



RESSOURCES21

RESSOURCES21 is a project funded as part of the French “Future Investment” national programme, with a budget of 9 million Euros (2011-2019). It pursues three main aims: (i) Understanding the formation processes of metal deposits, and the natural and anthropogenic cycle of strategic metals; (ii) Develop innovative tools and procedures to better manage and exploit these deposits; (iii) To grasp the environmental impact of these metals once they have been scattered throughout the ecosystem. Three broad areas of action complement the main aims: (i) Pushing the frontiers of analysis in terms of finding and measuring trace elements within rocks and dating geological events; (ii) Modelling the geometry, movement and physical chemistry processes at regional level to understand the distribution of metals and their development in space and time; (iii) Designing and developing new biogeochemical sensors to monitor the scattering of dangerous elements and predict pollution. More info at www.ressources21.univ-lorraine.fr/en/project/download.html

RESEARCHERS FROM LORRAINE STILL CONTRIBUTE TO THE DEVELOPMENT OF PHYTOMINING

New Scientist 2961, 22 March 2014, page 49)

Aida Bani from the Agricultural University in Tirana, who studied under Jean-Louis Morel and Guillaume Echevarria in the noughties, has published an article on her research in New Scientist. Echevarria originally set up these tests, now producing conclusive results. The development of phytomining in Albania is the result of our investment since the 1990's.

As part of this collaborative work, testing was extended to Cuba and Brazil where researchers like former LSE post-doc and current colleague of Guillaume Echevarria, Leide de Andrade from the Embrapa Research Institute, are working.

New Scientist states that Eramet wants to use phytomining to rehabilitate biodiversity.

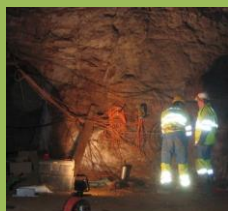
The journal also mentions that the ECONICK project (for the design of an environmentally friendly, high value Nickel production process) is now being incubated at Lorraine. This start-up is led by Marie-Odile Simmonot and aims to create a phytomining business that produces high-added-value nickel salts.

RECRUITMENT

Two students from the National School of Geology (Quentin Lespagnol and Alix Marchal) have been recruited for a 3 month placement to produce a web-documentary providing general information on strategic metal.

AN UPDATE ON OUR SCIENTIFIC PROGRAMMES

One of the main aims set by LabEx Resosources21 is to produce new scientific



and technological knowledge to enable the identification and exploitation of future deposits. The launch of the integrative

programmes (Nickel Programme 2014-2017 and Rare Earth Programme 2015-2018) have allowed the community to focus on its priorities, thus encouraging interaction around the same topic. The Nickel programme will launch in September 2014 and the preparation workshops for the Rare Earth Programme have already revealed a community supporting new scientific questioning.

PRIZE

Arnaud Botella received a prize for his poster on hybrid grid generation during the RP2E Graduate School open day. These grids are an essential element in achieving the modelling-related aims of LabEx on coupled calculations in complex geological models.

PUBLICATIONS

See our Ressources21 publications at <https://www.zotero.org/groups/ressources21>

FRANCO-AUSTRALIAN MEETING ON RARE EARTH ELEMENTS IN PERTH



Michel Cuney and Lev Filippov represented Geosciences in Nancy and “RESSOURCES21” at this workshop organised by the French Embassy. Many industrial and academic stakeholders attended, giving us a better grasp of the challenges this field faces due to markets, prospection and rare earth element production processes as well as an overview of the chemical and physical chemical challenges involved in flotation and leaching etc. The associated issues were presented by several bodies (CSIRO, UniSA, ANSTO, CEAtch and Georesources). Visits to laboratories and research centres emphasised the importance of the research work in mineral raw materials.

Thanks to the conferences on the subject, there are many mining projects underway, with the Université de Lorraine, Chimie ParisTech and Curtin University began working together by exchanging researchers and setting up joint research projects.

QUÉBEC MINES 2013

A 10-person delegation from Lorraine represented the University and RESSOURCES21 at the Québec Mines 2013 congress. The students were able to extend their networks, giving them a chance to find a placement or a job in Canada. Three of them were given the chance to take part in the MINES EXPLO contest where several teams compete to deliver the best exploration project). The job of the lecturers was to strengthen Franco-Québec ties and to make it easier for French students to find jobs in Canada. The Franco-Québec Youth Office (OFQJ) funded the involvement of 7 students from Lorraine in the International Forum for Young Leaders in Mining Development that took place during the show. The delegation from the Université de Lorraine and French companies were received by the French Consul in Québec.



RESEARCHERS' MOVIE FESTIVAL

The Researchers' Film Festival is a CNRS / Université de Lorraine event that took place between 10th and 15th June 2014 at the Parc de la Pépinière in Nancy. Scientists and directors got the chance to answer questions from the audience. 60 films screened for free, researchers and festival-goers discussing until the early hours, passers-by who stopped then stayed, film-making school-children, science (and comedy) shows. The first evening was dedicated to "The Continental Waltz" with Christian France-Lanord (from CRPG) as the speaker.

OTELO and RESSOURCES21 presented an exhibition for the general public, built around 5 totems focusing on the future challenges of rare metals that are essential to our daily lives and the environmental impact of these metals, including tracking them.



FOCUS ON GUEST RESEARCHERS



Prof Jose Paulo PINHEIRO, specialist in environmental physical chemistry, lecturer at the University of the Algarve (Portugal) spent a month in Nancy hosted at the LIEC in March 2014. His stay enabled him to share his knowledge and (i) explore electroanalytical methods for developing sensors and speciation analysis of trivalent metals, especially rare earth elements, in natural waters (ii) and to study the behaviour of a model trivalent metal (Indium) in solution in the presence of natural particles (humic acids). The last point was the subject of a Masters placement in 2014 supervised by Paulo Pinheiro and Elise Rotureau. The work carried out so far has enabled the operating conditions to be perfected for assessing the speciation of *In* by voltametry, and to acquire a first data set on the interactions between Indium and various molecular or particulate ligands. Jose Paulo PINHEIRO's was recruited after as a lecturer at ENSG.

Currently a researcher/lecturer at the University of Geneva, **Prof Montserrat FILELLA** joined the LIEC from January to June 2014. The aim of her stay was to set up research into the geochemistry of strategic elements. Mme Filella was involved in the integration into ecotoxicology studies of metal speciation such as those she set up in aquatic environments, as well as experimental cultivation environments. She supervised a campaign of antimony sampling in water from old mineworkings, and established the conditions for effective speciation in bioavailability studies. As part of a Masters, Montserrat FILELLA set up and ran the protocols for the chemical and physical separation of the components in aquatic organic matter, in the context of biodiversity and ecotoxicology studies. Projects underway will be continued through other joint efforts.



Prof Daniel Fornasiero from the Ian Wark Research Center, Associate Professor at the University of South Australia spent 8 weeks as part of the "Resource and Residue Recovery" team at the Georesources laboratory thanks to funding by the Emerald programme. He was involved in 3 modules for Emerald Masters students and presented two conferences on different aspects of modelling flotation microdynamics for mixed and composite particles. He also took part in discussions on progress in the team's research projects and existing thesis work. As part of the Ressources21 "Nickel" project, he developed a research programme on the properties and recovery of fine particles contained in lateritic ores.

Dr Laurent Aillères is a Professor at Monash University in Australia. He was the guest of GeoRessources for 3 weeks as part of the EMERALD Masters. We took the opportunity to discuss implied-surface based 3-D modelling methods and discuss future collaboration (an article is currently being written with Gautier Laurent, a former doctoral student and current post-doc at Monash). Laurent Aillères produced an applied mining exploration module in M1 Emerald based on geophysical and geomodelling data.

