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Version visionnée sur le site Internet d’origine le 28 novembre 2011.

Section du dépôt légal
New analytical results of lake sediments

Québec’s Ministère des Ressources naturelles et de la Faune (MRNF) has announced the publication of new geochemical data from the re-analysis of archived lake sediments using four-acid near-total digestion.

Geoscientific data 2012-2017

A last chance to take part in the consultation on projects to gather geoscientific data and assess Québec’s mineral potential. You can return the questionnaire by E-mail before November 25th, 2011.

Québec Exploration 2011

Don’t miss Québec Exploration 2011, from November 21 to 24. Many discoveries await you!

The Highway 167 extension: "Route des monts Otish"

Providing better access to mineral resources.

The SIGEOM database

A key asset for the sustainable development of Québec’s land base.

The UQAT-UQAM Chair in Mining Entrepreneurship

An initiative supported by the MRNF which objective is to promote the development and growth of Québec firms involved in the mining industry.
New analytical results of lake sediments following four-acid digestion in the Churchill Province: implications for mineral exploration

Charles Maurice,
Ministère des Ressources naturelles et de la Faune (MRNF)

Background

Québec’s Ministère des Ressources naturelles et de la Faune (MRNF) announces the publication of new geochemical data from the re-analysis of archived lake sediments using four-acid near-total digestion. The project was launched following renewed interest in exploration for rare earths (lanthanides) and other rare metals (Zr-Y-Nb-Be) associated with peralkaline granitic rocks in the Churchill geological Province (Figure 1). The region covered by the Rivière George survey includes at least three rare earth and rare metal mineral deposits, namely Strange Lake-Lac Brisson, Lac Misery and Ytterby 2 (Salvi and Williams-Jones, 2006; Petrella, 2011).

The objective of the current project is to compare the analytical results obtained following partial digestion in aqua regia, the digestion generally used for lake sediments in Québec, with the results obtained using near-total digestion in four types of acid.

The comparison will help identify and distinguish environmental chemical signatures from the chemical signatures of the basement rock. Since some of the minerals containing rare earth and rare metal mineralizations are refractory (such as zircon, pyrochlore, monazite, and xenotime), their signature in lake sediments could be enhanced.

Analytical method

The lake sediment samples from the Rivière George survey were re-analyzed using the ICP-MS method (Maurice and Labbé, 2009) following partial digestion in aqua regia, the digestion generally used for lake sediments in Québec. The new data, made available from today, were obtained using the same ICP-MS method, at the same laboratory (ACMELabs, Vancouver), but the samples were prepared by near-total digestion at high temperature in four types of acid (nitric, perchloric, fluorhydric and chlorhydric). The results are close to total contents for several of the elements analyzed, except when the samples contain highly resistant phases such as barite (Ba), cassiterite (Sn), chromite (Cr), monazite (La, Ce, Nd), titanite (Ti), xenotime (Y) and zircon (Zr). Of the original 1902 samples from the Rivière George survey, 1865 were analyzed using both digestion methods. The new results present analytical data for all the rare earth elements, while the 2009 data...
contained only the results for La, Ce and Y.

The digestion of the samples in the four types of acid may lead to volatilization of the elements arsenic, antimony and gold during fuming, giving lower concentration readings than the actual concentrations. For this reason, unless the analysis for these three elements is considered unnecessary, four-acid digestion cannot be used for routine analyses.

**Preliminary results**

The rank correlation coefficients\(^4\) for the 41 elements analyzed with both digestion methods were calculated (Table 1). Almost half of the elements had coefficients over 0.80, demonstrating an excellent match between the two methods. These elements include the transitional elements copper (Cu; 0.98), molybdenum (Mo; 0.99) and zinc (Zn; 0.94), for which near-total digestion appears to have no effect. Similarly, the light rare earth elements lanthanum (La; 0.97) and cerium (Ce; 0.96) have extremely high correlation coefficients (Figure 2a). Yttrium (Y), an element chemically close to the heavy rare earth elements, also has a relatively high correlation coefficient of 0.85. Since the anomalous samples obtained using the two digestion methods are the same, the use of a near-total digestion to explore for several metals and rare earth elements does not appear to be justified.

<table>
<thead>
<tr>
<th>Alkaline metals</th>
<th>Transition metals</th>
</tr>
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<tbody>
<tr>
<td>Ba 0.20</td>
<td>Ag 0.93</td>
</tr>
<tr>
<td>Be 0.35</td>
<td>Cd 0.88</td>
</tr>
<tr>
<td>Ca 0.10</td>
<td>Co 0.86</td>
</tr>
<tr>
<td>Mg 0.77</td>
<td>Cr 0.71</td>
</tr>
<tr>
<td>Sr -0.56</td>
<td>Cu 0.98</td>
</tr>
<tr>
<td>Lanthanides</td>
<td>Fe 0.85</td>
</tr>
<tr>
<td>Ce 0.96</td>
<td>Hf 0.40</td>
</tr>
<tr>
<td>La 0.97</td>
<td>Mn 0.75</td>
</tr>
<tr>
<td>Post-transition metals</td>
<td>Mo 0.99</td>
</tr>
<tr>
<td>Al 0.07</td>
<td>Nb 0.50</td>
</tr>
<tr>
<td>Bi 0.81</td>
<td>Ni 0.87</td>
</tr>
<tr>
<td>Ga 0.58</td>
<td>Sc 0.47</td>
</tr>
<tr>
<td>Pb 0.65</td>
<td>Ti 0.73</td>
</tr>
<tr>
<td>Sb 0.72</td>
<td>V 0.71</td>
</tr>
</tbody>
</table>
Almost one quarter of the chemical elements analyzed, however, have correlation coefficients below 0.60, and strontium (Sr) even have a negative correlation of -0.56 (Table 1). In these cases, the results using the two digestion methods are significantly different, since the anomalous samples obtained from partial digestion are often different from those obtained using near-total digestion (Figures 2b, 2c and 2d). The use of the analytical results obtained through partial digestion for these elements should, therefore, be used with caution when drawing up exploration models.

Among the elements with the lowest correlation coefficients are the major elements calcium (Ca; 0.10), sodium (Na; 0.36) and aluminum (Al; 0.07). If we assume that the analytical results following four-acid digestion represent the total concentrations, then it is possible to obtain an idea of the mineral phases that influenced the dispersion of data. Figure 2c, for example, shows the digestion rates for aluminum in common minerals following digestion in aqua regia (Snäll and Liljefors, 2000). The samples that give similar concentrations for both digestion methods may contain a predominance of easily-dissolved minerals such as biotite and/or chlorite (and possibly clays).

Table 1: Rank correlation coefficients for the elements analyzed using two digestion methods. The chemical series in the periodic table of the elements were used to group the results. The major elements are shown in bold italics.

<table>
<thead>
<tr>
<th>Element</th>
<th>Correlation Coefficient</th>
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<tbody>
<tr>
<td>Sn</td>
<td>0.75</td>
</tr>
<tr>
<td>W</td>
<td>0.83</td>
</tr>
<tr>
<td>Actinides</td>
<td>0.85</td>
</tr>
<tr>
<td>Th</td>
<td>0.77</td>
</tr>
<tr>
<td>U</td>
<td>0.99</td>
</tr>
<tr>
<td>Zn</td>
<td>0.94</td>
</tr>
<tr>
<td>Zr</td>
<td>0.41</td>
</tr>
<tr>
<td>Cs</td>
<td>0.98</td>
</tr>
<tr>
<td>As</td>
<td>0.38</td>
</tr>
<tr>
<td>K</td>
<td>0.64</td>
</tr>
<tr>
<td>P</td>
<td>0.96</td>
</tr>
<tr>
<td>Li</td>
<td>0.97</td>
</tr>
<tr>
<td>S</td>
<td>0.99</td>
</tr>
<tr>
<td>Na</td>
<td>0.36</td>
</tr>
<tr>
<td>Rb</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Figure 2: Diagrams showing concentrations from ICP-MS analyses of the elements cerium (a), niobium (b), aluminum (c) and titanium (d), following partial digestion in aqua regia, and near-total four-acid digestion. The lines in
On the other hand, the samples showing higher concentrations following four-acid digestion, but lower concentrations following aqua regia digestion, may contain a higher proportion of feldspar and/or muscovite (Figure 2c). Similarly, Figure 2d shows the concentrations of titanium, an element that has a strong correlation in several samples, but for which systematically higher values are observed following four-acid digestion. This suggests that the titanium content of lake sediments is not due solely to biotite, in which titanium is almost totally dissolved following partial digestion, but rather to an amalgam of other, more resistant mineral phases such as titanite, ilmenite and rutile.

**Future work**

A study is currently under way to analyze the behaviour of these chemical elements using a spatial statistical approach. The results of this study will not only help to apply partial analyses more effectively for exploration purposes, but also to better understand the links between the bedrock and the concentrations of chemical elements in lake sediments.

**Acknowledgement**

A discussion with Sylvain Trépanier (CONSORT) helped define the implications of the results more clearly and direct the treatment of the analyses.

**References**


1 : Project 1982055 in the SIGEOM database.

2 : Aqua regia: a mixture of nitric and hydrochloric acid in the ratio 1:3.

3 : Under the heading "*Geochemistry– Sediment sample* 

4 : The analytical values for each chemical element were ranked according to their rank in the population as a whole. The lowest value was rank 1, while the highest was the same as the total number of samples. Ranks were used rather than actual values to calculate the correlation coefficients, in order to attenuate the effect of the most widely divergent samples.

5 : Environmental factors, the percentage of organic material, water quality and even micro-organisms can influence the content of certain elements in lake sediments (Trépanier, 2007; Turcotte et autres, 2011). These factors are not considered here.
2012-2017 timeframe: A last chance to take part in the consultation on projects to gather geoscientific data and assess Québec’s mineral potential

Charles Maurice, Isabelle Flageol et Sylvain Lacroix
Ministère des Ressources naturelles et de la Faune (MRNF)

We are currently conducting a consultation on projects to gather geoscientific data and assess mineral potential that could take place in Québec over the next five years. A questionnaire was recently sent to several mineral exploration industry representatives by E-mail to survey their opinions. If nobody in your company received this E-mail; if you received the E-mail but have not yet responded, please take 15 minutes to complete the survey. It can be returned by E-mail (isabelle.flageol@mrnf.gouv.qc.ca) before November 25th, 2011.

Questionnaire (Word Format, 1 Mb)

In addition, the file “annexe.pdf” contains four documents covering the whole province to guide your comments:

- a geological map;
- a map showing active mines and mining projects at the development stage;
- a map showing the publication years of the geological maps produced by the MRNF;
- a map of active mining rights and applications for mining rights as of August 18, 2011.

Please note that potential Quaternary or 3D model projects may be proposed, even if no five-year plan is presented here on specific maps, as is the case for other specialties.

Your cooperation will help us specify the needs of as many stakeholders as possible in connection with the gathering and processing of new geoscientific data on Québec’s land base.
Québec Exploration 2011

Luc Charbonneau and Charlotte Grenier, Ministère des Ressources naturelles et de la Faune (MRNF)

From knowledge to discovery—using this evocative theme, the ninth annual Québec Exploration convention will survey the current state of geoscientific knowledge in all regions of Québec, a key destination for mineral exploration companies.

A PROGRAM OF SPEAKERS COVERING ALL ASPECTS OF GEO-SCIENTIFIC KNOWLEDGE!

The Québec Exploration 2011 organizing committee is proud to present a roster of high-quality speakers who will address a wide range of topics. The program has been put together to ensure that each session is relevant to a sector of activity experiencing unprecedented growth! Many internationally-renowned speakers will be part of the line-up for the 2011 event.

The program is divided into six separate sessions.

Session 1
New geological knowledge and mineral potential of the Abitibi geological region

After nearly a full century of mining, the Abitibi geological belt remains a fertile region for mineral exploration, particularly in regard to precious and common metals. The region’s mineral potential appears to be equally high for many other metals and substances, including nickel, lithium and vanadium. This session will focus on recently acquired geological knowledge of the region and its metallogenic evolution, as well as on promising discoveries and mining projects.

Session 2
Entrepreneurship and public financing: What entrepreneurs and investors think

Québec’s mineral potential attracts players from around the world, especially due to its highly competitive mining industry environment. Québec possesses all the needed expertise, along with institutions ready to support Québec mining entrepreneurship. Yet despite these advantages, Québec accounted, in 2010, for only 6 of the 149 mining companies listed on the TSX Venture Exchange. Why should this be the case? In this session, mining entrepreneurs that have been successful on the TSX Venture Exchange will share their stories, talk about managing a public corporation and help participants benefit from their experience. A panel of investors will also reveal the qualities they look for in mining entrepreneurs and business plans.

Session 3
Geoscience, exploration and discovery of mineral resources: An inseparable trio

This session will explore the contribution made by the geoscientific work of governments, universities and research groups in the discovery of new mineral deposits. The involvement of governments in the gathering of geoscientific knowledge will be assessed against the background of constantly increasing costs for mineral discoveries. In addition, the use of new conceptual and exploration models developed by university research groups and pre-competitive consortiums will be illustrated by up-to-date, concrete examples of mining industry performance.

Session 4
Iron: From exploration to mining

The price of iron ore has increased considerably over the last decade in response to...
growing demand. Québec’s first new iron ore mine in 30 years opened in 2009, after a long parade of closures. The year 2010 and the beginning of 2011 saw Chinese and Indian steelmakers taking equity interests in several junior mining companies active in Québec and Labrador. This session will discuss Québec and Labrador iron ore exploration and development projects, and the important role played by China in this newly effervescent market.

Session 5
Critical, strategic and high technology minerals and metals

Industrialized countries are increasingly aware that certain minerals and metals have become key to maintaining and developing hi-tech industries. Supply restrictions, export quotas, price increases, supply/demand mismatches and predicted shortages have increased interest in these substances that are now a part of our daily lives. Prospectors and mine operators are seeking sources of the minerals and metals of the future. This session will attempt to answer the vital questions of What, Where, Why, and for Whom? In sizing up the current situation, the session will discuss some of the key parts of this equation.

Session 6
Earth sciences: at a crossroads in knowledge

Earth Sciences are at the crossroads of geological, chemical, physical and biological knowledge. A multi-disciplinary approach is essential to our understanding of the history and evolution of the Earth. This lecture session will clearly and comprehensibly present examples of major scientific projects that are offering a new way to look at the planet by bringing together knowledge from a variety of disciplines. Fresh interpretation of this information is leading to a better understanding of the environment.

GÉOLOGIE QUÉBEC TAKES GEOSCIENTIFIC KNOWLEDGE TO A NEW LEVEL!

The geologists working for Géologie Québec have spent a busy summer. Dozens of new maps have been prepared and will be exhibited. The new analysis of lake-bottom sediments will be unveiled. Last, details on promising new target areas for mineral exploration will be released.

Priority access to this wealth of new geoscientific data will guide you along the path to new mineral discoveries.

Québec Exploration on Facebook

Québec Exploration has reached Web 2.0 speed. Become a “fan” of Québec Exploration by visiting its Facebook page. Monitor the preparatory work for the convention and interact with the Québec Exploration team.

Québec Exploration 2011 takes the lead!

A challenging program of lectures, workshops of relevant interest for geoscientific stakeholders, interactive sessions presenting essential information about policies and regulations, an “open-door” day on the theme of radioactivity, an enticing list of social activities, and over 2000 participants: these are just a few of the reasons for attending Québec Exploration 2011. A pooling of knowledge to promote new discoveries!

Register now for the event, which will take place at the Château Frontenac hotel from November 21 to 24, 2011. For more information, go to the website: www.QuebecExploration.qc.ca
The Highway 167 extension: providing better access to mineral resources

Alain Mondy,
Ministère des Transports du Québec (MTQ)

Highway 167 North is the main road link between Lac-Saint-Jean and Chibougamau. The highway provides access to the community of Mistissini and continues on to the Lac Albanel sector.

The project to extend Highway 167 over a distance of roughly 240 km was announced in the 2009 Budget Speech as part of the Plan Nord. It will provide better access to mineral resources, improve ecotourism opportunities, and give Cree families a way to travel to their traplines.

The Monts Otish area has seen a lot of exploration investment in recent years, and many mining rights have been acquired. Although exploration is possible without road access, the situation becomes more complicated when a deposit is brought into production. Advanced projects, such as the Renard, Matoush and Lac McLeod projects, require road access. The construction of a highway to serve an area with strong mineral potential will act as an economic lever for sustainable development in the region, maximizing the benefits for neighbouring communities and for Québec as a whole.

Since the launch of several mining projects depends on road access, it is important for the highway to be built within a tight deadline.

The analysis of the environmental impact assessment by the federal and provincial authorities is under way, and public hearings have been held. Work can begin as soon as all the required authorizations have been obtained. Based on the hypothesis that the certificates of authorization will be issued in November 2011, construction work is scheduled to begin in December 2011, with the highway opening to traffic in November 2015.

Currently, the Ministère des Transports (MTQ) intends to implement the project in the form of four construction contracts (PDF Format, 1 Mb).

The project is making steady progress. The pooling of the information gathered by mining companies, the Parc Albanel-Témiscamie-Otish and the MTQ has provided a knowledge base for the physical and biological makeup of the sector.

In addition to the aspects that are important from a sustainable development perspective, the economic benefits and social impacts will be examined in detail by the community of Mistissini and Ville de Chibougamau.
The SIGEOM database: A group investment, an invaluable heritage, and outstanding value!

Charles Roy,
Ministère des Ressources naturelles et de la Faune (MRNF)

The SIGEOM database was created by pooling geological information from government surveys and from the exploration work conducted by the mining industry over the years. This heritage of geoscientific information results from a decision made in the 1960s to create an index along with lists of government publications. To start with, the index included spatial information using townships or NTS sheets and, beginning in the 1990s, the data was computerized.

Today, the replacement cost for the data contained in SIGEOM is estimated at four billion dollars. This amount is based on an assessment of the number of occurrences of each type of data and its unit cost prior to 2004, along with the costs actually incurred by mineral exploration companies and the Québec government since 2004. This information is available in the system for managing mining credits, and in the accounting records for the government's management system. The total estimate is a minimum, since the analysis is not based on constant dollars and diamond drilling, which makes up 50% of the work, is calculated at only $25/foot for work completed before 2004.

The SIGEOM database comprises two main assets.

- The largest asset is made up of all the data forming Québec's heritage of geoscientific information.
- The second asset is made up of all the SIGEOM computer systems used to record, publish and disseminate information via Internet technology.

The geoscientific data in the system is essentially from the fields of geology, geochemistry, geophysics, etc.

The computer systems have required the investment of $40 million since 1993. This total includes the budgets for data entry by MRNF personnel and the money spent on creating, maintaining and updating the required technology.

In conclusion, SIGEOM is a key asset for the sustainable development of Québec's land base. It makes mineral exploration more efficient, since work does not need to be repeated over time; this reduces its ecological impact and allows companies to allocate their resources more effectively. Its value will continue to increase over time as more geoscientific data is added each year, making it an invaluable heritage!
The UQAT-UQAM Chair in Mining Entrepreneurship

Andrea Amortegui, Robert Marquis and Joëlle Boudigou, Ministère des Ressources naturelles et de la Faune (MRNF)
Suzanne Durand, Université du Québec en Abitibi, Département des sciences de la gestion
Michel Jébrak, Université du Québec à Montréal, Département des sciences de la Terre et de l'Atmosphère

The Chair in Mining Entrepreneurship is an initiative launched by Université du Québec en Abitibi-Témiscamingue (UQAT) and Université du Québec à Montréal (UQAM), with strong support from the Ministère des Ressources naturelles et de la Faune (MRNF). The Chair itself is an innovative partnership bringing together experts from several fields of management and the earth sciences, entrepreneurs, managers, and professionals from various sectors including the MRNF.

The objective of the Chair is to promote the growth of Québec firms involved in exploration, and to provide entrepreneurship development support to help them move on to the next stages in the process, namely extraction and processing. Training for mining entrepreneurs must take into account the realities of the sector, which requires extensive experience in the field, a range of highly specialized knowledge, the ability to manage a high level of risk over the short and long terms, and access to specific types of financing.

The Chair in the Québec context

The mining industry plays an essential role in Québec. In addition to its economic and social importance in terms of jobs and exports, it helps to structure regional development. The expertise developed in mineral exploration and extraction has made Québec a leader in the international field. However, in recent years, there has been a shortage of entrepreneurs able to lead projects forward and create wealth. There is sometimes more capital available than suitable projects, despite Québec’s recognized potential.

This lack of entrepreneurs appears to have been caused, in particular, by the collapse of the mining sector in the early 2000s when many competent individuals had to redirect their careers, by the lack of attractiveness of the sector for young people used to city life, and by the separation of the technical and management aspects. In addition, the current challenges of the mining sector (resource diversification, financiarization, social acceptance, etc.) require operators to adopt new approaches and acquire new learning, without being able to rely on training centres in Québec to meet their needs.

To reverse this situation, the industry must attract young, competent players and develop their management and mining entrepreneurship skills. With this goal in mind, UQAT and UQAM have pooled their expertise to create the Chair in Mining Entrepreneurship, as a concrete way to move towards the shared goal of increasing Québec participation in the mining industry. The specific requirements of the mining sector do not support a classic research and training approach. Instead, the main focus must be on field work, the ability to combine highly specialized knowledge with a functional approach to interdisciplinarity, and the management of large-scale risk over the short and long term. Several similar initiatives have been launched in Ontario (U of T, Lassonde Entrepreneurship Series), South Africa (Abaqobi) and Australia (Brisbane, Perth). They are based on the integration, for research and training purposes, of technical innovation and organizational management components, with research into best entrepreneurial practice. This type of approach is not currently available in Québec, where the fields of science and management remain compartmentalized. The reality of the mining sector, as
reflected in the career paths of its leading players, shows that two skill sets are required to succeed. In addition to the simple juxtaposition of knowledge, it is important to be able to integrate the two components with business strategy. To take advantage of the opportunities offered by emerging markets, Québec must quickly make up for lost time.

The Chair will give Québec a way to implement the Québec Mineral Strategy, which emphasizes the importance of providing support for mining entrepreneurship in order to create wealth and prepare for the future of the mining sector in keeping with the principles of sustainable development. The Chair:

1. Will allow Québec to exercise leadership in an approach based on sustainable development
2. Will become an indispensable tool for the promotion of innovation and the creation of wealth in connection with the mining industry
3. Will help define best practices for both mining techniques and managerial approaches, in particular concerning financing methods, business models and organizations processes
4. Will ensure the necessary synergy with industry partners, to allow Québec to exercise leadership over the long term in the new globalized context for mineral resource extraction

**The Chair and the MRNF**

In the Mineral Strategy released in 2009, the Québec government clearly indicated its goal of strengthening Québec mining entrepreneurship while continuing to provide funding for mining development through the Société d’investissement dans la diversification de l’exploration (SIDEX) and for diversification through the Société québécoise d’exploration minière (SOQUEM). By working with the Chair in Mining Entrepreneurship in a research partnership, the MRNF will contribute actively to one of the key objectives of the Québec Mineral Strategy. This association will make it possible:

- To create a clear model for the responsible development of mineral resources
- To develop a network of Québec experts in mine management and enhance training for entrepreneurs in the fields of exploration, extraction and processing
- To document the success factors specific to exploration firms to stimulate mineral exploration and extraction, for use as the foundation for innovative management strategies and models that will lead to the emergence of new businesses able to meet the challenges of global competition

In short, the research partnership with the UQAT-UQAM Chair in Mining Entrepreneurship will enable the MRNF to implement a key element in the Mineral Strategy, promote the emergence and development of new Québec firms in the fields of mineral exploration, extraction and processing, and confirm Québec’s position as one of the world’s leading mining regions, while promoting respect for the environment and the enrichment of local communities.

**The Chair and other partners**

The Chair will seek financial support from private and institutional partners in various spheres of activity. The two chair holders will gradually create connections with other researchers in the two founding universities and other university-level institutions, and will develop close collaborative ties with other chairs and research groups. The representatives of several organizations working in various fields have been approached to propose potential partnerships with the Chair, either in the form of expertise for training and research, or in the form of financial contributions.

**Funding and operation of the Chair**

Three main partners will provide funding in equal shares over a five-year period, for a total of over $2 million:

- The MRNF will contribute $150,000 per year from the Mining Heritage Fund
- UQAT will contribute $150,000 per year
- UQAM will contribute $150,000 per year
- other associative, industrial and community partners, along with research
funds, will contribute $150,000 per year

The Chair will be located at UQAT and directed by two titular chair-holders, selected by their respective universities for their competency and interest in the field. Michel Jébrak, Ph. D., is the chair-holder for UQAM, and Suzanne Durand, DBA, is the chair-holder for UQAT. Two representatives of the Québec government will sit on the administrative committee, and one MRNF representative will sit on the scientific committee.

**Past and present activities and research projects**

The first training activity of the UQAT-UQAM Chair in Mining Entrepreneurship took place on December 6, 2010 when a two-hour talk was given by one of the two chair-holders, Michel Jébrak (UQAM). The talk focused on globalization in the mining industry, and was organized jointly with the UQAT masters-level business administration (MBA) program for senior managers. It was presented simultaneously by videoconference link in three cities in the Abitibi region, Val-d’Or, Rouyn-Noranda and Amos, and was also webcast. It can be viewed on the UQAT website.

The Chair’s research projects are listed below. For more information on future activities, go to [www.uqat.ca/cem](http://www.uqat.ca/cem) or write to entrepreneuriat.minier@uqat.ca.

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<td>Mineral exploration firm performance</td>
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<td>Success factors for mineral exploration firms</td>
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<td>Assistance available for mineral exploration entrepreneurs in Québec</td>
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<td>The role of globalization in the development of mining companies</td>
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<td>Assessment the performance of an innovation</td>
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<tr>
<td>The mining industry value chain</td>
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<tr>
<td>Innovations in mining</td>
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</tbody>
</table>

*Table 1. Chair research projects*

The Chair is a pole of excellence that will attract, retain and train effective researchers and entrepreneurs. It will help develop the entrepreneurial skills of people in the exploration industry. Special attention will be paid to training for people already working in the mining sector who wish to acquire or upgrade mining project management skills. The Chair will also promote the emergence of a new generation of Québec mining entrepreneurs, aware of the importance of ensuring that mine development is responsible and sustainable. It will be a key stakeholder in the implementation of the government objective of developing resources while stimulating job creation and creating collective wealth, in a partnership with local
Mines actives et projets miniers de mise en valeur et de développement

**Projets miniers**

- Or
  - 27: Bachelor (Metanorc)
  - 28: Belleterre (Conway)
  - 29: Canadian Malartic (Osisko)
  - 30: Éléorore (Ginoima)
  - 31: Francœur (Richmont)
  - 32: Joanna (Aurizon)
  - 33: Lac Pelletier (Alisés)
  - 34: Laronde (Century Mining)
  - 35: Romoc (Russian Kids) (Romroc)
  - 36: Veza (N. A. Palladium)
  - 37: Westwood (Iamgold)

- Cuivre, zinc
  - 38: Bloomer-McLeod (Donner Metals)
  - 39: Lac McLeod (Western Troy Capital)
  - 40: Langlois (Ressources Breakwater)
  - 41: LaRonde Extension (Agnico-Eagle)

- Nickel, cuivre
  - 42: McNicoll Nickel (Royal Nickel)
  - 45: Nunavik Nickel (Jen Canada Mining)
  - 46: Nioclair (Nicoan)
  - 47: Crever (MDN)

- Chrysotile
  - 48: Mine Jeffrey (Mine Jeffrey)
  - 49: Analco (Mines Arnaud)
  - 50: Lac à Paul (Ressources d'Annonce)

- Terres rares, yttrium, zircon
  - 51: B-Zone (Quest Rare Minerals)

- Uranium
  - 52: Matsic (Strateco)

- Lithium
  - 53: Québec Lithium (Canada Lithium)

- Diamant
  - 54: Renard (Stoneware-SOQUEM)

- Alumine
  - 55: Grande-Vallée (Orbite VPSA)

**Minéraux métalliques**

- Or
  - 1: Beaufor (Richmont)
  - 2: Casa Benard (Aurizon)
  - 3: Searl Dormant (N. A. Palladium)
  - 4: Goldex (Agnico-Eagle)
  - 5: Kiena (Wesdome)
  - 6: Lac Herbin (Alexis)
  - 7: Lapa (Agnico-Eagle)
  - 8: Mouska (Iamgold)

- Argent, cuivre, zinc
  - 9: LaRonde (Agnico-Eagle)
  - 10: Persévérance (Xstrata)

- Fer, for et titane (limonite)
  - 11: Fire Lake (ArcelorMittal)
  - 12: Lac Bloom (Cliffs Natural)
  - 13: Lac Tio (Rio Tinto Fer et Titane)
  - 14: Mont-Wright (ArcelorMittal)

- Nickel, cuivre, EGP, cobalt
  - 15: Raglan (Xstrata)

- Niobium
  - 16: Niobec (Iamgold)

**Minéraux non métalliques**

- Chrysotile
  - 17: Black Lake (Lac d'Amiante)
  - 18: Mine Jeffrey (Mine Jeffrey)

- Feldspath
  - 19: Chimer (Dentsply)

- Graphite
  - 20: Lac-des-îles (Timcal)

- Mica
  - 21: Lac Letondal (Produits Mica Suzorite)

- Se
  - 22: Mine Seleine (Société canadienne de Sel)

- Silicium
  - 23: Petit-Lac-Maita (Silicium Québec)
  - 24: Saint-Canut (Unimin Canada)
  - 25: Saint-Donat (Unimin Canada)
  - 26: Saint-Rém-AMherst (Société minière Gerdin)

**Ressources naturelles et Faune**

Ministère des Ressources naturelles et de la Faune
Direction de l'information géologique du Québec

Note : Le présent document n'a aucune portée légale.
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