

# T I C

## TANTALUM-NIOBIUM INTERNATIONAL STUDY CENTER

### GENERAL ASSEMBLY OCTOBER 2001

The Forty-second General Assembly of the Tantalum-Niobium International Study Center will be held in the exciting city of Rio de Janeiro, at the Le Meridien Hotel, Copacabana. (see photo)

Participants are expected to gather over the weekend, and on Sunday October 7th the registration desk will be open. In the evening a welcome reception will be sponsored by Companhia Brasileira de Mineração e Metalurgia (CBMM).

On Monday October 8th the member company delegates will meet for their General Assembly, to carry out the business and administration of the association, also to admit and welcome new applicants. The rest of the day will be devoted to presentations of technical papers, ending with a panel discussion, with a break for lunch in one of the hotel's fine salons overlooking Copacabana beach. In the evening all delegates and guests and those accompanying them are invited by CBMM to a gala dinner.

A field trip to Araxá, with a return flight, is planned for Tuesday October 9th, to visit the world's largest niobium mine and tour the processing installations of CBMM. The reserves in the mine are sufficient for the entire world's forecast demand for niobium for 500 years! As seats in the aircraft will be limited in number, prospective participants are advised to book early to reserve a place.

There will be sightseeing tours in and around Rio de Janeiro on Monday and Tuesday for those accompanying the delegates.

Invitations and information have been sent to member company delegates. Information has been circulated to those who have already asked for it. Others interested in attending should contact the T.I.C. without delay, at 40 rue Washington, 1050 Brussels, Belgium. Telephone +32 2 649 51 58, fax +32 2 649 64 47, e-mail [info@tanb.org](mailto:info@tanb.org).

### TECHNICAL PROGRAMME

**Niobium and tantalum: a year in review**  
by Mr Edward Mosheim, Technical Promotions Officer of the T.I.C.

**CBMM – The most comprehensive and fully integrated manufacturer of niobium products**

by Mr Clovis Antonio de Faria Sousa and Mr Antonio Telhado Pereira, CBMM

(continued on page 2)



### CONTENTS

General Assembly .....	1
Technical Programme .....	1
President's Letter .....	2
'Coltan' and DRC .....	4
DLA .....	5
Eurometaux .....	6
Applicants for membership .....	6
Member Company news .....	6

[www.tanb.org](http://www.tanb.org)  
e-mail to [info@tanb.org](mailto:info@tanb.org)

## Overview of Metallurg's tantalum and niobium activities in Brazil

by Mr Itamar Resende, Metallurg

## Mamoré's position in the tantalum and niobium markets

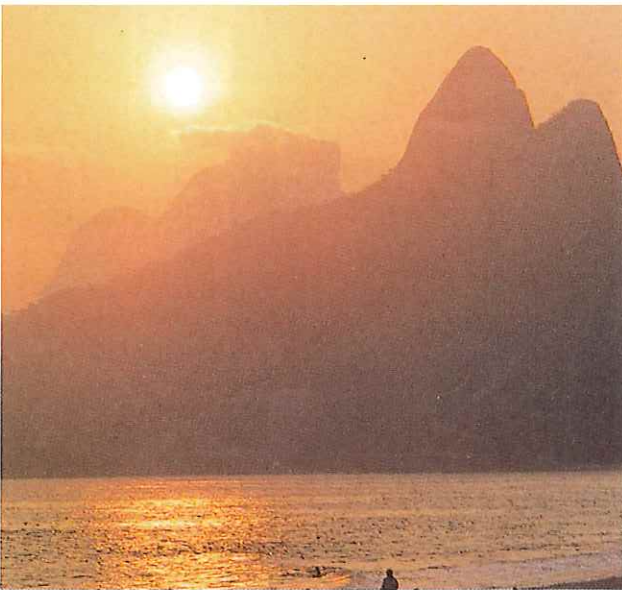
by Mr Ricardo Dequech and Mr Jorge José Correia Salles, Tin, Tantalum and Niobium Division of the Paranapanema Group, parent of Mamoré Mineração e Metalurgia

## Alternative materials for electrolytic capacitors

by Dr Karl-Heinz Reichert, H.C. Starck & Co GmbH KG

Further papers on applications of tantalum and niobium, their compounds and alloys will complete the technical presentations.

The technical session will close with a **panel discussion** on the development of **niobium capacitors**, with participants from the major manufacturers of capacitors as well as companies currently undertaking research into, and development of, suitable capacitor powders for this application.



## PROCEEDINGS

The book of the Proceedings of Symposium 2000 is about to appear. Delegates registered for the Symposium will each be sent a copy of the book.

Others who would like copies should order them from the T.I.C. at 40 rue Washington, 1050 Brussels, Belgium. The cost will be US\$200 per copy, including postage and packing.

## PRESIDENT'S LETTER

As you are all aware, the electronics industry recession continues. Semiconductor forecasts for 2001 have generally been dropped to 'single digit' or negative growth. As usual, there are mixed opinions about the duration of the downturn, but a likely scenario places the 'bottom' late in this calendar year.

Capacitor manufacturers are only operating at about 50% of their capacity, but capacitor prices are still somewhat stable.

## INTEGRATED CIRCUITS, SEMICONDUCTORS AND ELECTRONICS GENERALLY

Worldwide sales of semiconductors and integrated circuits (IC) fell again in March 2001, semiconductor revenues by another 7%, and IC units by about 3% (see figure 1).

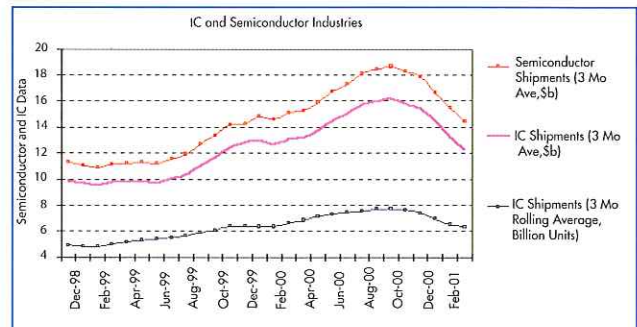


Figure 1

The Semiconductor Industry Association (SIA) indicates that sales are getting worse 'across-the-board'. The decline is affecting every product sector and most geographic regions. The Americas and Asia Pacific regions have been hit the hardest by the economic downturn. Selected market segments in Europe and Japan appear somewhat stronger. SIA president George Scalise indicated 'We continue to believe that the industry will complete the inventory correction in the third quarter and the recovery will commence in the fourth quarter'.

Electronics marketing research firm IC Insights recently indicated that, in its view, the worldwide semiconductor market will increase only 7% in 2001. More pessimistically, Dataquest (Gartner Group) now believes that semiconductor revenues will be 17% lower this year than in 2000. Dataquest's latest forecast is for a fairly slow recovery next year for a 13% revenue growth, and industry revenues not reaching year 2000 levels until the year 2003!

In a recent report, The National Association of Purchasing Management (NAPM) said the U.S. manufacturing sector contracted for the ninth consecutive month. Norbert Ore, chairman of the NAPM Business Survey Committee, told EBN 'I really don't see anything encouraging. Electronics will lag the rest of manufacturing this year' and 'It may even be next year before we see an improvement'.

As shown in figure 2, the U.S. Consumer Confidence Index turned down again in April, following the slight reversal in March. Consumers' appraisal of both current conditions and future expectations eroded as the index fell to 109.

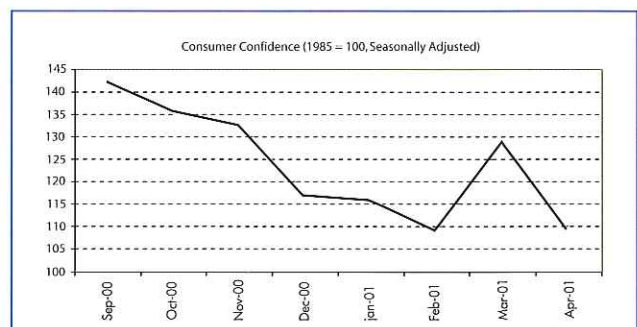


Figure 2

Although U.S. durable goods orders for the entire first quarter were 5% below the previous quarter, orders rose 3% in March. However, aside from transportation equipment, most major industries reported lower orders. As illustrated below (figure 3), electronic and other electrical equipment makers reported a sharp decrease in orders, primarily concentrated in electrical components. Sharp price cuts by microprocessor makers are contributing to weak dollar volume growth.

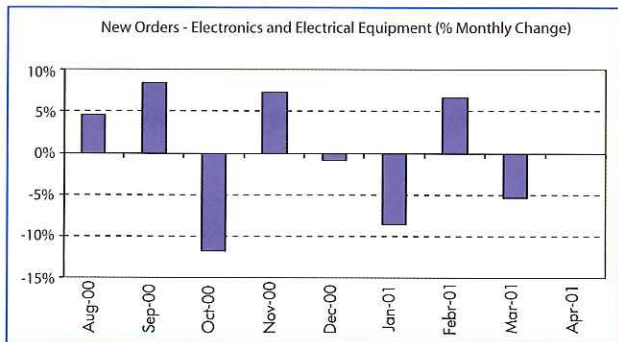


Figure 3

The most recent survey of electronics buyers by Cahners' Purchasing Magazine indicates that few buyers see better business in the next quarter and are not optimistic about business over the next three months. Only 29% of the respondents thought they would increase purchase orders over the next 90 days.

Still, the Kiplinger Letter of April 20th 2001 advises its readers to not get lost 'in the blizzard of conflicting economic reports'. It believes that the underlying trend is positive and that there is plenty of good news that is getting obscured by the bad news. Outside of technology companies, manufacturers are said to be picking up production after working off inventories. They cite automotive as picking up now, and indicate that 'others will follow'.

In March, the U.S. semiconductor equipment book-to-bill ratio dropped again to 0.64, approaching the lowest level of the 1998 recession, on declining orders and shipments (figure 4).

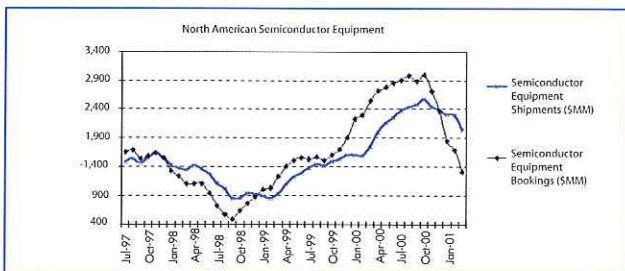


Figure 4

Last year, the worldwide equipment market grew 84%, according to Dataquest. How this year will end up is (like everything else) very much debated. Predicting equipment bookings would hit bottom in the June quarter, analysts at Morgan Stanley Dean Witter recently recommended that investors buy back into equipment stocks. Others at Goldman Sachs and Crédit Suisse First Boston (CSFB) disagreed. CSFB analysts expressed the opinion that equipment stocks are still too expensive and also doubt that bookings will pick up in the second half of this year.

The U.S. printed wiring board industry had a book-to-bill ratio of 0.70 for March on shipments 15% lower, and orders 50% lower, than the same period last year.

## CAPACITORS

The number of tantalum capacitors shipped into and out of the U.S. (illustrated below, figure 5) fell again in February.

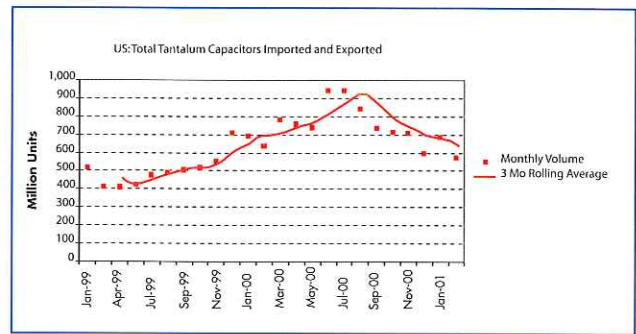


Figure 5

Japanese imports and exports dropped off sharply in January to about 30% of the peak summer rate.

Producer Price Indices (PPI) for tantalum capacitors rose substantially in March, then held in April, as illustrated below (figure 6). The high PPI for tantalum's was not expected! The PPI for ceramics continues to fall off slightly.

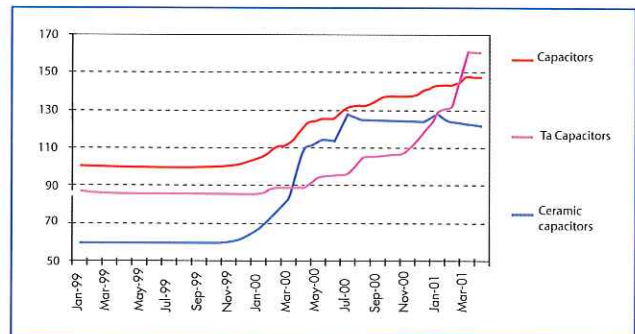


Figure 6

Cahners' Purchasing Magazine's survey of component pricing, figure 7, still shows prices holding steady.

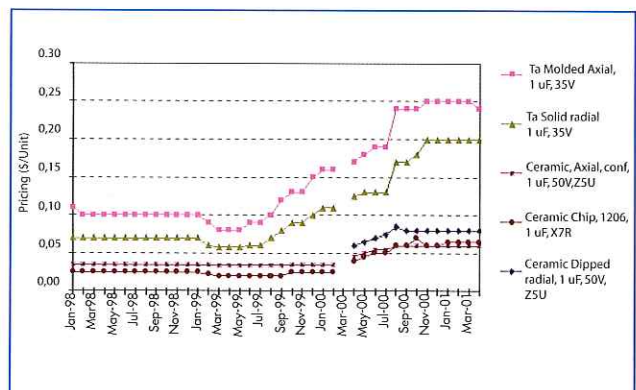


Figure 7

The average (declared) unit value of tantalum capacitors imported and exported from the U.S. (shown below in figure 8) continued to hold through February.

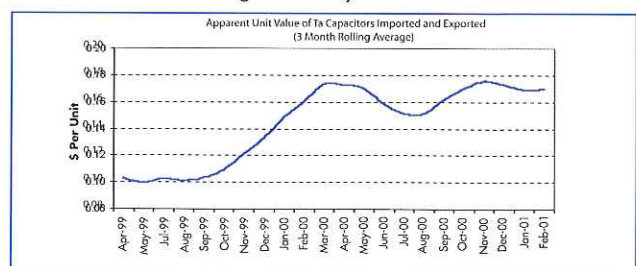


Figure 8

Electronic News reported in late April that according to the Electronic Components, Assemblies & Materials Association (ECA), electronic component orders flattened out in March after significant declines in the previous two months. ECA indicated that some manufacturers are beginning to see orders pick up (based on weekly order reports from about 30 electronic component companies). ECA president Bob Willis is reported to have said 'We expect to see inventories continue to decrease and end-use markets begin to grow in conjunction with increased production rates'. ECA vice chair John Denslinger, Murata Electronics, was quoted 'Our average selling prices increased last year and they seem to be holding steady this year. We're beginning to see a lot of optimism for the second half of the year'.

As you can see, the tantalum and capacitor market signals are mixed and the industry is dipping close to the 1998 recession levels. Tantalum markets have been and will continue to be cyclic and we all need to be conscious of this fact. Today's glut can quickly become tomorrow's shortages just as the case was in 2000. Consistent planning and long term approaches are key to maintaining a reliable position in any industry, and this is an approach that I believe the T.I.C. must insure its members maintain to be a viable entity in the future.

As the industry shifts and churns, Judy Wickens is working very hard to get the 2001 T.I.C. meeting in Brazil together. We are expecting a tremendous meeting and I look forward to seeing you there to discuss the issues of the T.I.C. I believe that we need to stay focused on the bright future for tantalum and niobium, and during this meeting we will discuss issues around current markets as well as new and exciting technologies.

All my best!!

*Tom Odle  
President*

## 'COLTAN' AND DRC

### Press release

The Tantalum-Niobium International Study Center (T.I.C.), the industry organisation representing producers, processors and consumers of tantalum and niobium around the world, deplores the reported activities of illegal miners in the Kahuzi-Biega National Park and the Okapi Wildlife Reserve in the Democratic Republic of Congo.

It was agreed at the T.I.C. Executive Committee meeting in Brussels on April 3rd 2001 that the organisation would take a stand regarding the use and production of coltan mined in these World Heritage Sites.

Tantalum and niobium are not new discoveries. They have been used in electronics and other applications since the early 1900's. If you drive a car, use a cell phone or exchange e-mail on the internet, you have probably been using tantalum for the past 20 years, on a steadily increasing basis. Many issues have recently surfaced about coltan coming from Central Africa and it is important to know that:

1. Less than 15% of the world's tantalum supply comes from Africa
2. The T.I.C. will cooperate with other concerned organisations such as The World Conservation Union (IUCN), the Dian Fossey Gorilla Fund and The World Wildlife Fund (WWF)

to preserve these World Heritage Sites in the DRC. Specifically the T.I.C. will

- Inform all its 66 member companies around the world of the issues surrounding the illegal activities and their consequences
- Fully support efforts by the relevant authorities to enforce an immediate removal of miners from within the boundaries of the National Parks
- Encourage major processors to obtain their tantalum and niobium raw materials from lawful sources in other parts of the world as well as Africa, and refrain from purchasing materials from regions where either the environment or wildlife is threatened.

Tantalum and niobium are important metals with numerous applications in both high tech and other industries. As the industry organisation, the T.I.C. deplores these unlawful and immoral activities.

At the end of March, the T.I.C. received messages from several wildlife conservation organisations pointing out that 'coltan' miners were damaging nature reserves in the eastern part of the Democratic Republic of Congo (DRC) and in Rwanda. The term 'coltan' is an abbreviation used in Africa for columbite-tantalite. The Executive Committee resolved to take a stand against this illegitimate activity: the press release shown here was issued just after the Committee meeting in April, and an appeal was sent to all member companies.

A number of our members, Kemet, Sogem, Starck among them, put out press notices supporting this statement by the T.I.C., as did the components division, ECA, of the Electronic Industries Alliance (EIA). Shortly afterwards, on May 3rd, the Director of The Dian Fossey Gorilla Fund, Greg Cummings, told the T.I.C. that he was 'astounded at the swift and positive response from your industry' and that he was 'already hearing reports that it is having an effect in the field'. In June the wildlife protection organisations were continuing to lobby manufacturers of electronic equipment in California, requesting them not to use tantalum components incorporating tantalum from the DRC national parks.

In early April, the T.I.C. became aware of an investigation by a 'panel of experts' appointed by the United Nations Security Council to report on 'the illegal exploitation of natural resources and other forms of wealth of the Democratic Republic of the Congo'. The report of this panel was published on April 16th: the panel's mandate was to collect information on all activities of illegal exploitation of natural resources, to research and analyse the links between the exploitation of the natural resources and the continuation of the conflict, and to revert to the Council with recommendations.

The panel found that there was illegal exploitation of the mineral and forest resources of the DRC taking place 'at an alarming rate', with mass-scale looting and also 'systematic and systemic exploitation' of natural resources. Stockpiles including minerals in territories 'conquered' by the armies of Burundi, Rwanda and Uganda were looted and transferred to those countries or exported to international markets by the forces and nationals of those countries. 'Systematic exploitation' used pre-existing structures developed by the forces of the late President Kabila when they were rebel forces before coming to power, and 'systemic exploitation' used the 'existing systems of control established by Rwanda and Uganda'. Exploitation was often carried out in violation of the sovereignty of DRC and led to illicit activities, and top army commanders and businessmen had been the 'engines' of this exploitation, the report continued. This had led to 'massive availability of financial resources for the

Rwandan Patriotic Army' and to the emergence of illegal networks, and these two elements formed 'the basis of the link between the exploitation of natural resources and the continuation of the conflict'. Another contributing factor was 'the opportunistic behaviour of some private companies'.

The methodology of the panel took the form of primary data collection (official documentation), secondary sources (reports, published and unpublished literature), interviews, from three kinds of sources: countries involved in the conflict, third parties (other countries outside the conflict, UN agencies, the World Bank, the International Coffee Organization, the University of Maryland, for example) and individuals who expressed an interest. (The T.I.C. was not approached.)

Mineral resources including coltan formed one of the three categories of primary consideration, to be examined for the commercial value of the resources, the interest of parties, and the scale of exploitation. The term 'exploitation' was not used in the report to mean production and extraction, but the panel 'opted for a broad understanding and interpretation of exploitation'.

The recommendations of the panel include the following: that the Security Council should immediately declare a temporary embargo on the import or export of a variety of materials including coltan, niobium, pyrochlore from or to Burundi, Rwanda and Uganda until those countries' involvement in the exploitation of the natural resources of the Democratic Republic of the Congo is made clear and declared so by the Security Council. All countries should abstain from facilitating the import or export of these resources. Any country breaking this embargo should face sanctions; Governments should take the measures necessary to ensure that companies registered in their territory and individuals breaking the embargo are punished. The panel also recommended that the Security Council should urge Member States to freeze the financial assets of companies and individuals who continued to participate in the illegal exploitation.

A report on the deliberations of the Security Council, dated May 3rd 2001, emphasised the importance of a comprehensive approach to the conflict. The Council asked the Secretary-General to extend the panel's mandate by three months and requested its members to submit an addendum to the main report, to update and analyse relevant data and add conclusions about whether progress had been made.

Since this report was published, there have been numerous articles in the press, both in the general press and in more specialised publications on metals or electronics. The T.I.C. has been approached by some of the journalists and has given much information both in writing and in telephone conversations. Many many hours have been spent on this, few days have passed without communication of some kind. There has been little acknowledgement of the co-operation offered by the T.I.C. or the information garnered from our web site, but please be assured that we have made constant and sustained efforts to provide assistance, not just the occasional sentence which has been quoted. At least it has been evident that journalists starting from a position of ignorance of the very existence of tantalum and niobium have made extensive use of our material.

We have told the press that the main sources of tantalum and niobium lie outside Africa, that African countries are a minor source, and the central African region of DRC and Rwanda is only a small part of that source. We have tried hard to correct misconceptions, explaining that tantalum is not a new discovery, that the manufacture of tantalum capacitors is not a new industry, that it is not easy to extract tantalum and niobium from the minerals, that tantalum-containing mud is not used to model cell phones. We have pointed out that Central Africa is not the only,

or even the principal, source of raw material, also that Rwanda and Zaire – now DRC - have been for decades sources of minerals.

Figures and statistics have caused confusion, both in the report and in the press, especially when total weights of mineral concentrates shipped have been compared with annual statistics quoted in 'tantalum oxide contained' or 'tantalum contained'. Minerals shipped out of Central Africa seem often to be not very well concentrated, so if they contain about 15% tantalum oxide and the journalist calculates their value on the total quoted weight and a price he has heard elsewhere, the value can be overstated by six times. The lack of published prices is another problem.

The wildlife conservation organisations and the press continue to publish reports and articles. The airline Sabena has now refused to carry cargoes of 'coltan'.

So far no embargo has been imposed by the UN Security Council and the recommended sanctions have not been implemented, but the decision not to undertake these steps has not been made either. The further investigations by the UN panel continue, although we understand that there may be changes in the membership of that panel.

The T.I.C. remains concerned about the developments, and continues to call on members to refrain from purchasing raw materials from unlawful sources.

## DLA

The Defense Logistics Agency continues to offer material in the Annual Materials Plan. As no news reports were posted for the month of May 2001, it is not easy to be sure that we have all the information.

Two amendments to the Annual Materials Plan (as printed in Bulletin 105) were announced on April 9th 2001:  
Columbium concentrates 560 000lb available instead of 375 000lb  
Tantalum minerals 500 000lb available instead of 300 000lb

### Columbium materials:

*Columbium carbide powder:* No information found.

*Columbium concentrates:* No information found on sales, in spite of the increased quantity made available.

*Ferro-columbium:* Of the total 150 000lb available, 106 266lb was offered for sale on April 30th 2001. On May 18th, the press reported a sale of 100 000lb to ABS Alloys (but this is not posted on the DLA web site).

*Columbium metal ingots:* Already exhausted.

### Tantalum materials:

*Tantalum carbide powder:* Already exhausted.

*Tantalum metal ingots:* About 8000lb remained available and were offered on February 26th 2001: approximately 7000lb were awarded to Cabot Performance Materials on March 9th 2001, thus exhausting the material available.

*Tantalum metal powder:* about 39 000lb of capacitor grade powder remained available, and was offered on April 19th 2001 in an amended solicitation. On April 27th an award of 34 000lb to Recovery Dynamics, Johnson City, Tennessee, was announced. (There was no note that this exhausted the available material.)

*Tantalum minerals:* 300 000lb had originally been available, and 205 000lb had been awarded to Kamco on

December 8th 2000. The amount authorised for sale in the year was increased on April 9th 2001 to 500 000lb, but in an announcement dated April 19th 2001 the DLA reported that the 'balance of material available for the remainder of FY 2001 is 489 000lb contained tantalum'. On April 19th, 'tantalum/columbium concentrates' were offered for May 24th, but the amount was not detailed at that time. On June 8th, it was announced that no award had been made following this solicitation.

*Tantalum oxide:* About 20 000lb were offered on March 29th 2001. With the award of 25 000lb to ELG Metals on April 11th, the material available in this category was exhausted.

## EUROMETAUX

Eurometaux pursues its aims of maintaining dialogue with European authorities.

A Eurometaux delegation held a meeting with the new Head of Unit A2 'Sustainable Resources, Consumption and Waste' of Directorate General Environment in the European Commission, Mrs M. Klingbeil. This is a newly-created unit which has taken over Waste Policy and at the same time taken charge of Product Policy. Eurometaux comments on an interesting evolution and a desire for practicality and says that 'for the first time, the notion of recycling was viewed from the angle of a "resource" rather than a "waste"'. Mrs Klingbeil was sympathetic to Eurometaux's arguments that metal waste intended for recycling is a high added-value raw material for the metals-producing industry, and asked for quantified explanations of the economic impact of recycling in a number of detailed cases and situations.

## APPLICANTS FOR MEMBERSHIP

A number of companies have already applied for membership of the T.I.C. These applications will be presented to the General Assembly on October 8th 2001:

ABS Industries  
Advanced Alloy Services  
AstroCosmos  
Euromet  
Jiujiang TaNbRe  
Metherma  
Osaka Trading  
PCC Airfoils

Any other companies wishing to apply should contact the T.I.C., and complete the application procedure as soon as possible.

## MEMBER COMPANY NEWS

### Australasian Gold Mines/Kemet

On April 17th Australasian Gold Mines announced that its venture with Kemet had been finalised, launching the new company Tantalum Australia as a joint venture. Kemet has a 50% stake in the new company.

Tantalum Australia will own and fund the development of Australasian Gold's existing tantalum assets in Australia and seek new project opportunities on a global basis. For Mr Michael Fotios, Managing Director of Australasian Gold Mines, the deal represented a significant milestone and he believed

that 'the tantalum industry offers excellent growth opportunities, not just in the current strong market but also in the long term on a sustainable basis'.

Australasian Gold's assets in Australia already include the Dalgaranga project (Western Australia), where a pilot plant is now producing, the Walwa Tantalum Project in Victoria, and the recently acquired Binneringie Project in Western Australia. Resource definition drilling programs have commenced at Walwa and Binneringie.

Among the elements of the agreement are that Kemet will purchase all tantalum concentrate produced by the Dalgaranga pilot plant, and it will assist in procuring finance for construction of a full scale plant there, 'including the possibility of pre-payment for sales under long-term take-or-pay contracts'.

### AVX

AVX Corporation reported net income of US\$124.8 million for the quarter ended March 31st 2001, compared with US\$70.9 million for the equivalent quarter in the previous year.

Chairman and Chief Executive Officer Dick Rosen stated 'We are very pleased to report strong earnings and profits in this period of uncertainty regarding near-term market conditions. There is much concern in this period as inventories of finished products as well as components are much too high for the near-term demand'. He believed AVX's strategies would serve the company well 'as the electronic world regains its momentum later in this year with new exciting products'.

### Cabot Performance Materials

For the quarter ended March 31st 2001 the earnings of Cabot Corp., parent of CPM, were 'up 43% due to tantalum products demand offsetting rising raw material costs', reported Metal-pages. Tantalum demand pushed up revenues in the CPM division, and, in this period, stronger than expected demand for tantalum powder and wire was being driven by a continued need for tantalum capacitors from the telecommunications and electronics sectors.

CPM announced on May 23rd 2001 it was about to 'double its capacity for producing tantalum and niobium metallurgical products'. The expansion is planned to meet the growing demand for materials used by the electronics, superconductor, aerospace and chemical process industries.

The press release continued 'This project is part of a multi-year plan to upgrade and expand equipment in the division's manufacturing operations and will include immediate improvements to an existing electron beam furnace and the purchase of a third, new, 2400kW electron beam furnace. Matthew Stershic, Business Unit Manager of CPM, said 'Cabot currently produces the largest tantalum ingots in the world, contributing to the exceptional chemical purity and metallurgical properties of our thin film sputtering products. These improvements will increase our capacity and allow us to continue manufacturing and casting ingots as large as 16 inches in diameter'.

Mr Thomas H. Odle added that the company's 'extensive and innovative manufacturing experience, coupled with access to the world's largest and highest quality supply of raw materials, assures that our customers will receive a steady, reliable supply of the highest electronics-grade tantalum products in the world'.

## **Cambior**

The delegate of Cambior to the T.I.C. is now Mr Claude Dufresne who has succeeded Mr Alan Bolton as Marketing Manager following Mr Bolton's retirement. From April 1st 2001 the administrative offices of Cambior are at

1111 rue Saint-Charles ouest,  
Tour est, bureau 750,  
Longueuil, Quebec,  
Canada J4K 5G4.  
Telephone: +1 450 677 0040  
Fax: +1 450 677 3382  
e-mail for Mr Dufresne: [claudio\\_dufresne@cambior.com](mailto:claudio_dufresne@cambior.com)

In the first quarter of 2001 Cambior's share of production from the Niobec mine was 365 tonnes of niobium, a 30% increase over the corresponding quarter last year due to the completion of the expansion of the mill in the fourth quarter of 2000.

## **Sons of Gwalia**

The company's report on activities for the quarter ended March 31st 2001 announced record production and sales of tantalum, a new estimate of reserves and resources increasing the resource base, and confirmation of a forecast for increased earnings in the next financial period.

Tantalum production in the quarter was 394 194lb Ta<sub>2</sub>O<sub>5</sub> contained, 246 088lb from the Greenbushes mine and 148 106lb from the Wodgina mine. The record output from the Greenbushes mine was achieved by re-scheduling higher-grade ore from the Cornwall Pit ahead of the lower-grade Central Lode, plus improvements in the practical organisation of the plant. The Lithium Minerals Plant was modified so that it had a dual purpose, with the possibility of using spare capacity to produce low-grade tantalum concentrates: in this quarter the plant was diverted entirely to tantalum production.

'The development of the underground mine received final Board approval during the quarter', 'and the first portal is now under construction from within the Cornwall Pit. The underground mining rate will incrementally increase to one million tonnes per annum within three years', the report continued. The project is on schedule for commissioning in the first quarter of 2002.

Increased rates of production at the Wodgina mine were assisted by 'higher through-put resulting from softer than anticipated ore' and by optimisation of the plant. Higher-grade ore was also scheduled for mining in the next quarter with a view to increasing production to meet sales commitments. A drilling programme to extend the current resource base was described as 'highly successful'. As a result, tantalum reserves at Wodgina have more than doubled. Expansion of the Wodgina plant is also due for commissioning in the first quarter of 2002. A considerable upgrade of site infrastructure and services is required, said the company report, and ancillary contracts were being negotiated.

The company's resources represent more than 50% of the world's known tantalum resources, and supply by Gwalia will continue to increase following the expansions now in hand. The company 'will continue to work with the electronics industry to provide sustainable production at required industry levels', and it notes that 'there has been increased demand in superalloys for jet engines, gas turbines and other special purpose applications'. The company was reviewing longer term tantalum supply requirements 'with a view to bringing additional tantalum supply to the market in an orderly fashion' should it judge that this is required.

## **Kemet**

'Kemet has completed the most successful year in its history' stated Mr David Maguire, Chairman and CEO, in reporting record sales and earnings for the fiscal year ending March 31st 2001. 'Net sales for the year increased to US\$1406.1 million, compared with US\$822.1 million last year', reported the company.

Analysing the situation from his wealth of experience, Mr Maguire continued 'The electronics industry is a high-growth, but cyclical industry. The extraordinary financial results of fiscal 2001 come at the end of a cycle that began with the Asian crisis in fiscal 1999, which was a very challenging year'. Kemet's business model remained focused on earning the preferred supplier position at the world's most successful electronics firms. Kemet anticipated using its resources to take advantage of significant market opportunities, including high-frequency tantalum, high-capacitance ceramic, and new solid aluminum capacitors. 'Electronics remains a high-growth industry' said the Chairman, 'but it is now in another correction phase of the long-term growth trend. This is my tenth cycle, and the rapidity with which this inventory/capacity correction is occurring is unprecedented compared to previous cycles. Our near-term visibility is limited because of the general uncertainty in the industry. In this environment, we will focus our efforts on cost reduction and continued development of our new products so we again will be well positioned to benefit as the industry recovers.'

Kemet will observe a 'Quiet Period' from July 2nd to the day when the next quarterly earnings release is published, scheduled for July 23rd.

The paper presented by Jim Marshall and Dr Erik Reed at the T.I.C. Symposium 2000 was also presented to CARTS, where it won the award for Best Paper at the CARTS 2001 meeting in March 2001.

## **King Metallurgical**

King Metallurgical Industry Co., Ltd. has a new address and contact numbers:

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160 Wuyi Road (M),  
Changsha, Hunan 410011,  
China.  
Telephone: +86 731 2243379  
or +86 731 2250808  
Fax: +86 731 2220723

## **Metallurg**

Metallurg's web site may be found at [www.metallurg.com](http://www.metallurg.com).

On March 21st Metallurg, Inc. announced that it earned US\$6.6 million on revenues of US\$150.3 million for the quarter ended December 31st 2000, 19% more than in the corresponding quarter of the prior year. The company attributed this partly to tantalum products. In the second quarter of 2000 Metallurg sold its minority investment in a Russian magnesium metal producer, which also contributed to its income for the year, the report noted.

Mr Alan D. Ewart, President and Chief Executive Officer, stated that 'Results for 2000 benefited from increased demand for our tantalum-containing products and for materials we supply to the producers of aerospace and superalloy products'. Actions taken to restructure operations had resulted in lower costs and greater efficiency, a tendency which Mr Ewart believed would 'provide the base for continued profitable growth'.

Metallurg states that through its principal operating subsidiaries in the United States, United Kingdom, Germany and Brazil it is a leading international producer and seller of high-quality specialty metals, alloys and metallic chemicals. These are essential to the production of high-performance aluminium and titanium alloys, superalloys, steel and certain non-metallic materials for engineered applications in aerospace, power supply, automotive, petrochemical processing and telecommunications.

The company continued to report better results for 2001 than for 2000 when it announced on May 14th 2001 net income of US\$3 million for the quarter ended March 31st compared with a loss in the corresponding quarter of 2000. Mr Ewart said that 'One of Metallurg's strengths is the diversity of its products for high performance metallurgical sectors. We have seen demand particularly for products we supply to the superalloy and titanium industries strengthen over the same period last year. We are also benefiting from our involvement in tantalum materials through our mining and processing operations in Brazil and Germany'.

#### **Mitsui Mining & Smelting**

Mr Itsunori Kirino, delegate to the T.I.C. for many years, has changed his responsibilities in the company, and his place as the representative of Mitsui has been taken by Mr Shunichiro Kachi. Mr Kachi is the General Manager, Raw Material, in the Rare Metal Division, Engineered Material Sector. The address and contact numbers are as shown on the T.I.C. web site for the company, but the e-mail address is: s\_kachi@mitsui-kinzoku.co.jp.

#### **Reference Metals/CBMM**

CBMM continues to improve and expand its plant facilities: installation of a second ball mill has brought its capacity for production of niobium concentrates to 84 000 tonnes per year, and ferro-niobium production capacity using aluminothermic reduction and electric arc furnace technology is now 45 000 tonnes per year. CBMM supplies the entire domestic market of Brazil with ferro-niobium, about 1 000 tonnes a year.

The aim of the company's expansion is to maintain global supply and also its own market share. New oil pipeline projects could 'bring about a 2-3% increase in niobium demand', reported Metal-pages in March.

In addition to ferro-niobium, the company produces annually 60 tonnes of niobium metal, 1 000 tonnes of vacuum-grade alloys, 2 400 tonnes of high purity oxide and 1 50 tonnes of optical grade oxide for lenses - its newest product.

#### **Sogem**

The annual report of Union Minière, parent company of Sogem, said that Sogem was 'concentrating on its core activities of agency, distribution and trading, relying on its network of more than 30 offices around the world'. Results were 'exceptionally good in 2000, four times the 1999 level', due to excellent trading profits, favourable dollar exchange rates and 'increased market share was also a major contributor'.

Six expert teams are in place, each covering its field on a world-wide basis with team members sharing knowledge, expertise and market information', the report continued.

#### **Alex Stewart (Assayers)**

The company has a web site at [www.alexstewart.com](http://www.alexstewart.com), and contact may be made through the e-mail address [Val.Head@alexstewart.com](mailto:Val.Head@alexstewart.com).

#### **Wah Chang**

Wah Chang offers a series of two-day seminars on corrosion solutions in a wide variety of locations across the world. Topics to be covered range from metallurgy, specifications and properties through welding, fabricability, failure analysis, and equipment design, fabrication, operation and maintenance as well as safety aspects. It is a course developed and presented by technical experts, not a sales presentation. There will also be a four-day Total Corrosion Solutions Conference from September 10th to 13th 2001 in Sunriver, Oregon. For information see [www.corrosionsolutions.com](http://www.corrosionsolutions.com), or call +1 888 926 4211.

The company's publication 'Outlook' for the first quarter of 2001 includes a summary report of corrosion testing of niobium in hydrochloric acid, as inquiries are being made about replacements for tantalum in chemical processing equipment, it says.

The purchase and installation of a new electron beam furnace has been approved for Wah Chang. When completed, the new EB furnace will be capable of producing niobium ingots of up to 19 inches in diameter, 120 inches long and weighing up to 10 000lb. The additional furnace will compliment the three existing furnaces operating at Wah Chang and will increase EB capacity by 40%. Plans call for installation to be complete and the equipment to be operational by the spring of 2002, said the company.

EB furnaces use very high vacuum, less than one millionth of an atmosphere, combined with very high temperatures, up to 3200°C, to remove impurities by evaporation from target metals.