

LSM '09

Industry Tour 29-30 January 2009

Courtesy of SQM & Chemetall. A unique opportunity to visit the lithium operations in the Salar de Atacama and Antofagasta.

Lithium Supply & Markets

26-28 January 2009

Sheraton Santiago Hotel & Convention Centre, Santiago, Chile

Lithium resources – can they meet the challenge?

Industrial Minerals' inaugural international conference on global supply of lithium minerals and chemicals to established and rapidly developing world markets.

Questions on the minds of industry players include:

- Will demand for lithium outstrip supply in the next ten years?
- Where can we source new lithium supplies?
- Will new resource types deliver their promise?
- Will hectorite serve more than a pretty face?
- How different are the challenges for the different salars?
- Is the lithium ion battery mature enough for auto mobility?
- Is the exploitable lithium resource base big enough?
- How will traditional markets fare if the auto market takes off?
- Will present economic uncertainty alter the lithium prognosis?
- Will the fall in oil price diminish the incentive for new technology?
- For how long can lithium sustain itself in the auto mobility sector?
- What are the technology hurdles to jump for lithium to triumph?
- What role do lithium minerals have to play?
- Is lithium ion technology the Holy Grail and if so what happens next?

These are tough questions and they are not the only ones. This conference will stimulate discussion on them all and point the way ahead.

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industrial minerals

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LSM 09

The Lithium Resource Market Challenge Showcase

Industrial Minerals Events is proud to present this landmark international conference in the commercial history of lithium resource exploitation. It is without doubt a showcase for the globe's lithium resources industry that will empower decision makers in the lithium supply chain and the growing markets for lithium-based minerals and chemicals.

Speakers include top executives from established, new and emerging lithium producer companies. They are accompanied by authoritative commentators on global lithium resources, reserves, market research/evaluation, economic and analysis. Leading edge speakers on the science of the lithium ion battery and the automotive requirements that need to be met bring into sharp focus the growing challenge for lithium technologists and suppliers to meet. Their presentations will not only be informative but, crucially, they are relevant to today's challenges facing lithium producers and users alike.

To join a group of lithium-focused business people on the two-day post conference optional **industry tour** to SQM's and Chemetall's processing facilities near Antofagasta and extractive operations in the Salar de Atacama, is such a rare opportunity that it is hard to think of any good commercial reason not to participate – see the programme for more details.

Don't delay, join your peers for **high-level networking opportunities** in Santiago de Chile. See the programme for more information and to register please complete the booking form on the back of this brochure.

We look forward to meeting you there.



Gerry Clarke
Conference Chairman and Consultant Editor
Industrial Minerals

Join us to hear this year's update on the global lithium market and network with key people in the industry.

Lithium minerals and chemicals are very hot in...

Interesting times with substantial investment in extractive and applications...

Technology development and unprecedented change taking place across the globe.

Hand picked authoritative speakers at the top of their careers will ensure your...

Investment of time and money attending this event will not only increase your...

Understanding of the challenges facing both sides of the lithium...

Market but will also provide invaluable networking at the highest level. Can you afford not to be in Santiago de Chile in January 2009?

Key paper topics include:

- Lithium resources – are they adequate?
- SQM lithium resources and view of the lithium industry
- Powerful lithium compounds for recent and future markets
- Talison and the role of minerals in the lithium industry
- Tianqi's lithium chemicals activities and its markets in China
- Sustainable lithium supplies through 2020 in the face of sustainable market growth
- Is the lithium ion battery mature enough for electric vehicles?
- Automotive requirements for lithium batteries
- Lithium from hectorite: A new source
- New developments in the production of lithium from brines
- Lithium resource developments – the Black Pearl Minerals strategy
- Can we take the inauguration of the lithium era for granted?



Day One Monday 26 January 2009

17:00 Registration desk opens

18:00 Welcome reception hosted by



Day Two Tuesday 27 January 2009

08:00 Registration desk opens

09:00

Chairman's opening remarks

What's so special about lithium?

Gerry Clarke, Consultant Editor, *Industrial Minerals*, UK

Keynote address

Lithium resources: Are they adequate?

Keith Evans, *Independent Consultant*, USA

Questions have been raised concerning whether or not lithium reserves are adequate to meet rising demand mainly from the potential large scale use of lithium-ion batteries in motor vehicles. A (US) National Research Council report prepared in 1976 estimating western world reserve tonnage is updated to include Russia, China, and a number of new discoveries since that time.

SESSION I: Focus on established lithium producers

SQM lithium resources and view of the lithium industry

Patricio de Solminihac, Executive Vice President and Chief Operating Officer, *SQM S.A.*, Chile

SQM is an integrated producer of lithium iodine, and speciality plant nutrition. The company's access to vast and unique natural resources supports it as the worldwide leader in these three business lines. It is the world's largest lithium producer with a commitment for sustainable and reliable high quality supplies.

11.30 Refreshment break

Powerful lithium compounds for recent and future markets

Dr Steffen Haber, President Lithium, *Chemetall GmbH*, Germany

Today lithium compounds are versatile tools for numerous applications in different industries. The presentation shows how future requirements will change and how Chemetall will meet these demands.

FMC: The global lithium company

Jon Evans, Division Manager, *FMC Lithium Corporation*, USA

Headquartered in Charlotte NC, FMC Lithium serves the full spectrum of world lithium markets. The company is steeped in history and deep in manufacturing capabilities, technical expertise and product offerings. In the mid-1950s FMC's Bessemer City NC facility now its research centre processed North Carolina ore. Today, its Argentine facility extracts and processes lithium brine. With production facilities on four continents FMC will update progress on its worldwide presence.

13:00 Lunch

14:30

Talison and the role of minerals in the lithium industry

David Miller, General Manager Strategic Development, *Talison Minerals Pty Ltd* Australia

Talison is the world's largest producer of lithium minerals from its Western Australian Greenbushes operation which has been supplying lithium minerals for over 20 years. Lithium minerals have traditionally been associated with glass & ceramics but have now become an important source for lithium chemicals and other lithium-based products. We examine the current minerals markets and the future role of both Talison and minerals in the lithium industry.

Tianqi's lithium chemicals activities and its markets in China

Wang Ping, Manager, *Chengdu Tianqi Industry Group Co Ltd*, China

Sichuan Tianqi Lithium Industries Inc., a subsidiary of Chengdu Tianqi Industry Group Co. Ltd, is the largest manufacturer of lithium chemicals made from spodumene. Possessing core technology of battery grade lithium carbonate and anhydrous lithium chloride, Tianqi's lithium chemicals are sold worldwide. Battery grade lithium carbonate from Tianqi accounts for more than 60% of cathode materials markets in China and is sold all over the world.

16:00 Refreshment break

SESSION II: Focus on the automotive challenge
Is the lithium ion battery mature enough for electric vehicles?

An analysis from the materials science point of view

Prof Dr Martin Winter, Institute for Physical Chemistry *University of Muenster*, Germany

Lithium ion batteries are considered as the battery choice for future hybrid, plug-in hybrid electric vehicles as well as for pure electric vehicles. There is no other battery chemistry which is as flexible as lithium ion, which is an opportunity and challenge. Present lithium ion battery technology will be discussed from the viewpoint of energy power, life, safety and costs.

Automotive requirements for lithium batteries

Ted Miller, Senior Manager, Energy Storage Strategy and Research *Ford Motor Company*, USA

Ford Motor Company's activities in the development of alternative fuel vehicles, including hybrids, plug-in hybrids, battery electric and fuel cell hybrid electric vehicles will be described. Market status and influences have been correlated and projections developed. Key automotive application requirements are considered, as are energy storage technology characteristics, status and present challenges. Cost and the impact of production volume have been assessed, likewise the effect of application relative power demand. Plug-in hybrid challenges and opportunities are defined, with specific references to the Ford Escape Plug-in hybrid. Electric vehicle energy storage status is reviewed with respect to fuel and battery cost. Finally, future energy storage solutions are identified.

An alternate view: Is there really just one path to the electrification of vehicles with a lithium-ion technology? If so is that the end game for electrification?

Jack Lifton, *Independent Consultant*, USA

There is not yet a clear path to the electrification of passenger vehicles based on any one lithium-ion battery technology. It is not clear that the goal of vehicle electrification is or should be 100% conversion of all present internal combustion power trains to all electric or hybrid operation. It has been said that the Holy Grail of automotive power trains is the hydrogen powered fuel cell supplying electricity to run an electric motor directly coupled to the drive shaft. Will lithium-ion batteries be but the penultimate step to fuel cell powered cars and, if so, will there be continuing development of lithium-ion batteries after they are successful and practical?

18:00 Close of day followed by networking opportunities

Hotel & Convention Centre, Santiago, Chile

Day Three Wednesday 28 January 2009

09:00

Chairman's opening remarks

Lithium in interesting times: Here to stay?

Gerry Clarke, Consultant Editor *Industrial Minerals*, UK

Keynote address

Sustainable lithium supplies through 2020 in the face of sustainable market growth

Edward Anderson, President, *TRU Group Inc*, USA

Based on an assignment funded by Mitsubishi Corporation the presentation summarises a unique in-depth analysis of the underlying determining technologies and applications sustaining both supply and demand through 2020. Included are the study's sustainability approach and original data estimation methods, a different view of lithium in batteries and other uses and supply technology drivers of sustainable production. Will, and if so when will the industry face significant disruption through 2020?

SESSION III: Focus on new and emerging lithium producer resources

Keynote address

From Zhejiang to Zabuye: China's mountainous path to a self-sufficient, integrated, lithium industry

Robert Baylis, Senior Research Associate, *Roskill Information Services Ltd* UK

Since 2000, China has emerged as a leading producer of Li-ion batteries and other lithium products. Initially, the market was served by lithium chemicals imports but, with rising import prices and access to cheap reagents and energy Chinese companies started converting increasing quantities of lithium minerals. Concurrently, China began exploitation of lithium from salt lakes in Tibet and Qinghai. Already China is turning from net importer to net exporter of lithium carbonate – what happens next and what will this mean for western suppliers?

11:30 Refreshment break

Bolivian government's initiative of industrialization of the Salar de Uyuni

Luis Alberto Echazu, Minister of Mining and Metallurgy Bolivia

First discovered in 1976 by Bolivian and US geologists the county Salar de Uyuni has been described as the largest of its kind in the world with substantial tonnages of potassium, boron, and magnesium in addition to lithium. The Minister will describe the nation's policies for exploiting Uyuni's massive untapped resource that has gained centre ground international attention in recent years.

Uyuni: Reserves and technological perspectives

Guillermo Roelants du Vivier and **Saul Villegas**, Director, Dirección de Evaporíticos de Bolivia, *COMIBOL*, Bolivia

Dirección de Evaporíticos de Bolivia is Corporación Minera de Bolivia's enterprise for the development and exploitation of the Salar de Uyuni deposits. With \$5.7m investing into the establishment of a pilot plant announced in May 2008 this presentation will provide an in-depth appreciation of the technical complexities required to be understood for the economic extraction of lithium and other mineral values.

New developments in the production of lithium from brines

Dr Carlos Sorentino, Director of Technical Services,

Rincon Lithium Ltd Argentina

Acquired by Australia's Admiralty Resources in February 2001 the property lies at 3,700 metres altitude in the northwest of Argentina in Salta Province close to the border with Chile. Extensive exploration and chemical research has identified a world class lithium, potassium, sodium and magnesium resource. Rincon Lithium Ltd has a patented production process that removes magnesium early in the process. Dr Sorentino explains further.

13:00 Lunch

14:30

Lithium from hectorite: A new source

Jay Chmelauskas, President, *Western Lithium Corporation* USA

Western Lithium, spun out from Western Uranium Corporation at the end of 2007, is focusing on proving reserves and developing the technology to introduce this clay mineral as a new lithium resource type. Time will tell whether or not this will act as a spur for similar development where there are concentrations of this rare mineral elsewhere. Recently appointed by Chmelauskas will update the world on progress towards putting hectorite on the global lithium chemicals map.

Lithium resource developments: The Black Pearl Minerals strategy

Judy Baker, President, *Black Pearl Minerals Consolidated Inc*, USA

This Toronto-based natural resources company traded on the TSX Venture Exchange, has made headlines in the last two years. Acquisition of Quebec Lithium near Val d'Or and Thompson Brothers Lithium in Manitoba, both substantial spodumene deposits now undergoing further evaluation, and the initiation of a lithium brines exploration programme in the Great Basin of the USA makes lithium the centrepiece of Black Pearl's polymetallic portfolio. Judy Baker explains the rationale.

Keynote address

Can we take the inauguration of the lithium era for granted?

Juan Carlos Zuleta, *Lithium Economics Analyst*, Bolivia

In a feature article published by EWWorld.Com in June 2008 I advocated the idea that three main factors: The oil market, technological development and resistance to change may determine whether lithium batteries will be adopted by the global automobile industry for its apparently irreversible transition to electric propulsion. Here, I will review and complement my original argument in light of some of the latest events in the world economy. In particular, a discussion around the economic recession that is beginning will seek to discover the extent to which this might hinder one of the world's most revolutionary technological innovations of the last 100 years.

Chairman's closing remarks

Where is lithium going from here?

Gerry Clarke, Consultant Editor *Industrial Minerals*, UK

16:00 Refreshment break and close of conference

Day Four Thursday 29 January 2009

Industry Tour

Depart Santiago de Chile airport for Antofagasta, visit lithium brines processing operations of SQM & Chemetall near Antofagasta. Overnight in Antofagasta.

Day Five Friday 30 January 2009

Industry Tour

Depart Antofagasta by coach to visit lithium brines extraction operations of SQM & Chemetall in the Salar de Atacama. Return to Antofagasta and overnight stay before departing Antofagasta airport for international destination.

Please note: There will be an additional fee to attend the industry tour. Details will be sent to you along with your confirmation.

Also, please check the website www.metalbulletinstore.com for updates.

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Book early to ensure instant access to the system when it goes live on 26 December 2008.

Venue: Sheraton Santiago Hotel & Convention Centre, Santiago, Chile

In walking distance of legendary sites including Pablo Neruda's house, Parque Metropolitano Zoo, San Cristóbal Hill, the district's best shopping, restaurants, and pubs, Sheraton Santiago Hotel and Convention Centre is also just 12 minutes from the airport and an easy drive from Viña del Mar.

Contact details: Sheraton Santiago Hotel & Convention Centre, Ave Santa Maria 1742, Santiago, Chile
Phone: (56)(2) 2335000 Fax: (56)(2) 2341729

Booking accommodation: Upon registration, delegates will be emailed an accommodation booking form at discounted rates along with their confirmation to be completed and returned to the hotel.

Forthcoming Events

15th Bauxite & Alumina Seminar

11-13 February 2009
Ritz Carlton Golf & Spa Resort, Montego Bay, Jamaica

MagMin 2009

10-12 May 2009
Hotel Okura, Amsterdam, The Netherlands

8th Chinese Industrial Minerals Conference

October 2009

Fluorspar 09

October 2009

20th Industrial Minerals Congress & Exhibition

21-24 March 2010
The Fairmont Turnberry, Isle Resort & Club, Miami, USA

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www.metalbulletinstore.com

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Lithium Supply & Markets

REGISTRATION RATES

Before 21 November 2008 US\$1,499

Before 16 January 2009 US\$1,699

Thereafter US\$1,899

FEE: The fee includes attendance at all conference sessions, welcome receptions, lunches, refreshment breaks and conference documentation.

ACCOMMODATION: The conference fee does not include hotel accommodation. An allocation of rooms has been reserved at the conference hotel. Delegates will be sent an accommodation booking form along with confirmation of registration. This form should be completed and returned to the hotel.

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