



## RESSOURCES21

The RESSOURCES21 project is looking at how France and Europe source their supplies of strategic metals for the energy and high technology goods fields. In this context, RESSOURCES21 is focusing more particularly on primary strategic metal resources (rare earths, uranium and nickel especially) in terms of geological concentration processes, mineralurgy and environmental impact as well as the management of secondary resources and recycling. [Find out more](#)

## INTERNATIONAL MASTERS

The so-called "DUBY" masters course for foreign students in "Mineral raw materials, risk engineering and management" offered by the *École des Mines* in Nancy and the *Ecole Nationale Supérieure de Géologie - ENSG*, has been approved by the Ministry. Its aim is to train mining industry managers in the countries that produce and export raw materials in order to create lasting links with these countries, the mine operators and their future managers. This new master course will start in autumn 2014 with its first intake and will take over from the CESTEMIN and the CESEV courses, which have lost their funding due to budget cuts by the ministry. These two undergraduate courses were created in Nancy in 1975 at the *Ecole Nationale Supérieure des Mines* and at the ENSG in the fields of mining technology (CESTEMIN) and exploration of mineral resources and ore processing (CESEV) respectively.

[link](#)

## MICHEL CUNEY HONOURED ONCE AGAIN



After being awarded the SGA-Newmont Gold Medal for 2013, Michel CUNEY has just been appointed Honorary Professor at the East China Institute of Technology in Fuzhou, after a period spent at this university, which trains most of China's geologists in exploration and research.

## RECRUITMENT

Julien Mercadier (GeoRessources) has been recruited by the CNRS as a CR2-level researcher specialising in Metallogeny.

## PROFESSOR CLAUDE FORTIN AT THE LIEC



Claude Fortin, Professor at the INRS-ETE (Water-Earth-Environment Centre) in Quebec and Canada Research Chair in biogeochemistry of trace elements, recently spent two months (from 10 June to 2 August 2013) at the LIEC (Interdisciplinary Laboratory for Continental Environments). His stay gave him the chance to forge close links with researchers at the LIEC, but also to share his knowledge and maximise the synergies and complementarity of research being carried out on rare earths, critical metals and nanomaterials. Areas were identified where scientific cooperation is possible and a number of joint projects will be put forward. Reciprocal exchanges and joint supervision of students, as well as technique sharing between the two laboratories, were also seriously considered.

## SUCCESS AT THE RESSOURCES21 - MOMENTS D'INVENTION – RENAISSANCE NANCY FAIR



Our researchers and students manned the RESSOURCES21 stand from 11 to 16 June 2013, welcoming the general public every day from midday to midnight. Our estimation is that approximately 150 to 180 people a day showed an interest in strategic metals, attended the demonstrations and engaged in discussion with the "researchers" present. The public's questions were particularly centered on the real place of metals in everyday life, the risks regarding the availability of supplies and the economic impact in Lorraine. This first RESSOURCES21 operation was a success and will surely be repeated, building on the solid content and experience.

## SGA MINERAL DEPOSITS

RESSOURCES21's researchers gave some fifteen presentations at the SGA conference in Uppsala, Sweden, which this year was attended by almost 670 researchers and representatives of industry working in the mineral resources field. The next SGA Meeting will be held in Nancy from 24 to 27 August 2015



## MEETING WITH THE MINERAL INDUSTRY SOCIETY

The Director of RESSOURCES21, Frederic Villieras, and his Scientific Director, Michel Cathelineau, met with the regional section of the SIM (Mineral Industry Society) on 5 June 2013. This event was an opportunity for the two directors to present RESSOURCES21 and the OTELO Pole of the University of Lorraine, of which it is a part. The 2013 SIM annual congress took place in Besançon at the beginning of October, and students from the ENSG and ENSMN were present at the congress exhibition. <http://www.lasim.org/>

## SOCIETY OF ENV. TOXICOLOGY AND CHEMISTRY (SETAC)

At the SETAC Annual Meeting held in Glasgow in May 2013, Laure Giamberini chaired a session on strategic elements in the 21st century. The session included 5 presentations and demonstrated that the life cycle assessment (LCA) approach has the potential to manage the risks relating to critical materials. Product indicators could constitute measures integrated at European level to manage the use of natural resources and the related risks.

## FOCUS ON RESSOURCES21's POSTDOCS

After a Masters in environmental chemistry, I completed a PhD thesis on "Discrimination of anthropic sources of mercury in the environment" at the University of Pau (IPREM/LCABIE) and the CRPG at the University of Lorraine. As part of the LabEx project and working with LSE and the CRPG, my job was to develop an analytical technique for measuring Ni isotopes using the double spike method to correct for instrumental mass fractionation of the machine. Once this stage was validated, we investigated the variations in nickel isotope composition in nickel hyperaccumulating soil-plant systems. These plants are of crucial importance to the LabEx project because their extraordinary capacity to take up nickel from the soil enables them to play a role in the phytoremediation of contaminated soils or to be used for "phytomining" of nickel-rich soils. The results achieved constitute a significant contribution to our knowledge of the geochemistry of nickel isotopes and have given LabEx an analytical tool it can use for future investigations.

*N. Estrade is now conducting postdoctoral research in Canada*

**Nicolas Estrade**



**Marc Ulrich**

After completing a PhD in geology in 2010 and 2 years in a temporary lecturing post in Grenoble, I joined the GeoRessources laboratory in Nancy in September 2012. My research aims to understand the distribution of metals of economic interest such as nickel, cobalt, chromium and manganese in the laterite profile in New Caledonia. A particular focus of the study is the behaviour of scandium, one of the group of rare earth elements, and at risk of a shortage of supply in the short term. My postdoctoral work is being funded mainly by LabEx Ressources 21, with a financial contribution from Koniambo SAS, a mining company in New Caldeonia which is participating in the project.

*M. Ulrich has taken up a post as a lecturer at the University of Strasbourg*

I obtained my PhD in January 2012 (Soil Science Department, University of Almeria, Spain) and I currently have a postdoctoral position funded by LabEx RESSOURCES21. My PhD was based on contamination problems, toxicity and remediation of soil contaminated by mining activities between the University of Almeria and Amsterdam University. During my postdoctoral training in LabEx, my main activities have been centered in rare earth elements (REEs); a group of elements with a broad spectrum of application in different industry sectors but with scarce ecotoxicological information. In this way, a detailed literature search was performed in order to identify research needs (results presented in the Congress SETAC, Glasgow 2013); after, a comparative study of REEs ecotoxicity has been performed by using different aquatic organisms. Final aim is to apply these results in understanding the environmental fate and ecotoxicity of these less studied elements in the environment.

**Veronica GONZALEZ**



*V. Gonzalez is currently in her second postdoctoral year*

**Asfaw ZEGEYE**

My research work concerns the biochemical cycles of elements, iron in particular, with a particular interest in bacteria-mineral interaction. My research combines solids analysis techniques and molecular approaches in order to determine reaction rates and mechanisms and the secondary products of these biogeochemical transformations. My postdoctoral project with Ressource21, working in the LIEC laboratory, is seeking to establish a relationship between the bioreduction of antimony-doped iron oxide and the bioavailability of this element using bacterial biosensors.

*A. Zegeye has taken up a position as a CNRS CR2-level researcher at the LIEC*



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