



Editorial

Enriching the learning experience of young researchers and maximizing the opportunities to acquire hard and soft skills are central aims and concerns of CIEPQPF. This year, on top of the celebrated cycle of regular monthly seminars “Encontros com a Ciência”, and the annual workshop of last Feb on Energy Management, a rich variety of hands-on courses and workshops were organized. Pest Control, Nanostructured Materials, Biomass Valorisation, and Computational Tools are examples of areas covered. Networking is progressing and new collaborations are also being established, resulting in innovative projects able to attain the increasingly high standards of current competitive calls. Check this newsletter and be acquainted with these and many other activities going on in CIEPQF. Enjoy your experience and don't forget to share it with us!

Marco Reis

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Post-graduation

New Marie Curie project (EID – European Industrial Doctorate)

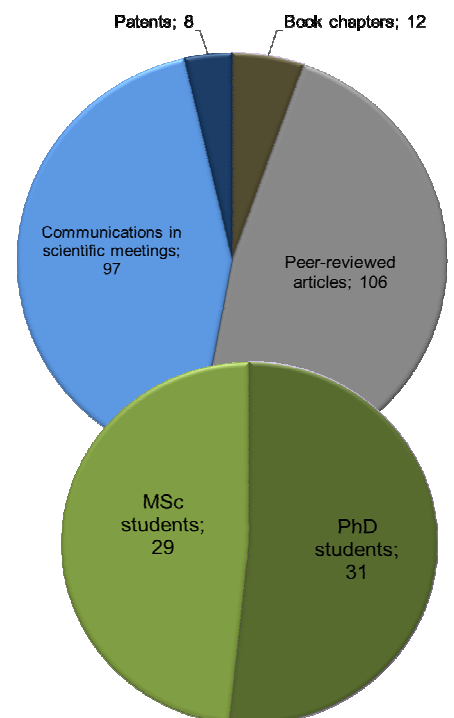
Last 1st of May, a new ITN/EID project, approved in the last call of the FP7 programme PEOPLE/Marie Curie, started in CIEPQPF. It is the first EID project to be hosted at the University of Coimbra. This a new line of projects launched by the PEOPLE's programme in the last two calls of FP7, and that the Marie Curie programme wants to further enhance in HORIZON 2020. It is a programme directed to industrial doctorships, where the PhD students are jointly supervised by industry and academia, registering for PhD at the partner university.

The present project, ECOFLOC-optimize: Combining an eco-friendly approach and a product performance approach to develop novel flocculation strategies, is aimed at the development of new eco-friendly polyelectrolytes based on green technologies, and directed to different applications, namely to high added value products (cosmetic, food and biomedical applications) but also to environmental applications.

The project coordinator is Prof. Graça Rasteiro, a member of CIEPQPF, and the industrial company is AQUA+TECH, a highly innovative Swiss company with recognized expertise in this field. The University of Leeds is also an associated partner of the project. The kick off meeting took place last July 2.

Monthly seminars “Encontros com a Ciência”

Our monthly seminars are out there. Check the annual programme and the upcoming seminars at http://www.uc.pt/ctuc/deq/ciepqpf/research_seminars.



Scientific production and post-graduation in 2013

Annual workshop - Current challenges in energy management

Programme

14:15 - Opening

14:30 - Ron Zevenhoven, Åbo Akademi University, Finland

Sequestration of carbon dioxide: the mineralization option

15:30 - Adélio Gaspar, Departamento Engenharia Mecânica, FCTUC

Buildings and Energy

16:15 - Coffee break

16:45 - José Ricardo R

Novos paradigmas d

17:30 - Open discussi

18:00 - Closing



Semi-empirical model building: should we go univariate, multivariate or ... intermediate?

Marco S. Reis



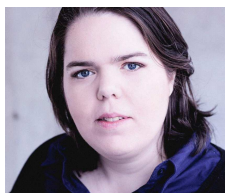
Opinion

Personal Scientific Experiences

About 5 years ago, I started my journey as a researcher at the Chem. Eng. Department and CIEPQPF. Through the years I've learned that a scientist's life is governed by a constant desire to find new and/or better solutions aiming a concrete application. During these 5 years, with the great support and dynamism of my supervisors, I've grown both personally and professionally. Since my supervisors work in collaboration with several research groups, both Portuguese and international ones (from Brazil, Argentina, Colombia, Spain, etc), there is a permanent exchange of knowledge and culture among all the members of the group. My PhD is the result of a partnership with a prestigious national company, TMG Automotive, linked to the automobile industry. Despite the demanding business environment, it's very rewarding to work with them since I feel that I'm doing applied research and that my work/know-how can help the company to improve their products. The main aim of my PhD is to develop novel and greener additives to reduce emissions and field-failures of plasticized polymeric materials for car interiors. I hope that the know-how achieved so far, the desire to enlarge my knowledge and my determination can allow me to successfully accomplish all the proposed objectives.



Sofia Marceneiro, PhD student at Department of Chemical Engineering and CIEPQPF.



During my PhD project, entitled "Green and biomimetic strategies for the development of composite materials of silica/biopolymer/biomolecule for biomedical applications", I've had the opportunity to do an internship abroad in order to complete some work and increase my skills as a researcher. The collaboration between CIEPQPF and the research group of Dr Carmen Alvarez-Lorenzo and Dr Angel Concheiro, Facultad de Farmacia, Universidad de Santiago de Compostela, has proved to be an asset to the development of our work. When working with materials for biomedical applications, it is necessary to test their biocompatibility in biological systems, often

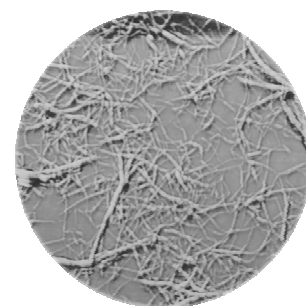
through cell culture assays. These tests were made in the renowned laboratories of the Santiago's group, where I had the opportunity to work with different materials, equipment and techniques, not available here at the CIEPQPF, and in general to enrich my research training and methods.

Luísa Filipe, PhD student at Department of Chemical Engineering and CIEPQPF.

News

COST Action on "wood cell wall structure"

Last 8th and 9th of May, CIEPQPF hosted a meeting of the COST Action FP1105 "Understanding wood cell wall structure, biopolymer interaction and composition: implications for current products and new material innovation". The primary goal is to build knowledge and understanding of fundamental processes that drive natural structures and biopolymer composition within the plant/wood cell wall, and to use this new knowledge to support the development of new materials. The two days meeting of last May gathered more than 50 participants from 19 European countries and also USA. Besides the regular programme with oral and poster presentations, meetings of the individual Working Groups and of the Management Committee took place. The participants had also the opportunity to socialize and continue their discussions during the conference dinner at Museu Machado de Castro. The visit of reputed scientists in the framework of the EU COST Programme provided the opportunity to highlight the research facilities and skills of DEQ and CIEPQPF and is also the recognition of the work carried out in University of Coimbra in the specific area of this COST Action.



Sample of nanopaper

COST Action on "Valorisation of lignocellulosic biomass"

CIEPQPF, through Prof. Graça Rasteiro, has been chosen by FCT to represent Portugal in the management committee of the recently approved COST Action FP1306 "Valorisation of lignocellulosic biomass side streams for sustainable production of chemicals, materials & fuels using low environmental impact technologies". The kick off meeting of this new Action took place in Brussels last May, and three other members of CIEPQPF have, after that, been nominated for different working groups of this Action.

Summer Course on Scientific Computing using R

Last July, we organized a summer course on "R", a free software environment for statistical computing and graphics, designed for a large audience with no previous contact with R and using a hands-on approach to introduce basic features (data handling, basic statistics, graphics, functions and packages). We had 17 participants (the limit was 20) including students and professionals. We hope in the near future to offer more courses of this type, in particular with topics that may interest a large audience and using a very practical approach.



News (cont.)

Collaborative research with the Department of Civil Engineering

A collaborative research project between António Alberto Correia (Civil Engineering Department, UC) and Graça Rasteiro (CIEPQPF) was initiated in 2013, making possible to face and handle new challenging problems of soil stabilization incorporating carbon nanotubes (CNTs). Results obtained so far are very promising showing that the addition of CNTs to soil can have high impacts on mechanical behaviour (improvement factors of 77 to 155%). Last July, the coordinators of this interdisciplinary project were awarded with an Ignition Grant due to recognised exploratory work in this field. Further, António Correia leads an international consortium joining universities and enterprises from Portugal, Finland, Italy and Switzerland, which is currently writing a proposal to be submitted to Horizon 2020, under the title “High performance binders for geotechnical applications”. CIEPQPF is also a member of this consortium.

Workshop on invasive bivalves management

The Asian clam (*Corbicula fluminea*) and the zebra mussel (*Dreissena polymorpha*) are two of the world’s worst pests, causing millions of euros worth of damage yearly. In addition to ecological concerns, as biofouling species, these bivalves greatly affect freshwater-dependent industries. The Asian clam has already been spreading in Portugal and the zebra mussel has reached neighbouring Spain, invading seven rivers in less than 10 years. Given this picture, the implementation of adequate pest management programmes, at the country scale as well as locally by susceptible industrial facilities, should be taken as a priority.



On June 23, CIEPQPF, in collaboration with CESAM (University of Aveiro), organized and hosted a workshop addressing the dispersal, impacts, monitoring and control of invasive biofouling bivalves. The workshop panel included experts from three national universities and the University of Cambridge as well as a representative from the national environmental agency ICNF. It put together over 40 participants, amongst which were industrialists, environmental managers and academics.

Chempor 2014

The 12th International Chemical and Biological Engineering Conference was organized by the Department of Chemical Engineering, University of Porto and the Portuguese Engineers Association. During three days, researchers from 13 countries discussed the hottest results in the field. Professors, PhD students, researches and senior undergraduate students from our department and CIEPQPF attended this conference and presented more than 20 communications, including oral, poster and keynote invited lectures.



The “Professor Almiro e Castro” award, sponsored by Paralab, was attributed for the first time. This award was created to distinguish every three years the scientific merit of a portuguese researcher under 45 years old in the area of Chemical and Biological Engineering. It is an honour that a former Professor of our department (who unfortunately passed away) gives name to this award, the first one of its kind. The distinguished researcher was Prof. João Coutinho from University of Aveiro.

European Researchers’ Night: One night, several hundred cities all over Europe and beyond

Last Sep 26, CIEPQPF joined the European Researchers’ Night offering three hands-on activities. Rui Martins and Ana Sofia Fajardo were there to explain how electrochemistry can be used to remove pollutants from water. Natércia Fernandes and Ana Sofia Brásio gave young scientists-to-be the opportunity to see how biodiesel is produced. Rita Garrido and Raquel Costa took their clams there to explain the impacts of biological invasions, responding to an invitation from the SOCIENTIZE framework. Graça Rasteiro and Marco Seabra enthusiastically speed-dated the crowd. While all this stuff was quite successful, Rui Reis was CIEPQPF star of the night, with his acclaimed performance as “Quim” in “Fakelook” play.



Challenges in rheology and product development

IBEREO 2015, an Iberian conference on rheology, will be held in Coimbra, 7-9 Sep 2015, with three researchers from CIEPQPF in the organizing committee. The conference will address recent trends in rheology, from experimental techniques to modelling and simulation, focusing on a variety of applications and stressing the importance of rheology for the development of new products. Abstracts submission is open until Feb 28. A strong participation of our research teams is expected.



The Importance of the Engineers Association

The Portuguese Engineers Association (Ordem dos Engenheiros, OE) is an institution of public utility with powers delegated by the Portuguese State to defend social interests. For such, it is its responsibility to contribute to the progress of Portuguese engineering, promote the development of its members in scientific, professional and social domains, ensure compliance with ethical and deontological rules of the profession and contribute to the regulation of the profession. Hence, it is required by law to be a member of the OE in order to practice the profession of engineer and use this title.



The OE also provides a range of services such as organization of technical and professional meetings, free offer of a Professional Liability Insurance, legal support to members in matters of professional practice, an employment pool, among others.

The OE has many international links, namely with FEANI (European Federation of National Engineering Associations), CLAIU (European Council of Engineering Schools) and EFCE (European Federation of Chemical Engineering). It also has close connections with similar associations within CPLP, having signed protocols for the recognition of professional qualifications with CONFEA (Brasil), engineers associations of Angola, Mozambique and Cabo Verde, and similar institutions of Spain, Peru and Colombia. The OE also has cooperation agreements with several American institutions of engineers: ABET, ASCE, ASME and IEEE. In addition to the Professional Evaluation System, with its several components, the OE recognizes and evaluates engineering education in Portugal through participation in the EUR-ACE® system, the European quality label for engineering degrees. It would be pertinent that FCTUC submit its engineering courses to the EUR-ACE® system and thus obtain this important certificate of quality.

It is important for engineering students to become active members of the OE, not only for the material benefits and services provided but also for improving professional association skills, establishing contacts with experienced members and giving their own contribute as students. The OE, Central Region, has a protocol with our students union (NEDEQ), under which students may become junior members for only 1 EUR per month.

Fernando Pinto Garcia, Coordenador do Colégio de Engenharia Química e Biológica, Região Centro.

Analytical facilities

CIEPQQPF offers a wide range of analytical techniques to assist projects from universities and industries. Modern installations and equipment are available, among them the new generation of thermo-mechanic analysis. Contact our Analytical Centre for more information: http://www.uc.pt/fctuc/deq/ciepqpf/facilities_services.

Tips for writing better papers

Since all of us are still looking for the magic formula to quickly write good papers, here are some tips that may be helpful.

1. Join all the information (literature, data, results, tables, figures, description of methodologies, etc.), and make sure you have everything you need.

2. Choose the focus of your work and target an adequate journal to publish it. Look up author guidelines provided by the journal, including formatting issues.

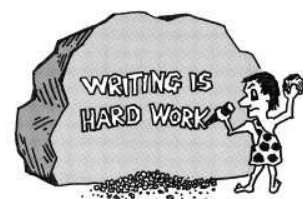
3. Prepare an outline of the paper including headings, subheadings and paragraphs covering different points. The classical structure is Abstract, Introduction, Materials and Methods, Results and Discussion, Conclusions and References. After this, you need to convert your notes and outline into narrative form – usually this is the hardest part. Leave the Abstract until the end – it is the marketing of your work.

4. You can start with the Introduction so as to think your work entirely. State your goals at the end of the Introduction, in order to guarantee that the reader will understand the objective of your work. At the same time, start the References section in order not to lose anyone.

5. Now describe and detail the Methods and Results sections. Don't attempt to write the whole manuscript at once. Instead, look at your notes and reconsider the experiments you have done. Use logical or chronological sequences.

6. The next step is to develop the Discussion section, which is the most important section, since your results should be described according to the old and new theories. Keep to the plan of your outline to focus on what you want to say. Revise it and be prepared to do this several times until you feel it is not possible to improve it further. For maximum readability, most sentences should be about 15-20 words. Avoid using unnecessary words.

7. Be consistent. Often a manuscript has more than one author and therefore the writing may be shared. However, the style needs to be consistent throughout. The first author must go through the entire manuscript and make any necessary editorial changes before submitting the manuscript to the journal. Put aside your first draft for at least one day. It is difficult to proofread and edit your own work; a day or more between creation and critique helps.



Based on "Twelve Steps to Developing an Effective First Draft of your Manuscript" from San Francisco Edit.