Researchers of the Month 2012

PHOTO COURTESY BY THE HERBARIUM AT UA

The Researcher of the Month is an initiative published on the website of research@ua dedicated to highlighting the people behind the research. Every month a researcher of the University of Aveiro is profiled. The aim is to enhance the knowledge of the research being done and the person developing it, both internally to the academy and to an external audience. When choosing the researcher of the month, the Research Support Office strives to picture the diversity of our research staff, concerning backgrounds, nationality and research subjects as well as research orientation or recommendations for the improvement of the research developed at UA.

Duncan Fagg

The job of a research scientist is delightful for those who possess curiosity.

Duncan Fagg is currently employed as a senior investigator in the nanotechnology research division (NRD) of the Centre for Mechanical Technology and Automation (TEMA), where he is presently the leader of a group studying hydrogen related technologies. His personal perspectives are to continue the research career in the University of Aveiro and the res earch interests include the storage of energy in the form of synthetic fuels that can be transported and reconverted into electricity far from the original source. In his opinion, the key strength of the UA is in granting scientific freedom to researchers to develop their own lines of research while providing them with the infrastructure and support that they need. He believes that the promotion of interdisciplinary research activity, for example by hosting open days at departments with guided tours for UA researchers, would provide researchers with a rare opportunity to see what infrastructure is available in other departments and talk with researchers in completely different scientific areas.

FULL INTERVIEW

José Richard Gomes

Chemistry can be viewed to a large extent as the art of making and breaking bonds.

José Richard Gomes is an assistant researcher of CICECO and his research interests involve the use of computational approaches in Chemistry. José was awarded the prestigious Vicente de Seabra Medal by the Portuguese Chemical Society (SPQ) in 2010, for the autonomous high-quality research he has been carrying out. In the future, he would like to do more applied research, synchronized with the strategic lines for research of CICECO. Usually, computational work can be used to predict electronic and structural configurations quite accurately from which many properties can be calculated and that may be used to plan the work in the experimental laboratory. However, the calculations are usually limited to the nanometer scale) and, therefore, the main challenge is the design of suitable molecular models (aggregates of particles) that can represent the most important states or configurations of the real systems. These limits are imposed by the computational facilities available to perform those calculations, which led to the combination of efforts to start up a central supercomputing infrastructure at UA, the LESCUA (Line of Excellence in Scientific Computing at the University of Aveiro).

FULL INTERVIEW

Mikhail Zheludkevich

Quality is more important than quantity

Mikhail Zheludkevich holds currently a position as researcher at CICECO and his scientific interests include “Smart” corrosion protection based on “self-healing” effect, controllable release systems in the corrosion protection, nanostructured protective coatings, mechanisms of corrosion inhibition, localised techniques in corrosion research. Currently, he is the technical coordinator of the large scale collaborative project MUST and also coordinating an IRSES project (NANEL) and participating as partner in other 6 EU funded projects (Nanobarrier, Saristu, SISET, Nanomar, Actcoras and Duradh).The close international collaborative networking with leading academic research groups in the area as well as with major relevant industries is the key point which allows being always at the hot edge of development of the new functional surfaces for various application. The driving force is a responsibility in front of the society which expects contribution of science to its sustainable development. For him, the main point to improve the research at UA is related to the development of a clear strategy for progression in researcher career in order to motivate and keep the most talented investigators in house.

FULL INTERVIEW

Andrei Kholkin

Teaming is the only way of survival and sometimes leads to the tremendous progress in understanding and creating new areas of research

Andrei Kholkin is a research coordinator and head of the functional imaging and nano-characterization laboratory of CICECO. His group develops multifunctional materials and scanning probe microscopy techniques. He coordinated two European projects on multi-functional materials and serves as an Associate Editor-in-Chief for the IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control (TUFFC) and member of editorial boards of several scientific journals. He was a recipient of the "Excellency" award from the FCT. In his view, the goal of a researcher is to advance science or technology to the state-of-art level and beyond even in a very narrow area of activity. In the area of piezoelectrics and ferroelectrics, there is a definitive shift from hard transition metal oxide materials (often containing lead) used in the past in sensors and actuators to the lightweight, flexible and ecologically green polymer or biological materials with almost the same functional properties. This allows researchers to extend the area of applications and finally design new types of the devices, for example, miniature piezogenerators that can be implanted into the human body. According to the researcher, the strength of UA is the flexibility and multidisciplinary research *ad hoc*. Teaming is the only way of survival and sometimes leads to the tremendous progress in understanding and creating new areas of research.

FULL INTERVIEW

João Serôdio

what drives me is mostly the pleasure of pursuing scientific curiosity and (sometimes…) discovery, as well as the training of students

João Serôdio is currently Assistant Professor at the Department of Biology and member of CESAM. Currently he is the PI of two FCT projects and is also coordinating a Marie Curie Action IRSES. In general terms, I aim to make significant contributions to the field of aquatic photobiology, particularly of marine organisms such as biofilm-forming diatoms (a diverse and ecologically important group of microalgae) and photosynthetic symbioses (like corals and seaslugs). More specifically, a big challenge in the study of the photophysiology of marine microalgae will be the integration of large amounts of genomic information, made available for an increasing number of species, with the physiological traits observed at the phenotypic level. In some more specific areas, as in the case of the study of microalgal biofilms, research is further hampered by the difficulty in finding adequate model organisms. The major strength of UA comes from the possibilities offered for multidisciplinary collaboration by the comparatively flexible nature of the university organization. To improve research he considers positive a closer approximation between teaching subjects and scientific expertise. It would help to improve the quality of teaching, and would stimulate the research activity through motivation and attraction of students.

FULL INTERVIEW

Carlos Herdeiro

I am fortunate to live at a very exciting time

Carlos Herdeiro is Assistant Professor at the Department of Physics and leads the relativistic gravity team. Currently he coordinates one European Marie Curie IRSES action, involving five countries. For his research on models of cosmological inflation he was awarded a 2004 Gulbenkian award for stimulating research. He pursues a threefolded goal. Firstly he is committed to continue producing, together with the team at Aveiro (Gr@v group) and outside collaborators, internationally competitive research. His area of research is an overlap between relativistic gravity/cosmology/high energy physics, and in any of these three directions a lot is happening or a lot is about to happen. Secondly, he is working to create opportunities for promising young researchers, both at undergraduate, graduate and post-doctoral level, to work in Portugal and, in particular, in the group at Aveiro. Finally, he is frequently involved in outreach activities that may raise the public awareness of science. Carlos Herdeiro highlights the physical organization in a (very nice) campus, which facilitates the interaction between the various departments and also with the central administrative services, as well as the absence of an intermediate level of Faculties/Schools in between the University and the Departments. Concerning opportunities, he is very pleased with the open-mindedness and support found at the Department/University. Without it, it would have been much harder to setup a group; this is the kind of opportunity not every University makes available.

FULL INTERVIEW

Nancy Lee Harper

Performance is generally viewed as 'entertainment' and not "scientific"

Nancy Lee Harper is Associate Professor with Aggregation in the Department of Communication and Art, where she coordinates the Piano Area. As a concert pianist, she has performed on four continents and has been described as "an extraordinarily multi-talented American musician and scholar who lives and works in Portugal" (Music and Vision). Her personal perspectives as a researcher in music are always generated by a sense of curiosity and love of teaching and are propelled by the fundamental questions of "Why?" and "How?" as well as the adage "Regard Man as a Mine Rich in Gems". As the first university professor in Portugal with Doctor of Musical Arts in Piano Performance and probably still the only one in the career status, she arrived in Portugal in 1992 as an invited Lecturer at a time when practical music was being implemented in the university system. To Nancy Harper, the biggest challenge in the area of artistic research, for a performing artist, is getting their research in Music Interpretation as a Performer to be accepted as valid research by an academic institution and the scientific community. Performance is generally viewed as "entertainment" and not "scientific". This means that the very essence of a performer's art - the many daily hours, months, and years which go into constructing and presenting one's individual interpretation of a work – is not regarded by the scientific community as valid if it is not used in a process of research, be it empirical or other. The strengths of UA regarding research include its openness and innovativeness. It would be hard to imagine some of the research interaction that occurs here as being possible, desirable, or accepted in other countries.

FULL INTERVIEW

Susana Loureiro

Interdisciplinarity is crucial to trigger responses and actions

Susana Loureiro is a researcher at the department of Biology and CESAM. Her research activity focuses on Ecotoxicology, Environmental Contamination and Risks. she is the coordinator of three projects financed by FCT and the WP leader for Ecotoxicology of the FP7 EU project NanoFATE. Under these projects, and as research interest, she is carrying out research on the combined effects of chemicals and natural stressors in soils (CLIMAFUN-FCT), how chemicals flow within a model trophic chain (FUTRICA-FCT), the responses of organisms exposed to chemical pulses and mixtures throughout generations (RePULSE-FCT), or focusing on emergent substances like nanoparticles and evaluate their toxicity and fate in aquatic and terrestrial systems (NanoFATE-EU FP7). In ecotoxicology the "basics" to derive toxicity responses from chemical exposure are well established but there is still a huge amount of work to carry out to understand the main processes that role toxicity. In addition, nano-ecotoxicology is leading us to reconsider all the basics for "regular" ecotoxicology as variables that can hinder and role toxicity are more than the usually ones considered for "regular" chemicals. Nowadays the university has gained strength by the presence of new researchers in its research teams. They brought new vigor, knowhow and energy to build networks, apply to new and innovative projects, and get international funding. For sure that "dressing the UA shirt" is a major strength and several researchers wear it every day! Although contention is one of the most common used words during the last months (or year!), lab and office space are crucial to properly run scientific activities and it is something that must be improved and that would benefit the research activities at the University. In addition it would favor also the visit of external researchers, improving the collaborations abroad and the students' exchange.

FULL INTERVIEW