

23/05/2022

26/ECUM/CFUM/2022 - UIDB/04650/2020

Where to apply

Application Deadline: 06/06/2022 23:00 - Europe/London

Contact Details

Where to send your application.

COMPANY

Universidade do Minho

E-MAIL

bolsas@ecum.uminho.pt

Hiring/Funding Organisation/Institute

ORGANISATION/COMPANY

Universidade do Minho

COUNTRY

Portugal

DEPARTMENT

Escola de Ciências

CITY

Braga

ORGANISATION TYPE

Higher Education Institute

STATE/PROVINCE

Braga

WEBSITE

https://www.uminho.pt

POSTAL CODE

4710-057

E-MAIL

centrodefisica@fisica.uminho.pt

STREET

Campus de Gualtar

PHONE

+351 253601560

ORGANISATION/COMPANY

Universidade do Minho

LOCATION

Portugal › Braga

RESEARCH FIELD

Physics › Optics

REFERENCE NUMBER

UIDB/04650/2020

RESEARCHER PROFILE

First Stage Researcher (R1)

APPLICATION DEADLINE

06/06/2022 23:00 - Europe/London

OFFER DESCRIPTION

ANNOUNCEMENT FOR THE AWARD OF A RESEARCH FELLOWSHIP

Research Fellowship; 4 vacancies

26/ECUM/CFUM/2022 - UIDB/04650/2020

A call for applications is now open for the attribution of 4 (four) research grant(s) within the scope of the R&D project UIDB/04650/2020, financed by national funds of the Physics Center of the Universities of Minho and Porto (CF-UM-UP) of University of Minho), through the Foundation for Science and Technology (FCT), under the following conditions:

Scientific Area: Optometry and Vision Sciences

Recipient category: Students enrolled in an Integrated Master's degree or a Master's degree course in the areas of Optometry and Vision Sciences, Informatics, Biophysics and Bionanosystems, or other areas that fit into the projects described below.

Requirement for granting the fellowship:

The applicants may apply without prior registration in the course for which the fellowship is open. The requirement to enroll in a degree course or non-

academic degree course will be verified on the date of contracting the fellowship;

Only fellowships whose selected applicants present a valid proof of enrollment in a degree course or non-academic degree course will be contracted, according to the type of the fellowship, issued by the academic services of the Higher Education Institution, indicating, respectively, the academic year or its duration (star and term).

Enrollment in non-certified courses (without curricular units) will not be considered as proof of enrollment.

Candidates profile: The candidate must have a profile that fits the research activities foreseen in the research project(s) to which is applying. The 9 (nine) projects that are in the competition are listed below and where the target audience for each project is also presented.

Applicants eligibility: Applicants must comply with the eligibility conditions laid down in article 9 of the Research Grants Regulation of the Portuguese Foundation for Science and Technology (2019).

Workplan and objectives to be achieved: It is intended that the fellows collaborate in the research activities of the CFUM-UM-UP, integrating one of the projects whose description and respective supervisors are indicated below. Candidates must mention up to 3 (three) references of projects they are applying for, in descending order of preference, chosen from among the following 9 (nine) proposals:

Project BI2022-1: Visual performance, binocular vision and accommodation with new spectacle lenses designed to myopia management

Supervisor(s): Daniela Lopes-Ferreira e Jorge Jorge, jorge@fisica.uminho.pt

Target: Master students in Optometry and Vision Sciences

Description: Myopia has been recognized as a serious public health issue, owing to its being a significant cause of visual loss and a risk factor for a range of pathologic ocular conditions.¹⁻² Different treatments to controlling myopia progression in children could be organized, as suggested by Wildsoet et al.³, under three broad categories: optical, pharmacological and environmental (behavioral). Concerning to optical category, mainly we have great effect retention associated to generation of myopia on peripheral retina (Figure 1) as reached using orthokeratology (ranged between 30-52%) or multifocal contact lenses (25-50%).³ Recently, new types of spectacle lenses designed to prevent myopia progression arrived to market.

The most documented and available in Portuguese marked spectacle lenses designed to myopia control are Defocus Incorporated Multiple Segments (DIMS) commercialized by Hoya as MiYOSMART and Highly Aspheric Lenslets (HAL) commercialized by ESSILOR® as Stellest.

The purposes of this work include the study of the visual acuity in distance and near, under high and low contrast conditions, the evaluation of accommodation function and binocular vision in young subjects with these two types of spectacle lenses.

Project BI2022-2: Computational implementation and use of a system used to analyze the colorimetric quality of illumination

Supervisor(s): João M.M. Linhares - <https://sites.google.com/view/jlinhares>,
jlinhares@fisica.ueminho.pt

Target: Students in the Master of Advanced Optometry equivalent

Description: The spectral distribution of light sources impacts the colorimetric reproduction, particularly if the priority is to maintain the color of the lighting and not its spectral distribution. Traditionally, the ability of light sources to reproduce color is evaluated using the “Colour Rendering Index – CRI”. This is a metric with known limitations, presenting difficulties in describing the ability of the lighting under analysis to generate color in complex scenarios. An alternative to this traditional metric (CRI) will be the Chromatic Diversity Index (CDI), which considers the chromatic complexity of complex scenarios.

The purpose of this work will be to computationally implement the already developed CDI calculation algorithm and apply it in the description and characterization of spectral tunable light sources and commercial light sources.

It is expected that the candidate have basic knowledge of color vision theory and computer programming. The work will be developed at the Color Science Laboratory (<https://sites.google.com/view/csl-uminho/>), consisting of programming, collection of spectral data from light sources, critical analysis of light sources after calculation of the CRI and CDI and formal description (writing of reports) of the results obtained.

Other relevant information

References

Linhares, J. M., Pinto, P. D., and Nascimento, S. M. (2008), 'The number of discernible colors in natural scenes', *Journal of the Optical Society of America A: Optics, Image Science, and Vision*, 25 (12), 2918-24. - <https://doi.org/10.1364/JOSAA.25.002918>

J.M.M. Linhares and S.M.C. Nascimento (2012), 'A Chromatic Diversity Index based on complex scenes', *Journal of the Optical Society of America a-Optics, Image Science, and Vision*, 29 (2), A174-A181. - <https://doi.org/10.1364/JOSAA.29.00A174>

Project BI2022-3: Development and implementation of a software application to aid in the diagnosis and treatment of binocular vision dysfunctions

Supervisor(s): Jorge Jorge, jorge@fisica.ueminho.pt

Target: Master's students with degrees in Computer Science, Computer Engineering, Biomedical Engineering or in Optometry and Vision Science

Description: The symptomatology and prevalence of accommodative and binocular vision disorders has increased in recent years. The assessment, diagnosis and treatment of these disorders requires expertise and experience on the part of the examiner. In many cases, diagnosis and treatment are poorly performed due to failure to obtain clinical information or an inability to handle and interpret all the information. Nowadays, there are no tools to guide the clinician during the visual assessment, proposing the performance of a certain procedure based on the results obtained in previous procedures. There are also no tools that, through the evaluation carried out, are able to suggest a diagnosis and list all the treatment possibilities, ordering them by their effectiveness.

It is intended to develop and implement an algorithm in an Android or/and IOS environment that guides the eye care professional during the consultation to obtain the relevant data for the case and help to establish a diagnosis and treatment.

Other relevant information: To develop this work, we are looking for candidates with one of the following profiles:

Profile 1. Knowledge of programming in IOS or Android environment for the implementation of the algorithm.

Profile 2. Knowledge in optometry and vision sciences to develop the algorithm so that it can be implemented later.

Project BI2022-4: Development of a nanotherapeutic formulation containing albumin and hyaluronic acid for corneal melanoma

Supervisor(s): Madalena Lira, mlira@fisica.uminho.pt e Elisabete Coutinho, ecoutinho@fisica.uminho.pt

Target: Master's students in Advanced Optometry and Master's in Biophysics and Bionanosystems

Description: Contact lenses have undergone numerous developments. A recent line of research is the attempt to provide them with the ability to deliver drugs, for example, for corneal pathologies, diabetes, or neurodegenerative diseases. On the other hand, hyaluronic acid has been used in artificial tear formulations to alleviate the discomfort caused by contact lenses, the main cause of their abandonment.

In this work, we intend to develop a nanotherapeutic formulation based on albumin and containing hyaluronic acid [1] for transport and delivery of an active drug for corneal melanoma (eg sunitinib, crizotinib, dacarbazine [2]). Studies will be carried out to characterize the size of the nanoparticles, stability tests, encapsulation efficiency and drug release tests.

In the final phase, the possibility of incorporation into the hydrogel and silicone-hydrogel contact lenses will be tested, comparing the two types of lenses.

Description of tasks

Phase 1: Bibliographic research.

Phase 2: Synthesis and characterization of nanoparticles containing hyaluronic acid. Stability studies.

Phase 3: Drug encapsulation assays, with the determination of encapsulation location and efficiency.

Phase 4: Controlled drug release trials.

Phase 5: Incorporation into lenses and release studies

Other relevant information

References:

[1] C. Lei et al., Hyaluronic acid and albumin based nanoparticles for drug delivery. Journal of Controlled Release, 2021, Vol. 331, pp. 416-433, <https://doi.org/10.1016/j.jconrel.2021.01.033>

[2] J. Yang et al., Treatment of uveal melanoma: where are we now?. Ther. Adv. Med. Oncol. 2018, Vol. 10, pp. 1-17; <https://doi.org/10.1177/1758834018757175>

Project BI2022-5: Theoretical and experimental evaluation of the visual function of patients fitted with multifocal contact lenses

Supervisor(s): **Miguel Faria Ribeiro** mribeiro@fisica.uminho.pt, **José M. González Méijome**, jgmeijorme@fisica.uminho.pt

Target: Master's students in Advanced Optometry.

Description: Correction of presbyopia with contact lenses has proved to be a huge challenge due to the complexity associated with producing designs capable of increasing the eye's depth of focus, in order to provide the user with a clear and simultaneous vision over a certain range of vergences/distances. Although some patients are perfectly satisfied with the vision obtained, there are others in which this satisfaction falls below of what is desired. This inter-individual variability appears to be related to optical and physiological factors inherent to each patient and transforms each adaptation into a challenge, which in the absence of some variables can end up becoming more art than science.

With this thesis proposal we intend to carry out a systematic evaluation in real patients using clinical equipment and optical modelling tools that allow treating and isolating experimental variables such as pupil diameter, lens centration, high-order aberrations, lens power and other parameters that may be considered relevant. It is intended to understand how each of the parameters evaluated contributes individually or in synergy to the variability of visual performance normally observed in patients fitted with multifocal contact lenses.

Other relevant information

This thesis aims to provide the student with knowledge and tools in the field of visual and ophthalmic optics that allow him to expand his employability opportunities.

Project BI2022-6: Retinal response to optical and digital defocus

Supervisor(s): **Paulo Rodrigues Botelho Fernandes**, pfernandes@fisica.uminho.pt, **José M. González Méijome**, jgmeijome@fisica.uminho.pt

Target: Master students of Optometry and Vision Sciences

Description: There is significant evidence indicating that retinal image quality plays an important role in the emmetropization process.

The main objective of this project is to analyze the retinal response to defocus with and without light vergence information. In this project it is intended to measure the response of the retina, visual cortex and choroid, when stimulated by images degraded by optical defocus and digital defocus. In this way it is intended to identify the types of defocus to which the retina may be most sensitive and to identify which areas or zones of the retina may be most sensitive to different types of defocus. The results of the project may have applications in future studies to understand how defocus affects the abnormal growth of the eye and the myopia development.

Other relevant information

The mentoring team provides the supervision and training in the area of visual optics and electrophysiology of vision necessary to carry out the project..

Project BI2022-7: Optical and visual quality stability with toric contact lenses over a day of lens wear

Supervisor(s): Rute J. Macedo Araújo, José M. González Méijome, rjfmaraújo@fisica.uminho.pt

Target : Master students of Optometry and Vision Sciences

Description: Stabilization of toric contact lenses (CL) is crucial for a successful fitting in terms of visual quality.

The present work will aim to evaluate the stability of optical and visual quality with a toric contact lens. Toric lenses will be fitted to astigmatic patients and several measurements will be taken over the course of a day of use (after placement, 30 min and 1, 6 and 8 hours).

Measurements of aberrometry (4mm), high and low contrast visual acuity, contrast sensitivity and light distortion will be made, as well as video recordings to know the dynamics of the lens in the eye (oscillation of the orientation marks with the blink), quantify the stabilization and later interpret the aberrometry results

Other relevant information
All measurements will be carried out at the Clinical & Experimental Optometry Research Lab (CEORLab), where the researcher will have access to all the materials and equipment necessary to carry out the project.

Project BI2022-8: Dynamic and real-time study of accommodation in presbyteries

Supervisor (s): **Sandra Franco**, sfranco@fisica.uminho.pt

Target: Master students of Optometry and Vision Sciences or Master in Physics

Description: The optical properties of the eye are not static but change continuously over time with factors such as pupil size, age, tear film stability and accommodation. The dynamic study of ocular aberrations can provide a better insight into the role of their changes in the accommodation control system. Furthermore, it may be interesting to evaluate, in real time, changes in ocular aberrations with accommodation in different conditions, such as refractive errors, accommodation dysfunctions, etc.

With this study we intend to measure changes in ocular aberrations in real time during the accommodative response to different stimuli using a Shack-Hartmann aberrometer in pre-presbyopic and young presbyopic women and relate the results to the age at which this condition arises.

Project BI2022-9: The colours we like – development and implementation of a visual test for children and adults

Supervisor: **Sérgio MC Nascimento**

(<https://sites.google.com/view/sergionascimento/home>), smcn@fisica.uminho.pt

Target: Master students in Optometry and Vision Sciences or similar

Description: The goal of this work is to investigate the properties of the colour combinations we like. This will be carried out by developing a vision test where participants select a set of coloured samples from a collection of standard colours to make compositions they like. The test will be implemented in children and adults, with and without artistic education. Data will be analysed quantitatively with colorimetry to understand which are the regularities in the colour compositions from a large set of participants. The tasks of the research student will be to help in the development of the test, to run the pilot tests and to implement the final version in several populations, children and adults. It is also expected that he/she can collaborate in the data analysis and writing of scientific reports. The requirements are a basic education in colour vision and ability to interact with people, particularly with children.

Other relevant information

References:

Nascimento, S.M.C., Albers, A.M., Gegenfurtner, K.R., (2021), Naturalness and aesthetics of colors – Preference for color compositions perceived as natural, *Vision Research*, 185, pp. 98-110.

Albers, A.M., Gegenfurtner, K.R., Nascimento, S.M.C., (2020), An independent contribution of colour to the aesthetic preference for paintings, *Vision Research*, 177, pp. 109-117.

Applicable legislation and regulations: Research Fellowship Holder Statutes, approved by Law no. 40/2004 of August 18, in its current version published by Decree-Law no. 123/2019 of August 28; Regulation of Scientific Research Fellowships of the University of Minho (RBIC), published in “Diário da República”, 2nd serie, no. 119, through dispatch no. 6524/2020 of 22-06-2020, ratified by ratification declaration no. 447/2021 of 22-06-2021 and Regulation of Research Studentships and Fellowships (RBI) of the Foundation for Science and Technology, I.P. - in force.

Host/Contracting institution and scientific supervision: The workplan will be carried out in the Centre of Physics, School of Sciences of University of Minho, located in the campus of Gualtar, Braga, under the scientific supervision of the Professor/Doctor proponent of the project for which the candidate was selected.

Fellowship duration: The grant will take place for a period of 6 (six) months, with a provisional starting date on October 2022. The fellowship grant cannot be renewed.

Amount of the research grant: The value stipend (Monthly Maintenance Allowance) is 875,98/ per month, in accordance with the stipends values published by the Foundation for Science and Technology (FCT I.P.) in the country (Annex I – Monthly Stipends Values for the maintenance allowances of the FCT Regulation for Research Studentships and Fellowships) and Annex II of the Regulation of Scientific Research Fellowships of the University of Minho (RBIC), published in “Diário da República”, 2nd serie, no. 119, through dispatch no. 6524/2020 of 22-06-2020, ratified by ratification declaration no. 447/2021 of 22-06-2021, according to the applicable regulation.

Payment is made on the 23st of each month, through bank transfer to the Bank Identification Number of the fellow identified in the contractualization process.

Other benefits: Reimbursement of Voluntary Social Security (Social Security contributions), corresponding to the 1st level of discounts (for research grants with a total duration 6 months or higher) and personal accident insurance.

Exclusivity regime: The grantee will perform the activities under exclusivity, as foreseen in article 5º of the Research Fellow Statutes and applicable regulations.

Selection panel:

The first effective member will substitute the President of the selection panel in case of impediment, being nominate the first substitute member in the place of the first effective member.

Presidente: Maria Madalena da Cunha Faria de Lira, Prof. Auxiliar do Departamento de Física, membro do CFUM, Escola de Ciência da Universidade do Minho

Effective member: Sérgio Miguel Cardoso Nascimento, Prof. Associado do Departamento de Física, membro do CFUM, Escola de Ciência da Universidade do Minho

Effective member: Jorge Manuel Martins Jorge, Prof. Associado do Departamento de Física, membro do CFUM, Escola de Ciência da Universidade do Minho

Alternate member: Paulo Rodrigues Botelho Fernandes, Prof. Auxiliar do Departamento de Física, membro do CFUM, Escola de Ciência da Universidade do Minho

Alternate member: João Manuel Maciel Linhares, Prof. Auxiliar do Departamento de Física, membro do CFUM, Escola de Ciência da Universidade do Minho

Criteria and procedures for applications assessment and selection: The applications assessment will focus on the candidate's Merit, following evaluation criteria, valued on a scale of 1 to 5 values (or another scale):

Applicant Merit - AM (70%):

A1-Academic path (considering the classifications of academic degrees), with a weighting of 50%;

A2-Personal curriculum (considering professional and scientific background), with a weighting of 30%

A3-Motivation letter, with a weighting of 20%.

The final classification of the applicant's merit with the achieved through the following formula:

$$MC=(A1*0,5)+(A2*0,3)+(A3*0,2)$$

Candidates whose MC classification is lower than 3.50 are excluded, and the remaining candidates go on to the interview phase.

ENT - Interview, with a weighting of 30%

B.1: Interpersonal skills (30%);

B.2: Demonstrated knowledge in the contested area (40%);

B.3: Motivation (20%);

B.4: Language skills (10%).

The Interview classification (ENT) will be obtained by applying the following formula:

$$ENT = (0.30 B1) + (0.40 B2) + (0.2 B3) + (0.1 B4)$$

CF - Final Classification

The Final Classification (CF) will be obtained by applying the following formula:

$$CF = 0.70 MCM + 0.30 ENT$$

Candidates with a CF lower than 3.50 are excluded.

The academic degrees and diplomas documents, or their respective recognition when awarded by foreign higher education institutions are not mandatory in the application phase, being replaced by a declaration of honor of the candidate with the contents of academic results. The documents of academic qualification or respective recognition will be required in the contracting phase and must attest facts that occurred on a date prior to the application. In situations of divergence between the information contained in the declaration and the documentation submitted for contracting the grant, only the information contained in the latter will be consider. If the documents proving the ownership of the academic degree and diploma, or the respective recognition under the terms of Decree-Law No. 66/2018, of August 16, do not correspond to the classifications awarded in the evaluation of the academic path, which can change the candidate's ranking, the fellowship won't be contracted.

Notes: Applicants with degrees obtained abroad must present proof of recognition of qualifications in Portugal and conversion of the final classification obtained in them to the Portuguese classification scale or declaration under the terms indicated in the previous point. Candidates who do not comply with one of these provisions, the selection panel will assign “0” in the grade of the graduation and/or master course. Candidates will be evaluated on the remaining parameters.

Disclosure of results: The provisional results of applications, based in the selection panel minutes, will be send to the applicants by email until 90 working days from the applications deadline.

If case of unfavourable results, the candidates have a period of 10 working days to comment, if desired, in a prior hearing to interested parties, pursuant to articles 121 and 122 of the Code of Administrative Procedure (DL no. 4 / 2015 of January 7th).

Complaint and appeal procedures: The final results of the evaluation will be published through an ordered list (alphabetically, by final grade obtained), posted in a visible and public place of the host unit, as well as by email to all applicants, enclosing for that purpose, the minutes of the jury deliberations.

The selected candidate must inform its willingness to accept the grant, in writing. In case of rejection, the fellowship will be awarded to the next candidate in the ordered list of applicants.

The final decision can be contested within 15 working days, by sending to the President of the jury the corresponding claim. Interested parties may also submit an optional hierarchical appeal, addressed to the Pro-Rector for Research and Projects, Professor Sandra Paiva.

Constitution of a selection reserve list: The applicants ranked in the next positions on the ordered list will be included in a selection reserve list, which can be used until 01/31/2023

Application deadline and submission: The call for applications is open for a period of 10 (ten) working days from the date of publication of the announcement on the Euroaxess portal.

Applications must be formalized by sending an application letter with the following documents: curriculum vitae; qualifications certificate or declaration of the applicant; motivation letter; statement proving that meets the conditions for the grant typology, according to the application requirements; other documents important to the evaluation process).

Applications must be sent by email to bolsas@ecum.uminho.pt, indicating the reference 26/ECUM/CFUM/2022 - UIDB/04650/2020of the call for applications in Subject. Applications submitted by other means will not be accepted.

Fellowship contractualization: The fellowship will be attributed by signing a fellowship contract between the University of Minho and the fellow, accordingly with the contract minute (annex IV of the Regulation of Research Fellowships of the University of Minho (RBIC), published in Diário da República, 2nd Série, no. 119, through dispatch no. 6524/2020 of 22-06-2020, ratified by ratification declaration no. 447/2021 of 22-06-2021, as indicated in 2.4 of the FCT

document: “Rules for Granting and Management of Grants within the scope of R&D projects, including infrastructure projects, the multi-annual financing program for R&D units and other FCT financing instruments (Version 2021)”.

The contract may only be concluded after all the documentation required is collected, which must take place within a maximum period of 6 months.

Once all the documentation has been received, the contracting entity has a period of 60 working days to conclude the scholarship contract. Once received, the fellow must return the contract duly signed within 15 working days.

The activities under the fellowship contract can only be begun after proper authorization by the contracting entity.

Term and cancellation of fellowship contracts: Without prejudice to the other causes provided in the fellowship regulations (FCT and UMinho) and in the Statute of the Research Fellow, the fellowship ends with the completion of the work plan, as well as with the expiration date for which it was granted or renewed.

At the end of the fellowship, the grantee is obliged to present a Final Report of the work carried out, in accordance with the objectives and evaluation criteria defined with the scientific advisor, within 30 days after the end of the scholarship.

The final report must be prepared in accordance with Annex I of the Scientific Research Fellowships Regulation of the University of Minho (RBIC), published in Diário da República, 2nd Série, no. 119, through dispatch no. 6524/2020 of 22-06-2020, ratified by ratification declaration no. 447/2021 of June 22.

More Information

ADDITIONAL INFORMATION

Benefits

Please you can find the information in the Offer Description section

Eligibility criteria

Please you can find the information in the Offer Description section

Selection process

Please you can find the information in the Offer Description section

Web site for additional job details

REQUIREMENTS

Offer Requirements

Skills/Qualifications

Please you can find the information in the Offer Description section

Specific Requirements

Please you can find the information in the Offer Description section

Map Information



WORK LOCATION(S)

4 position(s) available at
Universidade do Minho
Portugal
Braga
Braga
4710 - 057
Campus de Gualtar

EURAXESS offer ID: 788738

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