LABORATORY OF EXCELLENCE RESSOURCES21
« STRATEGIC METALS IN THE 21st CENTURY »

NEWSLETTER N°11 - LabEx RESSOURCES21 – JULY 2023

Geology
Ore genesis
Exploration

Ore processing
Hydrometallurgy

Agromining

Ecotoxicology
Environment
Remediation

Mines & society:
Territorial & eco-
nomic integration

Recycling

The Project RESSOURCES21/IMERYS

The LabEx RESSOURCES21 scientific team is composed of ten permanent researchers, two post-doctoral and four doctoral researchers. The project comprises three major axes: **Geology** The actions of this axis aim to establish the relationship between the distribution and the content of rare and critical metals and magmatic and hydrothermal phenomena, along with the use of geological dating methods to understand the formation of pluton over time. **Characterization** The actions are dedicated to: (1) the development of portable tools designed to detect and quantify in a fast and practical manner the rare and critical metals and (2) the establishment of the relationship between geochemistry and mineralogy of the studied rocks. **Processing options for metal recovery** This axis is dedicated to the development of a processing route suitable for the recovery of lithium-bearing minerals and phases-carriers of other rare metals such as, for example, Nb and Ta, using gravity and flotation separation methods, coupled with modelling tools.

Our lastest PhD. thesis defense

Allen Yushark Fosu defended his PhD thesis on June 1st, realised under the Direction of Prof. Alexandre Chagnes, Université de Lorraine, the Co-director of Assoc. Prof. James Vaughan, University of Queensland in Brisbane and the supervision of Dr. Ndue Kanari, Université de Lorraine. This work supervised in cotutelle was intitled «Advanced chloride route for lithium extraction from spodumene ore».

Challenge

Congratulations to Océane Rocher, a doctoral student at GeoRessources, whose thesis focuses on the hydrothermal system of the Beauvoir granite, took part in the Université de Lorraine final of the Ma Thèse en 180 secondes challenge. Exactly three minutes to present her thesis in a clear and accessible way. Océane Rocher's portrait is available here: bit.ly/3IlofFg

Welcome to Jing WANG, Nicolas LACHAUX and Christophe BALLOUARD

After a post-doc at GeoRessources co-funded by LabEx RESSOURCES21, **Dr. Christophe Ballouard** is recruited as "Chargé de recherche CNRS" with a research project entitled “Rare-metals as tracers of the evolution of the continental crust”. He will be joining the GeoRessources laboratory at the beginning of October 2023. His research project aims at studying the geochemical cycle of rare-metals (Li, Nb, Ta, Sn, W) within orogens, from Archean to Phanerozoic, in order to better understand the formation of granite-related ore deposits in relation with the evolution of the continental crust.

After completing his PhD in Simulation Chemistry at the University of Montpellier in 2021, followed by training in computer science (Python, Big Data, Machine Learning) at Centrale Marseille, **Dr. Jing Wang** joins the LIEC LabEx team for the project "Modelling metal binding to environmental humic nanoparticles (NICA-SPBT-PEST)", supervised by Dr. Jérôme Duval, Prof. José Paulo Pinheiro.

Dr. Nicolas Lachaux completed his PhD at the Université de Lorraine in 2023. He is currently working on a project entitled "Lithium and Health-Environment: Action 3 Occurrence, fate and transfer of lithium and its isotopes in freshwater ecosystems: implications for environmental impact assessment". This project is co-supervised by Prof. Laure Giamberini of the LIEC laboratory and Dr. Yves Marocchi of the CRPG.

Save the date! CONGRESS, SEMINARS, CONFERENCES…

The International Congress dedicated to the Metals for electric mobility

A Congress organized by **LabEx RESSOURCES21** will be held in Nancy on September 19–20, 2023 in NANCY AQUARIUM MUSEUM 34, Rue Sainte Catherine. One of the major predicted consumers of the green technology metals is electric mobility. Cobalt, lithium, rare earth elements, manganese, nickel – all these metals and more are required for production of an electric vehicle. The International Congress dedicated to the Metals for electric mobility organized by LabEx RESSOURCES21 aims to promote networking and fruitful exchange between the scientists and the industrial representatives and to spread awareness among the younger audience in regard to the challenges and the state-of-art across the major electric mobility-related fields. Read more: http://ressources21.univ-lorraine.fr/content/metal-electric-mobility

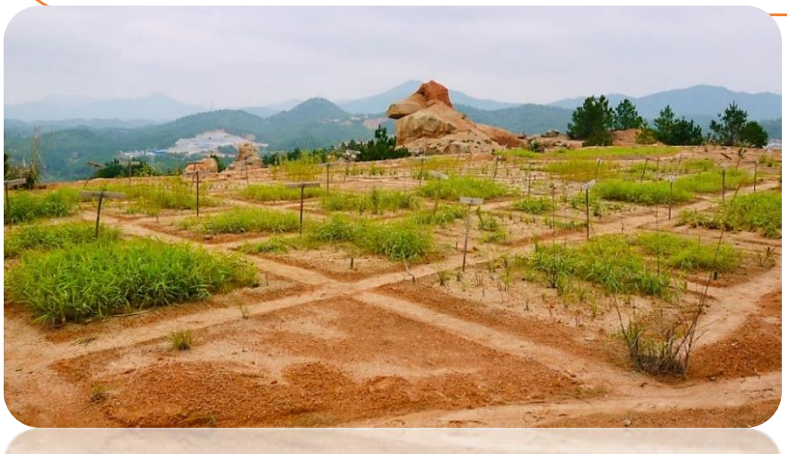
You are invited at the annual meeting of the Aquatic Ecotoxicology

The Aquatic Ecotoxicology Research Group (GDR EA, https://gdrecotoxaqua.wixsite.com/gdr-ea) gathers 17 French laboratories and focuses on contaminant monitoring, mostly, effects on biota, both in fresh and marine waters. The next annual meeting, that brings together around 70 researchers, will be organized by the LIEC in Metz, from December 5 to 7, 2023. It is an opportunity to present ongoing research program and to build new consortium to address emergent challenges. Apart from these presentations, some trainings are also proposed, this year on dose-response analysis of omics dataset and on imagery for ecotoxicology, a research topic on which the LIEC is at the forefront and get an internationally recognized expertise. The four thematic axes of the GDR are Omics for non-model species, Species sensitivity to depict ecosystem health, trans- and multi-generational effects and accumulation and transfer of pollutants along trophic food webs.

The 14th Sino-French International Workshop on Contaminated Soil Remediation

The LIA ECOLAND is a joint international laboratory created in 2015 by the Laboratoire Sols et Environnement of the Université de Lorraine and INRA and the Laboratory of Environmental Pollution Control and Remediation Technologies of the Sun Yat-sen University of Guangzhou, China. In the context of the renewal of the LIA Ecoland (2023-2028) scheduled for October 27 in Guangdong, the Laboratoire Sols et Environnement is organizing the next annual Franco-Chinese workshop, which will take place in Nancy from September 11, 2023 to September 16, 2023. The aim of the 14 th workshop is to present scientific progress on the topics developed in ECOLAND 2 in the form of talks and poster sessions. The main objectives of the LIA are to understand the dynamics of pollutants in soils and the potential of large contaminated territories, to generate a wide range of ecosystem services.

During the workshop, time will also be devoted to creating synergies within the group and laying the foundations for setting up new joint projects or through joint supervision of students (masters, theses, post-docs). A round table with all partners involved in the LIA will help to define the scientific strategy and objectives for the coming year in order to bring the work to a successful conclusion and contribute to the development of sustainable management strategies for contaminated sites to support the ecosystem services they provide.



Kick-off meeting- EPHemeris Impact project

Two days of presentations, workshops and debates will be held on October 24-25, 2023 (location to be specified) in order to identify and bring together all the stakeholders who wish to get involved in co-constructing the Impact EPHemeris project. Click on the link below to download the presentation summarising the initial project and its ambitions https://filesender.renater.fr/?s=download&token=66befd7d-1c60-496c-b3b8-d09b5c366872

(Available for download before August 4, 2023)

Our lastest conferences and expositions

Prof. Alexandre CHAGNES held on July 5, 2023 a conference organized by Métropole Grand Nancy at Auditorium du Musée des Beaux-Arts, Place Stanislas at Nancy. The event, focused on "Sustainable metal supplies for the energy transition: technological and geopolitical issues" was followed by a round-table discussion with the participation academics and industrials.

An open exposition for all audiences and all professional backgrounds

The first tour of an exposition, implemented by Dr. Michel Cathelineau and Dr. Olga Chernoburova took place on March 18-19, 2023 in the Nancy Gentilly hall during the 48th ALAST bourse exposition. The exposition "**Geologists in the energy transition**", in the guided tour format, presents in a scientific and accessible way the nature and origin of the metals that are essential for the energy transition. It is designed to raise awareness of the challenges facing geologists, the criticality of raw materials and their global distribution. Enriched by the history of French and foreign deposits, it shows mineral samples from Congo, Morocco, New Caledonia, Argentina and Gabon.

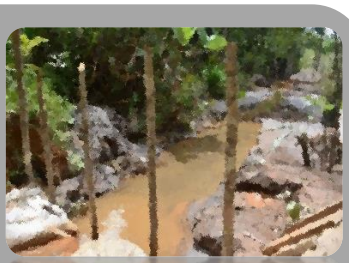
Serpentine Ecology

The 10th International Conference on Serpentine Ecology took place in Nancy on June 12–16, 2023, one of the major international scientific forums in the field of serpentine ecology, bringing together botanists, zoologists, microbiologists, physiologists, geneticists, geologists, soil scientists, and other applied specialists studying the ecology of ultramafic rocks and soil. The event brought together at least 115 specialists from all over the world 40 researchers with expertise in agromine. This is a unique opportunity to keep Nancy and the Université de Lorraine community at the heart of international research in this field https://icse2023.sciencesconf.org/

PDAC 2023- Began in 1932, it's today the event of choice for the world's mineral industry ; The World's Premier Mineral Exploration & Mining Convention happened on March 4-8th 2023. As every year for the past 9 years, a 5-person delegation attended the annual convention held in Toronto, Canada, an opportunity to present our training and research activities (projects, structures, equipment, and so on) in the field of the mining cycle. The convention gathers over 1,100 exhibitors, 2,500 investors and 23,819 attendees from over 130+ countries.

On site mission in French Guiana

As part of her thesis work, **Nina Fermet-Quinet** completed a one-month field mission in French Guiana in March and April 2023. The aim of this mission was to finalize the characterization of illegal mining activity, with a view to prospective modeling of the various mining players present in French Guiana. For this purpose, two main axes were explored: field reconnaissance as part of a HARPIE repression mission organized by the Guiana Gendarmerie *(see pictures on the right)*, and individual interviews with specific players directly or indirectly involved in the fight against illegal gold panning. In addition, on March 17, 2023, Nina and her supervisors were invited to present the quantitative results of the ongoing study at a meeting of the technical committee for the fight against illegal gold washing. In conclusion, this mission served to underline the importance and relevance of the work to public policy in the fight against illegal gold mining, and to consolidate, validate and finalize the results with local stakeholders with a view to scientific publication.



Articles

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GeoRessources CRPG | GeoRessources Steval | LSE Coll LRGP | LSE LIEC | GeoRessources BETA | GeoRessources (Steval, Hydroval)

7 LABORATORIES

International research and teaching collaborations with research institutes:

CANADA (Quebec: UQAT, DIVEX, INRS) CHINA (ECOLAND: international research partnership with Sun-Yatsen university
AUSTRALIA (UQ, SMI: international research partnership SUCRE)

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