistor channel for ischemic stroke biomarker detection, P. D. Cabral, E. Fernandes, F. Cerqueira, G. Machado Jr., J. Borme, P. Alpuim, EGF - European Graphene Forum 2016 Conference and Exhibition, 01 Jun - 03 Jun 2016, Paris, France

A comparison of graphene electrochemical sensors and electrolyte-gated field-effect transistors as label-free immunosensors, G. Machado Jr., S. Teixeira, N. Vieira, M.F. Cerqueira, J. Borme, P. Alpuim. NanoPT2016 International Conference, February 16-19, INL Braga, Portugal

Orbital manoeuvres using controlled solar radiation pressure, G. V. Smirnov, 10th Workshop on Spaceflight Dynamics and Control, UBI, Covilhã, Portugal.

Mathematical problems of orbital manoeuvres with single-input control, G. V. Smirnov, XVIII Colóquio Brasileiro de Dinâmica Orbital, Águas de Lindóia, SP, Brasil

How vibrational degrees of freedom determine nanocrystal QD emission in the infrared, M. I. Vasilevskiy, Workshop on Quantum Materials and Quantum Technologies, INL, Braga, Portugal, September 13-14, 2016.

Poster

Electrochemically Gated Graphene Field-Effect Transistor for Extracellular Cell Signal Recording, Sanaz Asgarifar, Ana Mestre, Pedro Inácio, J Bragança, Jérôme Borme, George Machado Jr, Fátima Cerqueira, Pedro Alpuim and Henrique L. Gomes // The 7th Advanced Doctoral Conference On Computing, Electrical And Industrial Systems DoCEIS'16 — 11/13 Abril 2016 Caparica, Lisboa, Portugal.

A comparison of graphene electrochemical sensors and electrolyte-gated field-effect transistors as label-free immunosensors George Machado Jr., Jérôme Borme, Rui Campos; Sofia Teixeira, Fátima Cerqueira, Pedro Alpuim // Nanoscience and Nanotechnology International Conference – 2016 NanoPT — 16/19 February 2016, INL, Braga, Portugal

Graphene Functionalization for Biosensing, P. D. Cabral, E. Fernandes, F. Cerqueira, G. Machado Jr., J. Borme, P. Alpuim // iBEM- International Biomedical Engineering Meeting — March 21th 2016, Porto, Portugal- "Epitaxial CuInSe2 thin films grown by molecular beam epitaxy and migration enhanced epitaxy" K. Abderrafi, R. R-Andrade, N. Nicoara, H. Limborço, M. F. Cerqueira, M. Debs, J.C. Gonzalez, P.M.P. Salomé, F. Briones, J.M. Garcia, and S. Sadewasser // E-MRS 2016 — May 2016, Nice, France

Functionalization of graphene field-effect transistor channel for ischemic stroke biomarker detection, P. D. Cabral, E. Fernandes, M. F. Cerqueira, G. Machado Jr., J. Borme, P. Alpuim // European Graphene Forum 2016, June 2016, Paris, France

Improvement of inorganic gas diffusion barriers by a low energy argon plasma treatment, P. Alpuim, S. Majee, P. Chapon, M. F. Cerqueira, D. Tondelier, B. Geffroy, Y. Bonnassieux, J.E. Bourée // 8th GD Day- Glow Discharge Spectrometries 2016 — 15/16 september 2016, Paris, France

Spice-based carbon dots: application to in vitro cancer growth inhibition, Nagamalai Vasimalai, Vania Vilas-Boas, Juan Gallo, Cerqueira M. F., Menéndez M, Costa J.M, Lorena Diéguez, Begona Espina, Maria Teresa Fernandez-Arguelles // Applied Nanotechnology and Nanoscience International Conference 2016 (ANNIC) — 09/11 november 2016, Barcelona, Spain

Influence of the cobalt position in the optical, vibrational and structural properties of modified cobalt-titanate nanotubes", A.G. Rolo, H. Gonçalves, M. Belsley, B. Barrocas, A.J. Silvestre, O.C. Monteiro, 14th IUVSTA School on NANO-OPTICS - From Principles to Basic Research and Applications, at INL, 11 to 15 April 2016, Braga, Portugal.

Graphene-based devices for biosensing applications, J. Borme, R. Campos, P.D. Cabral, E. Fernandes, M.F. Cerqueira, G. Machado Jr., P. Alpuim, IEEE Sensors Council Summer School on Nano-Bio-Sensing for Distributed Diagnostics, EPFL Campus, July 11-15, 2016, Lausanne, Switzerland

Study of the functionalization of graphene surfaces for biosensing applications, G.L. Machado Jr., R. Campos, J. Borme, P. Alpuim, Graphene 2016, April 19-22, Genova, Italy

National

Oral

Composite BaTiO3-CoFe2O4 Nanofibers by Electrospinning, V. Gomes, E. de Matos Gomes, A.G. Rolo, B.G. Almeida, A FÍSICA 2016 – 20ª Conferência Nacional de Física e 26° Encontro Ibérico para o Ensino da Física, Universidade do Minho, Campus de Gualtar, de 8 a 10 de setembro de 2016.

Graphene-based devices for bio-sensing platforms, P. Alpuim, Workshop Cefema, December 5, 2016, IST, Lisboa

Pensar a duas dimensões e fora da caixa, R. M. Ribeiro, Encontro Nacional de Estudantes de Física, Braga, 19 Fevereiro 2016

Different ideas in electronic structure calculations, R. M. Ribeiro, Worshop on Quantum Materials and Quantum Technologies, Braga, 13-14 September 2016

Poster

RAMAN AND STRUCTURAL STUDIES OF MODIFIED COBALT-TITANATE NANOTUBES, M. S. Sharath Kumar, A.G. Rolo, B. Barrocas, A.J. Silvestre, O.C. Monteiro, A FÍSICA 2016 – 20ª Conferência Nacional de Física e 26° Encontro Ibérico para o Ensino da Física, Universidade do Minho, Campus de Gualtar, de 8 a 10 de setembro de 2016.

DIELECTRIC AND NON-LINEAR OPTICAL PROPERTIES OF KDP NANOFIBERS, V. Gomes, H. Gonçalves, E. de Matos Gomes, A.G. Rolo, M. Belsley, B.G. Almeida, A FÍSICA 2016 – 20ª Conferência Nacional de Física e 26° Encontro Ibérico para o Ensino da Física, Universidade do Minho, Campus de Gualtar, de 8 a 10 de setembro de 2016.

ESTUDO DO EFEITO PLASMÓNICO EM ESTRUTURAS COM NANOPARTÍCULAS DE OURO, Ana Jase Costa, Anabela G. Rolo, A FÍSICA 2016 – 20ª Conferência Nacional de Física e 26° Encontro Ibérico para o Ensino da Física, Universidade do Minho, Campus de Gualtar, de 8 a 10 de setembro de 2016.

Graphene Functionalization for Biosensing, P. D. Cabral, E. Fernandes, F. Cerqueira, G. Machado Jr., J. Borme, P. Alpuim, 7th Symposium on Bioengineering, 22nd and 23rd of April, 2016, Porto, Portugal

Graphene Functionalization for Biosensing, P. D. Cabral, E. Fernandes, F. Cerqueira, G. Machado Jr., J. Borme, P. Alpuim, iBEM International Biomedical Engineering Meeting 2016, 21 de Março, Porto, Portugal

6.6 Group of Optics and Vision Science (OCV)

6.6.1 Updated composition of the group

Research Group Title	Optics and Vision Sciences
Principal investigator	Jorge Jorge
Research area	Optics, Optometry and Vision Sciences
Group Members	<u>Effective members:</u> - Alberto Diaz Rey MD PhD, Assistant professor -Ana Pinho PhD, Research and Teaching Assistant -António Baptista PhD, Assistant Professor -António Queirós PhD, Assistant professor -Filipe Costa PhD, Assistant professor -Filipe Macedo PhD, Assistant professor -Jorge Jorge PhD, Assistant professor -José Meijome PhD, Associated professor with Habilitation -Madalena Lira PhD, Assistant professor -Sandra Franco PhD, Assistant professor -Sérgio Nascimento PhD, Associate professor with Habilitation -João Linhares – PhD, Assistant Professor <u>Associate members:</u> -Vasco de Almeida – Assistant professor at UBI <u>Post-Doctorate Researchers and Research Fellows with PhD:</u> -Paulo Rodrigues Botelho Fernandes – FCT grant <u>Ph.D and Other Research Students:</u> - Rute Araujo – Phd in optometry - Helena Neves – Phd in science – FCT grant - Santiago Garcia – Phd in optometry - Ana Isabel Amorim de Sousa – Phd in optometry and BI project grant - Maria Francisca Peixoto – Phd in optometry - Serguey Junior – Phd in optometry - Lina Cely – Phd in optometry - Laura Moreno – Phd in optometry - Alshaarawi Salem - Phd in optometry - André alburquerque Rino Loreiro Amorim –BI Project grant

6.6.2 Summary description of the scientific work carried out by the group in 2016

During 2016 the Group of Optics and Visual Science at the Center of Physics has launched the foundations for its strategic development in the next years in terms of funding, equipment and human resources through the Clinical and Experimental Optometry Research Lab (CEORLab). We are in the process of acquisition of a system for electrophysiological recording of the visual activity along the visual pathway and a metrology device to aquire accurate optical information about the devices we use at the ocular surface for different applications from optical correction in clinical trials to alter the visual input to the eye in the context of fundamental research. This will be applied in the future in several areas of activity we have been developing over the past 7 years: accommodation, presbyopia, visual performance, ocular surface research and most importantly in ocular development and myopia progression and adaptation to multifocality for presbyopia correction. Two pre-doctoral researchers have been recently hired for a period of 3 years, one in the clinical area of Optometry, other in the technological area of Biomedical Engineering. Along with these structural activities, the team has produced a significant amount of work in the form of book chapters, ISI publications, and strong presence in international conferences and participation in two international clinical trials.
The OCV group through the Colour Lab have been studying the vision of daltonics and also working on spectral imaging of artistic paintings with Belas Artes Lisboa and Fondation Calouste Gulbenkian.

6.6.3 Future Research

- In the next future, OCV group aims to strength its human resources by creating a multidisciplinary team of clinical and technologically oriented researchers to work together in the evaluation of visual function and produce innovative solutions to optimize visual performance and regulate eye behavior in several areas using minimally invasive medical devices as contact lenses, among others. The team also aims at collaborating with other groups of the Center of Physics to produce new solutions for visual evaluation. Therefore, OCV group aims at continuing its strategic development focused in 5 pillars:

- Attract internationally funded projects from public and private initiatives, with particular relevance for the participation and leadership of international consortiums to participate in European projects.
- Creating a multidisciplinary team to develop clinically oriented technological solutions and strength our capability to attach more funding and researchers.
- Conduct fundamental research coupling knowledge of visual optics with the electrophysiological assessment of the visual information customized through minimally invasive optical devices in our areas of expertise (visual optics and presbyopia correction, contact lenses and ocular surface, visual electrophysiology and ocular behavior and development).
- Keep up with the publication track increasing progressively the impact of the articles published and our participation in international conferences.
- To continue the above activity and also do research using fMRI on normal and Dalton.

6.6.4 Scientific Production

6.6.4.1 Regular Articles Published in ISI Journals

Changes in myopia prevalence among First-Year university students in 12 years. Jorge, Jorge; Braga, Ana; Queirós, António. 2016. Optometry and Vision Science 93, 10: 1262 - 1267. http://hdl.handle.net/

Spatial distributions of local illumination color in natural scenes, Nascimento, Amano & Foster (2016),Vision Research, 120, p. 39-44 doi:10.1016/j.visres.2015.07.0057 http://hdl.handle.net/1822/43973

Analysis of the application of the Generalized Monod kinetics model to describe the Human Corneal Oxygen-Consumption Rate During Soft Contact Lens Wear. Compañ V, Aguilella-Arzo M, Del Castillo LF, Hernández SI, Gonzalez-Meijome JM. J Biomed Mat Res B – Applied Biomaterials. 2016 Jul 26. doi: 10.1002/jbm.b.33764. http://hdl.handle.net/1822/44053*(2.881)

Assessing the effects of dynamic luminance contrast noise masking on a color discrimination task. João M.M. Linhares, Catarina A. R. João, Eva D. G. Silva, Vasco M. N. De Almeida, Jorge L. A. Santos, Leticia Álvaro, Sérgio M.C. Nascimento (2016), Journal of the Optical Society of America A, 15(12):1316. http://hdl.handle.net/1822/43971

Astigmatic Peripheral Defocus with Different Contact Lenses: Review and Meta-analysis.Queirós A, Lopes-Ferreira D, González-Méijome JM. Curr Eye Res 2016;41:1005-1015.http://hdl.handle.net/1822/44056

Changes in peripheral refraction, higher order aberrations, and accommodative lag with a radial refractive gradient contact lens in young myopes.Pauné J, Thivent S, Armengol J, Quevedo LI, Faria-Ribeiro M, González-Méijome JM. Eye Contact Lens. 2016;42:380-387.http://hdl.handle.net/1822/44047

Changes in peripheral refractive profile after orthokeratology for different degrees of myopia. González-Méijome JM, Faria-Ribeiro M, Lopes-Ferreira D, Fernandes P, Carracedo G, Queiros A. Current Eye Res. 2016;41:199-207 http://hdl.handle.net/1822/39546

Corneal Aberrations, Contrast Sensitivity and Light Distortion in Orthokeratology Patients: 1-Year Results. Santolaria-Sanz E, Cerviño A, González-Méijome JM. J Ophthalmol. 2016;2016:8453462.http://hdl.handle.net/1822/44059

Differences in Dry Eye Questionnaire (DEQ) symptoms in two different modalities of contact lens (CL) wear: silicone-hydrogel in daily wear basis and overnight orthokeratology. García-Porta N, Rico-del-Viejo L, Martin-Gil A, Carracedo G, Pintor J, González-Méijome JM. BioMed Research International. 2016;2016: 1242845.http://hdl.handle.net/1822/44054

Effect of environmental conditions on the concentration of tear inflammatory mediators during contact lens wear. Martín-Montañez V, Enríquez-de-Salamanca A, López-de la Rosa A, López-Miguel A, Fernández I, Calonge M, González-Méijome JM, González-García MJ. Cornea. 2016;35:1192-1198.http://hdl.handle.net/1822/44050

Effect of Pupil Size on Wavefront Refraction during Orthokeratology. Faria-Ribeiro M, Navarro R, González-Méijome JM. Optom Vis Sci 2016;93:1399-1408.http://hdl.handle.net/1822/44051

Effect of three months of soft contact lens wear on conjunctival cytology. Kishor Sapkota, Sandra Franco, Paula Sampaio, Madalena Lira. Clin Exp Optom 2016; 99: 336–341 (10.1111/cxo.12373), http://hdl.handle.net/1822/43916

Global trends in myopia management attitudes and strategies in clinical practice. Wolffsohn JS, Calossi A, Cho P, Gifford K, Jones L, Li M, Lipener C, Logan NS, Malet F, Matos S, Meijome JM, Nichols JJ, Orr JB, Santodomingo-Rubido J, Schaefer T, Thite N, van der Worp E, Zvirgzdina M. Cont Lens Anterior Eye. 2016;39:106-16. http://hdl.handle.net/1822/44048

iDEAS: a web-based system for dry eye assessment. Beatriz Remeseiro, Noelia Barreira, Carlos Garc´ıa-Resu´a, Madalena Lira, Mar´ıa J. Giraldez, Eva Yebra-Pimentel, Manuel G. Penedo. Computer Methods and Programs in Biomedicine 130 (2016) 186–197, http://hdl.handle.net/1822/43989

Light Distortion and Spherical Aberration for the Accommodating and Non-Accommodating Eye. Macedo-de-Araújo R, Ferreira-Neves H, Rico-del-Viejo L, Peixoto-de-Matos SC, González-Méijome JM. J Biomed Opt. 2016;21(7):75003. http://hdl.handle.net/1822/44052

Morphology, Topography and Optics of the Orthokeratology Cornea. Faria-Ribeiro M, Navarro R, López-Gil N, González-Méijome JM. J Biomed Opt. 2016;21:75011 http://hdl.handle.net/1822/44049

Stabilization in Early Adult-onset Myopia with Corneal Refractive Therapy. Gonzalez-Meijome JM, Carracedo G, Lopes-Ferreira D, Faria-Ribeiro MA, Queiros A, Peixoto-de-Matos SC. Contact Lens and Anterior Eye 2016;39:72-7. http://hdl.handle.net/1822/39544

Strategies to regulate myopia progression with contact lenses: a review. Gonzalez-Meijome JM, Peixoto-de-Matos SC, Faria-Ribeiro M, Lopes-Ferreira DP, Jorge J, Legerton J, Queiros A. Eye & Contact Lenses. 2016;42:24-34. http://hdl.handle.net/1822/39547

Symptoms and Signs in Rigid Gas Permeable Lens Wearers During Adaptation Period. Carracedo G, Martin-Gil A, Peixoto-de-Matos SC, Abejón-Gil P, Macedo-de-Araújo R, González-Méijome JM. Eye & Contact Lenses. 2016;42:108-114 http://hdl.handle.net/1822/39545

The influence of rigid gas permeable lens wear on the concentrations of dinucleotides in tears and the effect on dry eye signs and symptoms in keratoconus. Carracedo G, González-Méijome JM Margin-Gil A, Carballo J, Pintor J. Contact Lens and Anterior Eye. 2016;39:375-379.http://hdl.handle.net/1822/44045

The statistics of colors in paintings and natural scenes. Montagner C, Linhares JMM, Vilarigues M, & Nascimento SMC (2016) Journal of the Optical Society of America A-Optics Image Science and Vision 33(3), (3):A178-A183. http://hdl.handle.net/1822/43972

Time-lapse ratios of cone excitations in natural scenes, Foster, D.H., Amano, K., & Nascimento, S.M.C. (2016), Vision Research, 120, p. 45-60 doi:10.1016/j.visres.2015.03.012. http://hdl.handle.net/1822/43974

Always on My Mind? Recognition of Attractive Faces May Not Depend on Attention. Silva A, Macedo AF, Albuquerque PB, Arantes J. Frontiers in Psychology. 2016;7:53. doi:10.3389/fpsyg.2016.00053.

6.6.4.2 Books and book chapters

Books (editor)

Hands-on. The Heart of Science Education. Costa MF, Dorrío BV, Trna J, Trnova E (Eds.); ISBN 978-84-8158-714-2, Hands-on Science Network, 2016.

SUPERFICIE OCULAR Y LENTES DE CONTACTO (Spanish) J.M. González-Méijome, PhD, C. Villa-Collar, PhD (Editors). Editorial: FUNSAVI – Madrid - Spain. 2016ISBN: 978-84-939656-9-3

Chapters

Robotics and Entrepreneurship for a Better Society. Opening Doors to Mobility; V Martins, A Resende, V Mateus, MFM Costa, "Hands-on. The Heart of Science Education". Costa MF, Dorrío BV, Trna J, Trnova E (Eds.); Hands-on Science Network, pp 82-90 (2016)

The Hands-on Science Network Science Fair in Portugal; Z Esteves, MFM Costa, "Hands-on. The Heart of Science Education". Costa MF, Dorrío BV, Trna J, Trnova E (Eds.); Hands-on Science Network, pp 168 (2016)

Capitulo 6 - Influência das compensações óticas na evolução da miopia. Queirós, António; Jorge, Jorge; Villa-Collar, César; González-Méijome, JM. 2016. In Temas actuales en Optometría - SIYO 2014, ed. Andrés Gené Sampedro, Inmaculada Bueno Gimeno, Francisco Sañudo Buitrago, 107 - 134. ISBN: 84-943550-5-8. Espanha: Ediciones MC. Montserrat Cruz.

El moldeo corneal mediante ortoqueratología nocturna. In Superficie Ocular y Lentes de Contacto, Villa-Collar, César; Calossi, Antonio; Queirós, António; Peixoto-de-Matos, Sofia C. 2016. ed. Superficie Ocular y Lentes de Contacto - José M. González-Méijome & César Villa Collar, 479 - 514. ISBN: 978-84-939656-9-3. Madrid: Fundación Salud Visual, Desarrollo Optométrico y Audiológico vs Grupo ICM Comunicación, S.L.

6.6.4.3 Master theses completed in 2016

Author	Supervisor	Title	Situation
Andrea Cristina Coelho	Madalena Lira/ Paula Sampaio	Avaliação da resposta inflamatória induzida por diferentes tipos de LC diárias	ECUM/ Terminada em 5/01/2016
Eduardo Jorge Silvestre Ínsua Pereira	Madalena Lira	Avaliação da performance clínica de lentes de contacto descartáveis em regime de uso diário	ECUM/ Terminada em 8/03/2016
Ivone de Fátima Campos Oliveira Barroso de Miranda Veloso	Madalena Lira	Relatório de Atividade Profissional ao abrigo Despacho RT-38/2011	ECUM/ Terminada em 20//12/2016
Maria Leonor Coimbra de Matos	Madalena Lira	Relatório de Atividade Profissional ao abrigo Despacho RT-38/2011	ECUM/ Terminada em 19//12/2016
Ana Amorim de Sousa	António Queirós Pereira José Manuel González-Méijome	Impact of Defocus in the Measurement of Light Distortion: Simmulation and Experimental Measurements	MOA Tese - ECUM Finished December 12th, 2016
Marta Rodrigues	José Manuel González-Méijome Miguel Faria-Ribeiro	Óptica e a Refração do Olho com Sistemas Multifocais	MOA Tese – ECUM Finished: December 15th, 2016
Maria Elisabete Macedo Coelho	José Manuel González-Méijome	Professional activity report	MOA RT38* - ECUM December 12th, 2016
Francisco Paulo Gomes da Silva	José Manuel González-Méijome	Professional activity report	MOA RT38* - ECUM Finished December 15th, 2017
Joaquina Paula Vilaça Ferreira	José Manuel González-Méijome	Professional activity report	MOA RT38* - ECUM December 19th, 2016
Eduardo Jorge Meruje Teixeira	António MG Baptista	Activity report	ECUM
Eduarda Martins	Sandra Franco, António Baptista	A Visão Binocular na realização de tarefas de leitura	ECUM
Jéssica Gomes	Sandra Franco, Sérgio Nascimento	Variação das aberrações oculares com a acomodação em tempo real	ECUM

Ana Rita Pascoal	Sandra Franco	Estudo da prevalência de disfunções acomodativas numa população de não presbitas.	ECUM
Andreia do Carmo Gonçalves	Sandra Franco	Alterações das propriedades óticas do olho com a utilização de computadores	ECUM
Cátia Sofia Azevedo Mariz	Sandra Franco	Astenopia ocular digital em adolescentes	ECUM
Márcia Barbosa	Sandra Franco	Disfunções acomodativas em estudantes universitários: eficácia da terapia visual no seu tratamento.	ECUM
Lara Beatriz Pinheiro de Melo	Sandra Franco	Sintomatologia associada ao uso de computadores: o impacto das condições ergonómicas.	ECUM
Dora Nazaré Marques	João Linhares/ Jorge Jorge	Myopia and Colour Vision, a Case Study	ECUM
Luciana Felicio	Manuel Filipe Costa	Introduzindo a Teoria da Relatividade no Ensino Secundário	ECUM
Rui Alexandre Nunes Santos	Jorge Jorge	Professional activity report	MOA RT38* - ECUM December, 2016
João Manuel Marques de Freitas Rodrigues	Jorge Jorge	Professional activity report	MOA RT38* - ECUM December, 2016
Catarina Gomes Ribeiro	Jorge Jorge	Performance Visual e Rendimento Desportivo	MOA - ECUM December, 2016

6.6.4.4 Ph.D. theses completed in 2016

Author	Supervisor	Title	Situation
Kishor Sapkota	Madalena Lira/ Sandra Franco	Clinical Experimental Trials On Changes In Ocular Surface Induced By Contact Lenses Wear	ECUM/ Terminada Em 16/05/2016
Miguel Faria Ribeiro	José Manuel González-Méijome, Jorge Martins Jorge Norberto López-Gil	Alteração Da Refração Periférica Para Retenção Da Progressão Da Miopia	Phd Science Finished: June 9th, 2016
Daniela Lopes Ferreira	José Manuel González-Méijome António Queirós	Efeitos Na Refração Periférica De Dispositivos Para O Controlo Da Progressão Da Miopia	Pdocv – Ecum Starting: September 2013 Finished (Awaiting Discussion)
Zita Esteves	Manuel Filipe Costa	Atividades Informais No Ensino Das Ciências Nas Escolas	ECUM

6.6.4.5 Master theses in progress in 2016

Author	Supervisor	Title	Situation
Cátia Patrícia de Brito Lourenço	Madalena Lira/ Gabriela Botelho	Avaliação da estrutura físico-química de LC e capacidade de recuperação após desidratação	ECUM/ Iniciada 01/10/2014, em desenvolvimento
Telma Isabel Peres Nunes	Madalena Lira	Relatório de atividades profissional ao abrigo do despacho RT 38/011	ECUM/ Iniciada 01/10/2014, em desenvolvimento
Ana Rita Pinto Valença	Madalena Lira	Relatório de Atividade Profissional ao abrigo Despacho RT-38/2011	ECUM/ Iniciada 01/10/2015, em desenvolvimento
Ângela Domingues de Almeida	Madalena Lira	Relatório de Atividade Profissional ao abrigo Despacho RT-38/2011	ECUM/ Iniciada 01/10/2015, em desenvolvimento
Cátia Sofia Aires Rodrigues Teixeira	Madalena Lira/ Armando Barros	Avaliação do módulo de Young em lentes de contacto hidrófilas	ECUM/ Iniciada 01/10/2015, em desenvolvimento
Elsa Maria de Oliveira Miguens	Madalena Lira	Relatório de Atividade Profissional ao abrigo Despacho RT-38/2011	ECUM/ Iniciada 01/10/2015, em desenvolvimento
Gustavo Adolfo Coelho Marin	Madalena Lira/ Elisabete Coutinho	Variação da Transmitância, Refletância e Índice de Refração das LC: Influência da Potência e do Material das Lentes	ECUM/ Iniciada 01/10/2015, em desenvolvimento
Rosa Isabel Pimenta. Martins	Madalena Lira/ Armando Barros	Síntese, ativação e funcionalização de materiais para lentes de contacto	ECUM/ Iniciada 01/10/2015, em desenvolvimento
Joana Silva	José Manuel González-Méijome	Óptica do olho com ortoqueratologia em função do tamanho pupilar: ensaio clínico	MOA - ECUM *Start: 01-10-2015*
Diana Pereira Calheiros Brandão	José Manuel González-Méijome Antonio Queirós	Caraterização Refrativa, Ocular e Visual dos Novos Estudantes da Universidade do Minho	MOA - ECUM *Start: 01-10-2016*
Cátia Alexandra Dias Gomes	Jorge Jorge José Manuel González-Méijome	Hábitos Visão nos Novos Estudantes da Universidade do Minho	MOA - ECUM *Start: 01-10-2016*

Carla Raquel Gomes de Sousa	Alberto Díaz-ReyJosé Manuel González-Méijome	Caraterização do Fundo de Olho nos Novos Estudantes da Universidade do Minho	MOA - ECUM *Start: 01-10-2016*
Joana Domingues	José Manuel González-Méijome	Variações Temporais e Espaciais na Resposta Electrofisiológica da Retina Durante a Adaptação a Dispositivos Ópticos Multifocais	MOA - ECUM
Linda Moreira	José Manuel González-Méijome Jorge Jorge	Repetibilidade da Medida da Atividade Retiniana em Usuários de Lentes de Contacto de Diferentes Materiais em Sujeitos Míopes	MOA - ECUM *Start: 01-10-2016*
Cesarina Ferreira	José Manuel González-Méijome Paulo Fernandes	Resposta Local Retiniana a Estímulos de Desfocado e Indução de Aberrações de Alta Ordem	MOA - ECUM *Start: 01-10-2016*
Paula Maria dos Santos Sobral	Paulo Fernandes José Manuel González-Méijome	Avaliação da Atividade Retiniana com diferentes protocolos mfERG	MOA - ECUM *Start: 01-10-2016*
Belany Barreto Monteiro	José Manuel González-Méijome	Caraterização Refrativa, Ocular e Visual numa população africana	MOA - ECUM *Start: 01-10-2016*
Ana Rita de Castro Pinto	João Linhares	Influência de lentes intra-oculares amarelas com filtro UV na perceção das cores de cenas naturais e em testes de visão das cores	ECUM
Andreia Esteves Gomes	João Linhares / Sérgio Nascimento	Efeito das perturbações visuais na percepção cromática de cenários naturais	ECUM
Ruben Carpinteiro Pastilha	Sérgio Nascimento / João Linhares	Filtros Cromáticos para Daltonismo	ECUM
Ana Rita de Sousa Ribeiro	João Linhares / Madalena Lira	Influência de filtros de ruído dinâmico na percepção das cores utilizando lentes de contacto multifocais e um novo teste de visão das cores	ECUM
Graciete Sabino	Jorge Jorge	Professional activity report	MOA RT38* - ECUM

Ana Margarida Antunes	Jorge Jorge	Elaboração de um dispositivo de rastreio visual para crianças	MOA - ECUM
Rui Carlos Barros	Jorge Jorge	Professional activity report	MOA RT38* - ECUM
Soraia Filipa Pacheco de Sousa	Jorge Jorge	Um contributo para a visão canina: Um estudo longitudinal do erro refrativo do Labrador Retriever	MOA - ECUM
Ana Catarina Silva	Jorge Jorge	Variação longitudinal da refração periférica	MOA - ECUM

6.6.4.6 Ph.D. theses in progress in 2016

Author	Supervisor	Title	Situation
Rute Juliana Ferreira Macedo de Araújo	José Manuel González Méijome	Clinical performance and biological interactions in scleral contact lens wear	PDOCV – ECUM
Helena isabel ferreira neves	José Manuel González Méijome	Analysis of light visual distortion and quality of vision with different multifocal lens designs for the compensation of presbyopia	Phd science
Santiago escandón garcia	José Manuel González Méijome	Analysis of light visual distortion and quality of vision with different multifocal lens designs for the compensation of presbyopia	Pdocv – ecum
Ana Isabel Amorim de Sousa	To define	To define	OCV
Maria Francisca Pinto e Peixoto	To define	To define	OCV
Serguey Roberto Cusato Junior	To define	To define	OCV
Lina Maria Rodrigues Cely	To define	To define	OCV
Laura Hernández Moreno	Filipe Macedo	To define	OCV
Alshaarawi M. A. Salem	António Baptista	To define	OCV

6.6.5 Other scientific activities

Conference organization
International

XIII International Congress of Optometry and Vision Sciences. Universidade do Minho; Braga / Universidade do Minho, 23-24 April (Group OCV)

III CONGRESO INTERNACIONAL ONLINE DE JÓVENES OPTOMETRISTAS, 2016 (CONGRESS). UNIVERSIDAD DE VALENCIA; VALENCIA, 9 AL 16 DE NOVEMBRO 2016 / WEB, José Meijome.

HSCI2016 - 13TH INTERNATIONAL CONFERENCE ON HANDS-ON SCIENCE, BRNO, CZECH REPUBLIC, JULY 18-22, 2016. Manuel Filipe Costa.

National

11ª JORNADA TÉCNICO-CIENTÍFICA DE CONTACTOLOGIA (CONTACTUM2016) -; Universidade do Minho. Braga (Portugal), 15 de February 2016 (Grupo OCV).

Conferencias Abertas de Optometria (CAOs2016) President of the Scientific Committee; José Meijome, Covilhã (Portugal), November 13-14, 2016.

JORNADA TÉCNICO-CIENTÍFICA DE CONTACTOLOGIA (CONTACTUM2016) – 15 de Fevereiro 2016, Jose Gonzalez-meijome Antonio Queiros Madalena Lira Joao Linhares Jorge Jorge

6.6.5.1 Invited Lectures/seminars delivered by members of the group, in national or international

International

MECANISMOS DE CONTROL DE LA MIOPÍA. Jorge Jorge. June 4th-5th, 2016. EuroOk Ibérica (Granada, Spain)

Advantages and Limits of Various Myopia Correctiong Optical Solutions. González-Méijome JM.January 17-18, 2016. French Optometrists Conference (París, FR)

Nutrition and the eye: evidence based science. González-Méijome JM. March 13-14, 2016. Netherlands Contact lens Conference (NCC, Eindhoven, NL)

Presbyopia correction with contact lenses. González-Méijome JM. March 13-14, 2016. Netherlands Contact lens Conference conference (NCC, Eindhoven, NL)

Myopia Control Session. González-Méijome JM. March 13-14, 2016. Netherlands Contact lens Conference (NCC, Eindhoven, NL)

Curso Monográfico sobre Lentes Esclerales, González-Méijome JM, Macedo-de-Araújo RJ. 24º Congreso Internacional de Optometría, Contactología y Óptica Oftálmica, OPTOM 2016, Madrid, 2016.

Adaptación de Lentes de Contacto en Niños y Adolescentes, Peixoto-de-Matos SC, González-Méijome, JM. 24º Congreso Internacional de Optometría, Contactología y Óptica Oftálmica, OPTOM 2016, Madrid, 2016.

Multifocal Contact Lenses. González-Méijome JM. April 29th to May 1st, 2016. European Federation of Contact and IOLs Industry (EFCLIN) conference (Valencia, Spain)

Ortoqueratología y control de la miopía. González-Méijome JM. Evidência científica. June 4th-4th, 2016. EuroOk Ibérica (Granada, Spain)

Orthokeratology: Efficacy and safety in children/teenagers. González-Méijome JM. June 29-30, 2016. XII Aegean Summer School in Visual Optics (Chania, Crete, Greece)

Current optical myopia control option. González-Méijome JM. June 29-30, 2016. XII Aegean Summer School in Visual Optics (Chania, Crete, Greece)

Prevalencia de los distintos defectos de refracción en la población general. González-Méijome JM. September 23, 2016. ASETCIRC Satellite Meeting at Sociedad Española de Oftalmologia (Malaga, Spain)

Casos Clínicos Adaptação de Lentes de Contacto Multifocais. González-Méijome JM. Congresso Internacional de Optometria e Ciências da Visão Universidade do Minho, Braga, Portugal. April 23-24, 2016: CIOCV2016

Surface Dimensional Metrology by Optical Triangulation", 4th International Conference on Photonics, Optics and Laser Technology, Manuel Filipe Costa – Rome, Italy, 27-29 February, 2016.

Advantages and Limits of Various Myopia Correctiong Optical Solutions. González-Méijome JM. January 17-18, 2016. French Optometrists Conference (París, FR)

Nutrition and the eye: evidence based science. March 13-14, 2016. González-Méijome JM. Netherlands Contact lens Conference (NCC, Eindhoven, NL)

Presbyopia correction with contact lenses. March 13-14, 2016. González-Méijome JM. Netherlands Contact lens Conference conference (NCC, Eindhoven, NL)

Myopia Control Session. March 13-14, 2016. González-Méijome JM. Netherlands Contact lens Conference (NCC, Eindhoven, NL)

Adaptación de Lentes de Contacto en Niños y Adolescentes, 24° Congreso Internacional de Optometría, Peixoto-de-Matos SC, González-Méijome, JM. Contactología y Óptica Oftálmica, OPTOM 2016, Madrid, 2016.

Multifocal Contact Lenses. April 29th to May 1st, 2016. González-Méijome JM. European Federation of Contact and IOLs Industry (EFCLIN) conference (Valencia, Spain)

Ortoqueratología y control de la miopía. Evidência científica.González-Méijome JM. June 4th-4th, 2016. EuroOk Ibérica (Granada, Spain)

Orthokeratology: Efficacy and safety in children/teenagers. González-Méijome JM. June 29-30, 2016. XII Aegean Summer School in Visual Optics (Chania, Crete, Greece)

Current optical myopia control option.González-Méijome JM. June 29-30, 2016. XII Aegean Summer School in Visual Optics (Chania, Crete, Greece)

Best lighting for visual appreciation of artistic paintings, "Art Work and Museum Lighting" in the Workshop on Spectrally Tunable LED and OLED Lighting, Nascimento, SMC, Bregenz, Austria (2016)

National

Refração periférica no controle da progressão da miopia,Queirós, António; González-Méijome, JM. X Colóquio de Optometria,Covilhã,2016 (Simpósio).

O olho em ação: da perceção ao treino de decisão. Baptista, António M. G. X Colóquios de Optometria. Portugal. 2016.

Sistema de mediação do diâmetro pupilar na pseudofaquia. Gomes, Renato A. S.; Fiadeiro, Paulo T.; Sánchez Trancón, Ángel; Fonseca, Elsa S. R.; Baptista, António M. G.; Serra, Pedro M. XIIªs Conferências Abertas de Optometria (CAO's). Portugal. 2016.

Análise da Repetibilidade das Cartas de Acuidade Visual LEA numa População Normal e numa População com Deficiência Intelectual.Machado, André F.F.; Fiadeiro, Paulo T.; Sánchez Trancón, Ángel; Fonseca, Elsa S. R.; Baptista, António M. G.; Serra, Pedro M. XIIªs Conferências Abertas de Optometria (CAO's). Portugal. 2016.

Casos Clínicos Adaptação de Lentes de Contacto Multifocais. González-Méijome JM. Congresso Internacional de Optometria e Ciências da Visão Universidade do Minho, Braga, Portugal. April 23-24, 2016: CIOCV2016

Efeitos visuais da iluminação – Da luz solar aos LEDs, Nascimento, SMC, Conferência Nacional de Física, Universidade do Minho, Campus de Gualtar, de 8 a 10 de setembro de 2016.

6.6.6 Other information

6.6.6.1 Other Conference Presentations given by members of the group in national or international conferences

International

Oral

Paquimetría, Topografía Corneal Anterior y Posterior en Antiguos Usuarios de LC Hidrofilia u Ortoqueratología 1 año Después de Cirugía LASIK,Queirós, António; Villa-Collar, César; Gutiérrez, AR; Gargallo, Beatriz; González-Méijome, JM. 24° Congreso Internacional de Optometría, Contactología y Óptica Oftálmica, OPTOM 2016, Madrid, 2016.

Efecto de las aberraciones oculares inducidas por lentes de contacto multifocales en el rendimiento visual, Lopes-Ferreira, Daniela; Queirós, António; González-Méijome, JM. 24° Congreso Internacional de Optometría, Contactología y Óptica Oftálmica, OPTOM 2016, Madrid, 2016.

Axial Length and Refractive Error in a Population of Myopes from 16 to 66 Years of Age, Ferreira R., Pereira Z., Salgado-Borges J.M.Society of Research in Retina and Visual Sciences (SIRCOVA SIRCOVA-OFTARED Joined Congress Abstracts), June 30, July 2, 2016. (Valencia Spain). Ophthalmic Res 2017;57:13–31. DOI: 10.1159/000452848.

Axial Length and Retinal Thickness in Low and Moderate-to-High Myopic Eyes.Pereira Z., Ferreira R., Salgado-Borges J.M., González-Méijome J.M. Society of Research in Retina and Visual Sciences (SIRCOVA SIRCOVA-

OFTARED Joined Congress Abstracts), June 30, July 2, 2016. (Valencia Spain). Ophthalmic Res 2017;57:13–31. DOI: 10.1159/000452848.

Corneal Morphometric and Biomechanical Changes During the Menstrual Cycle. Salgado-Borges J., Rico-de-Viejo L., Rodrigues Pedro, Ferreira R., Borges C., Ambrósio Jr. R., González-Méijome J.M. Society of Research in Retina and Visual Sciences (SIRCOVA SIRCOVA-OFTARED Joined Congress Abstracts), June 30, July 2, 2016. (Valencia Spain). Ophthalmic Res 2017;57:13–31. DOI: 10.1159/000452848.

Effect of defocus and spherical aberration on light disturbances measured with a new psychophysical method.González-Méijome JM, Macedo-de-Araújo RJ, Amorim A, et al. 34rd Congress of the ESCRS. Copenhagen (Denmark), September 10-14, 2016.

Clinical investigation of a daily disposable silicone hydrogel contact lens: Stenofilcon A. Kishor Sapkota, Sandra Franco, Madalena Lira. Nederlands Contactlens Congres (NCC 2016, 13-14 March, Veldhoven, The Netherlands.

Poster

Efecto de las condiciones ambientales en la concentración de mediadores inflamatórios en la lágrima de usuários de lentes de contacto. Martin-Montañez V, Enriquez de Salamanca A, Lopez de la Rosa A, Lopez Miguel A, Fernandez I, Calonge M, González-Méijome, JM, González Garcia MJ. 24º Congreso Internacional de Optometría, Contactología y Óptica Oftálmica, OPTOM 2016, Madrid, 2016 (Poster).

Sensibilidad al desenfoque esférico y astigmático en un nuevo dispositivo para la determinación rápida de la distorsión luminosa (Award to the Best Poster Communication).Amorim-de-Sousa, Ana; Queirós, António; Macedo-Araújo, Rute; Neves, Helena; Rico-del-Viejo, Laura; González-Méijome, JM. 24º Congreso Internacional de Optometría, Contactología y Óptica Oftálmica, OPTOM 2016, Madrid, 2016 (Poster).

Análisis de la repetibilidad intra-examinador de la estabilidad de la película lagrimal pre-lente (EPLPL) en sujetos sintomáticos durante el uso de lente de contacto de nueva generación, Rico-del-Viejo, Laura; Neves, Helena; Macedo-Araújo, Rute; Martín-Montañez, V.; Queirós, António; González-Méijome, JM. 24º Congreso Internacional de Optometría, Contactología y Óptica Oftálmica, OPTOM 2016, Madrid, 2016.

Prevalencia del error refractivo y correlaciones biométricas en una población pre-universitaria en Portugal 24º Congreso Internacional de Optometría, Queirós, António; Neves, Helena; Vaz, Rita; Macedo-Araújo, Rute; Lopes-Ferreira, Daniela; Amorim-de-Sousa, Ana; González-Méijome, JM. Contactología y Óptica Oftálmica, OPTOM 2016, Madrid, 2016.

Tamaño promedio de la pupila y aberraciones del ojo al aire libre y en condiciones de examen optométrico con diferentes métodos, Vaz, Rita; Neves, Helena; Queirós, António; Peixoto-de-Matos, Sofia C; Macedo-Araújo, Rute; González-Méijome, JM. 24º Congreso Internacional de Optometría, Contactología y Óptica Oftálmica, OPTOM 2016, Madrid, 2016.

Cambios diurnos en deshidratación y confort de dos lentes de contacto de hidrogel silicona desechable diarias de nueva generación. Macedo-Araújo, Rute; Rico-del-Viejo, Laura; Queirós, António; Martín-Montañez, V.;

González-Méijome, JM. 24º Congreso Internacional de Optometría, Contactología y Óptica Oftálmica, OPTOM 2016, Madrid, 2016.

Comparación de la distorsión luminosa con dos aparatos de medida en sujetos sanos. Neves, Helena; Macedo-Araújo, Rute; Queirós, António; González-Méijome, JM. 24º Congreso Internacional de Optometría, Contactología y Óptica Oftálmica, OPTOM 2016, Madrid, 2016.

Effect of hormonal changes on corneal biomechanical properties and anterior segment ocular parameters.Gonzalez-Meijome et al. 34th Congress of the ESCRS. Copenhagen (Denmark), September 10-14, 2016.

Managing the Post-surgical Cornea with Advanced Contact Lenses: large diameter Corneal rigid, corneo-scleral, mini-scleral and scleral, hybrid and thick soft lenses. Peixoto-de-Matos, González-Méijome JM et al. 34th Congress of the ESCRS. Copenhagen (Denmark), September 10-14, 2016.

rescription of refractive auxiliary correction for night vision improvement using different methods: pilot study. Peixoto-de-Matos, González-Méijome JM et al. P 34th Congress of the ESCRS. Copenhagen (Denmark), September 10-14, 2016.

Light distortion and quality of vision in binocular implantation of three different IOLs for presbyopia correction. Escandón-García S, Ribeiro F, González-Méijome JM. 34th Congress of the ESCRS. Copenhagen (Denmark), September 10-14, 2016.

Quality of vision under low lighting conditions and in the presence of glare in phakic and pseudophakic population of different ages. Escandón-García S, Ribeiro F, González-Méijome JM. 34th Congress of the ESCRS. Copenhagen (Denmark), September 10-14, 2016.

Subjective evaluation of the visual outcomes after premium intraocular lens implantation. Salgado-Borges JM, González-Méijome JM et al. 34th Congress of the ESCRS. Copenhagen (Denmark), September 10-14, 2016.

Depth-of-Field After Orthokeratology: A theoretical study. Faria-Ribeiro M, Navarro R, Lopez-Gil N, González-Méijome JM. 8th European Meeting on Visual and Physiological Optics (VPO2016). Antwerp (Belgium), August 23-25, 2016.

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