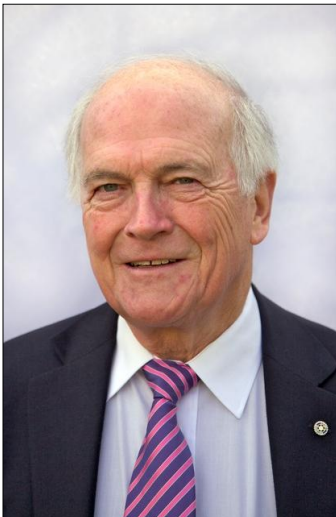


## New vice-chair for MMTA board



David Craik



Sarah Frigot

The MMTA board of directors has announced that David Craik ([Amalgamated Metals Corp.](#)) will be stepping down as Vice-Chairman after four years in the role and that Sarah Frigot ([Wogen Resources Ltd](#)) has agreed to be the new Vice-Chairwoman with immediate effect.

David joined the board in 2006 and has held the post of Vice-Chairman since 2007 while simultaneously chairing the highly successful Conference Committee. David played a key role in the MMTA's transformation into a global organization with a market leading annual conference.

Sarah has served on the main committee since November 2007 and also sits on the conference and management committees. Sarah has made many important contributions since joining the MMTA, including giving a presentation in China and editing the Crucible quarterly newsletters.

On accepting the role Sarah said "I am very pleased to be taking on the role of Vice-Chairwoman and thank David Craik for his hard work over the last four years. The Association is growing in both membership and stature and has an increasingly important role to play in the metals industry. We have a hugely diversified membership involved in all facets of production, trade and consumption of minor metals and associated services. Members want a body to represent their interests; lobbying to eliminate trade barriers, providing industry norms and standards, hosting a forum for conflict resolution, and organizing a world class conference and I am proud to be a part of it."

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**Members can save over 10% on the International Minor Metals Conference 2011** ([see p.2 for details](#))

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### Do you have what it takes to join an MMTA Committee?

The MMTA is a members' association and if the members are the lifeblood then the backbone is made up of the various committees that work towards providing maximum benefit for members in several key areas.

Beyond the main committee which is responsible for amongst other things overall strategy the Association has eight sub-committees whose responsibilities include business and social events, trade/lobby issues, warehousing, mediation/arbitration and of course the hugely successful annual conference. Without these committees there would be no association and as the MMTA grows there is also a growing requirement for new committee members who are prepared to contribute accordingly.

We encourage you, as members, to participate. The role is not highly time consuming but is hugely rewarding so don't hesitate, contact the Executive now ideally indicating which areas you have interest in. If you require further information on the various committees please visit our [website](#).

We look forward to welcoming you!

## Dates for your diary

Import Training Course	London, UK	17-18 March 2011
Trade and Industry Seminar	Brussels, Belgium	31 March 2011
Quarterly Lunch	London, UK	7 April 2011
The International Minor Metals Conference	Philadelphia, PA, USA	4- 6 May 2011
MMTA annual general meeting	Philadelphia, PA, USA	5 May 2011
Quarterly Lunch	Changsha, China	17 May 2011
38 <sup>th</sup> Anniversary Dinner	London, UK	4 October 2011
North American Dinner	New York, NY, USA	8 December 2011
Christmas Lunch	London, UK	15 December 2011

## New MMTA Members:

Since the last edition of *The Crucible* the following companies have joined the MMTA's community:

**American Metal Market (AMM)** is a provider of minor metals news and pricing with a focus on North American and global markets. Chris Dunne has full details on +1 646 274 6211, [subscribe@amm.com](mailto:subscribe@amm.com) or through their website [www.amm.com](http://www.amm.com).

**ENRC Marketing AG** is responsible for marketing of the ENRC group's cobalt and gallium products. ENRC is a leading diversified natural resources group. For more information please contact Giles Smith on +41 (0) 43 499 41 88 or visit [www.enrc.com](http://www.enrc.com).

**Pacific Rare Specialty Metals & Chemicals Inc. (PRM)**, is a producer and supplier of tellurium and selenium products based in the Philippines. Daniel Hisshion can be reached on +63 (464) 37 25 26, [sales@prm.ii-vi.com](mailto:sales@prm.ii-vi.com) or via their website [www.prsmetals.com](http://www.prsmetals.com). Mr Hisshion is also president of the Selenium-Tellurium Development Association.

**Robert Bosch GmbH** is a system/component manufacturer mainly for the automotive industry employing many minor metals in electronic, electrical and mechanical parts. More information is available from Roland Löffler and Alexandra Wilde on +49 711 811-6669 or by visiting [www.bosch.com](http://www.bosch.com).

**Stratcor Inc**, a subsidiary of Strategic Minerals Corp, is one of the world's leading vanadium producers and supplier of vanadium alloys and vanadium chemicals worldwide. For more information talk to Kenneth D Zenkevich on +1 (412) 797 4500, [info@stratcor.com](mailto:info@stratcor.com) or visit [www.stratcor.com](http://www.stratcor.com).

**Stockpile Surveying and Protection BV (SSP)** provides inspection, supervision, sampling, weighing and analytical services in the field of minor metals. Marc Tournier can be contacted on +31 (0) 180 556 561, [info@ssp-rotterdam.nl](mailto:info@ssp-rotterdam.nl), or via [www.ssp-rotterdam.nl](http://www.ssp-rotterdam.nl).

# The International Minor Metals Conference © in Philadelphia, PA, USA, May 4 – 6, 2011

Organised by Metal Events Ltd

*The premier event for the minor metals industry!*

To benefit from the exclusive registration rate available to MMTA members register by 4<sup>th</sup> April 2011 and pay just £850 per person. Over 160 attendees have already booked – don't miss out!

To learn more please contact [sales@metalevents.com](mailto:sales@metalevents.com) or +44 20 7840 0145. Full details including speakers and companies attending are online at [www.mmta.co.uk](http://www.mmta.co.uk) and [www.metalevents.com](http://www.metalevents.com).

## Christmas Lunch and Metals Quiz 2010



On a snow-bound Winter's day the MMTA's 2010 Christmas lunch took place in the medieval glory of the Old Hall at Lincoln's Inn in London. Built in 1490 the hall has stood the test of time and provided a contrasting backdrop for our dynamic association.

Members were out in force to mark the end of another interesting year in minor metals and the festive experience was complete with a Christmas tree and carol singers.

Avon Metals Ltd generously donated champagne for prizes to the winning table in the minor metals quiz.



### **The MMTA's Christmas Quiz:** (answers on page 5)

1. When doped with europium what minor metal creates red light in LCD TVs?
2. Which minor metal is added to mercury vapour tubes to give street lighting a more natural feeling light?
3. Which metal killed 44 people in Guyana in 1987 after they drank milk from a cow that had eaten poisoned molasses?
4. Which metal increases corrosion resistance in pure titanium by 100 times when added at 0.1%?
5. Which minor metal was successfully isolated in 1250 by heating soap?
6. Which minor metal is almost transparent to high-energy particles and was used for the beam pipe around the collision region of the Large Hadron Collider?
7. Name the metal that derives its chemical name from the Latin meaning "quicksilver"?
8. Which element is named after the German word for "goblin"?
9. Which minor metal was an additive in the aluminium alloys used for nose-cones for Soviet submarine-launched ballistic missiles because it allowed the missile to pierce through the Arctic ice-cap (from beneath) without incurring any damage?
10. What is the lightest metal in the periodic table?
11. What does the Incoterm 'CIP' stand for?
12. During the NiCd battery boom during the 1970s and 1980s what all time high price (in \$/lb) did cadmium metal reach?
13. How many MMTA norms are there at present?
14. Where is the largest amount of pure gallium ever collected in one place?
15. A coin made of which soft minor metal and issued in the Guizhou Province of China in 1931 was unpopular because they would wear out so quickly?

## Annual General Meeting of the MMTA

The MMTA's next annual general meeting (AGM) will take place on 5<sup>th</sup> May 2011 in Philadelphia, PA, USA (during the [International Minor Metals Conference](#)).

All MMTA member companies are welcome to attend. Full details will be circulated in due course.

## **MMTA members' generosity in action – Mufulira, Zambia**

*MMTA director and former chairman Anthony Lipmann ([Lipmann Walton & Co Ltd](#)) reports on developments in Zambia where money raised at the 38<sup>th</sup> Anniversary Dinner is helping change lives.*

On 10<sup>th</sup> January I was privileged to be invited to talk to the children and teachers from Ansford School in Somerset, UK, before their trip to Mufulira in Zambia on this year's exchange programme.

Self-funded for 15 years with lottery grants and local fund-raising events, the programme was in danger of collapsing until the MMTA's relationship was formed in 2007. What would have been lost was not a single project but irreplaceable relationships that form the basis of a true partnership between two separated but linked communities. For the MMTA, this linking represents our symbolic commitment to the communities from which metals come.

Meeting the 15 children, aged between 14 and 16 years of age, I am able to explain that Mufulira is not a town that happens to have a copper smelter but is the very reason for its existence. Together we looked at photos which illustrated both how lush Zambia can be, but also, sadly, at times, how polluted. The theme of this year's visit is the environmental impact of the mine and smelter - an educational and scientific topic that ties in with the UN Millennium Development Goals - reducing poverty and hunger, ensuring children complete primary education, ensuring environmental sustainability and developing global partnerships.



The area of slag heaps in Kankoyo to the west to the smelter, Mufulira, Zambia



Godfridah, a teacher at Mine Basic School, nearest to the smelter with two children from the Eco Group.

The children have been preparing for their trip with their Zambian partners at Mufulira High School via the broadband computer link established with the assistance of MMTA members' donations. As the children will be examining the environment together, it is important to explain to the class how copper is almost always found in sulphide ores and how the need to liberate sulphur lies at the heart of all copper production. They need to understand that, unfortunately, in the case of Mufulira, a mixture of sulphur gases, instead of being collected safely as sulphuric acid for use in electrolysis or fertilizers, are allowed to escape to the atmosphere. The photos of bleached land in Kankoyo, to the west of the smelter, illustrate the effects caused when sulphur meets moisture in the atmosphere to create sulphurous acids with

negative consequences for agriculture, sustenance and health.

While asking the class how they might think about improving the soil, one boy, a farmer's son, tells us how his father uses limestone to lower the acidity on his farmland in Somerset by the use of large stones to cause slow-release of calcium carbonate. The correct way in Mufulira, of course, would be to ensure the capture of all sulphur gases at source.

These Somerset children will bring real knowledge and enthusiasm to their trip and, through MMTA sponsorship, not only have we ensured that children from poorer UK families will be able to participate in this life-changing experience, but that the return trips of their Zambian counterparts will also be made possible. If you would like to learn more about Mufulira or donate to the CMCPT programme please write to me at [lipmann@lipmann.co.uk](mailto:lipmann@lipmann.co.uk) or contact the MMTA.

Anthony Lipmann

## New York dinner hears a conversation on criticality



Professor Thomas Graedel

*Photo by Michael Marsland, Yale University*

This year the MMTA's annual end-of-year North American dinner was honoured to have Professor Thomas E. Graedel from Yale University as the keynote speaker. Professor Graedel is the lead creator of the 'criticality matrix' that is used by many governments to determine the risks and strategic value of critical metals and also lead author of the UNEP's papers on recycling metals "[Metal Stocks in Society](#)". The dinner was a sell-out event.

Professor Graedel's speech provided many fascinating insights into the metal trade from a macro viewpoint. Central to this was the Yale Stocks and Flows (STAF) project which focuses on evaluating the flows of technologically significant materials, determining the stocks available in different types of reservoirs and the flows among the reservoirs, developing scenarios of possible futures of metal use, and assessing metal supply and demand.

To date the group has completed highly detailed reports on copper, zinc, chromium, lead, iron, nickel, silver, and stainless steel. Specialized studies on tin, cobalt, tungsten, and aluminum have also been completed and more are planned. The philosophy behind STAF is that modern society is made possible by the use of metals, most of which come from virgin production. However, a principal

reservoir of metals is in the products used, stored, and/or discarded by society and in times of resource stress or reduced energy availability this reservoir might become an important source of metal units through recycling.

STAF is also investigating the use of energy in the extraction and processing of metals, and realization that the loss of resources by dissipation or land-filling can sometimes be problematic from an environmental standpoint, and concerns over the short and long-term "criticality" of metals. Further information can be found on the [STAF website](#).

Dinner was generously sponsored by [Traxys North America LLC](#) a provider of seamless solutions for supplying and accessing raw materials. Traxys is a leading supplier of minor and alloying metals, ferroalloys, base metals and concentrates, rare earth metals and more. Traxys has been a member of the MMTA since 2004.



**Quiz answers:** 1. Yttrium, 2. Europium, 3. Thallium, 4. Ruthenium, 5. Antimony, 6. Beryllium, 7. Mercury (Hg – Hydragyrum), 8. Cobalt, 9. Scandium, 10. Lithium, 11. Customs & Insurance Paid, 12. \$10/lb, 13. 105, 14. Neutrino Telescope at the Baksan Neutrino Observatory, Russia, 15. Antimony.

### Trade and Industry Seminar

Brussels, March 31<sup>st</sup>



This event will give MMTA members an insiders' guide to potential EU policies that will directly influence our industry, the EU decision-making process, how to lobby for/against proposals and what industrial topics are currently under consideration.

On the evening before the seminar (Wednesday 30<sup>th</sup> March) there will be an informal dinner in central Brussels

### Import Training Course

London, March 17<sup>th</sup> to 18<sup>th</sup>



MMTA has been offered places at the successful International Steel Trade Association (ISTA) logistics training course on operational issues and procedures

as the principals are the same for the logistics of minor metals and ferro-alloys too.

This course will enable traders and shipping staff to review and refine their current practices.

Focus on

# Rhenium (Re)

Suzannah Lipmann of Lipmann Walton & Co Ltd explores the world of rhenium.



Rhenium, element 75, was discovered in 1925 in Germany by Ida Tacke and named after the river Rhine. It was the last naturally occurring element to be isolated and its most striking properties are a high density of 21.02 gms per cm<sup>3</sup> and a melting point of 3186 degrees centigrade (2nd highest after tungsten). Its rarity, of no more than 0.4 parts per billion in the earth's crust, the 77th least abundant, means commercial application needs to take this into account.

A by-product of molybdenum, which is itself a by-product of the mining of copper-porphry ores, rhenium is also sometimes found within sedimentary copper ores. Its main recovery occurs where copper is mined along the Pacific fault, which stretches from the southern tip of Chile, north through Peru, New Mexico, and along the Rocky Mountains. It is also found where copper is mined in Mongolia, Iran, Armenia, Kazakhstan and in Poland.

The world's largest producer, at about 28 mt (2009), is Molymet of Chile whose toll molybdenum roasters draw in large quantities of by-product molybdenum sulphide concentrates (MoS<sub>2</sub>) from the world's largest copper producing region. Here the MoS<sub>2</sub> is roasted in order to remove sulphur and produce molybdenum trioxide (MoO<sub>3</sub>) for the steel industry. During this process the rhenium particles form Re<sub>2</sub>O<sub>7</sub> which passes up the flue where sulphur is wet scrubbed to produce sulphuric acid from which Ammonium Perrhenate (NH<sub>4</sub>ReO<sub>4</sub>) is precipitated.

Eighty percent of the world's approximately 50-55 mt annual consumption of rhenium is as a 3% or 6% addition within complex nickel base alloys for the manufacture of single crystal turbine blades for high pressure aero and industrial gas turbine engines. Makers, such as GE, Pratt & Whitney and Rolls-Royce, are thought to consume 45 mtpy where the alloys operate at up to 1600 degrees centigrade, allowing for more efficient fuel combustion and reduced emission of nitrous oxides (NO<sub>x</sub>). Rhenium also predominates in bi-metallic reforming catalysts where 0.3%Pt/0.3%Re on a substrate of alumina are used in production of high octane gasoline. About 15 mtpy rhenium is used for these catalysts of which 80% remains in a closed recycle loop so consumption of virgin metal is relatively small.

Rhenium prices reached a historic peak of \$12,000 per kg in 2008 stimulating greater recovery of rhenium from scrap alloy in USA, Germany and Russia, as well as a search for new resources. Claims have been made for new mines containing high levels of rhenium but these are not yet commercial. The outlook for rhenium consumption looks bright as material scientists have found no substitute for the properties such as 'creep resistance' that rhenium brings to jet engines and industrial gas turbines.

To discover which MMTA members can supply rhenium please visit [www.mmta.co.uk](http://www.mmta.co.uk).

## **MMTA Annual Review 2011: call for adverts**

The MMTA's Annual Review is sent out to over 600 industry professionals at existing and potential MMTA member companies. To advertise in the 2011 edition please contact the Executive as soon as possible as space is strictly limited. Prices are available upon request.

The Annual Review will be launched at the [International Minor Metals Conference](#) in Philadelphia, USA, from 4<sup>th</sup> to 6<sup>th</sup> May 2011.