

TANTALUM-NIOBIUM
INTERNATIONAL STUDY CENTER

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TIC

2022 ANNUAL REPORT



Presented at the 63rd General Assembly of the
Tantalum-Niobium International Study Center (T.I.C.)

Geneva, Switzerland, October 16th-19th 2022



a **YAGEO** company

KEMET continues to be a leader
in the responsible sourcing of tantalum



ECV

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Partnership for Social & Economic Sustainability

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Tantalum-Niobium International Study Center (T.I.C.)

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Cover photo credit: Geneva Tourism Board, T.I.C.

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President's Welcome

Welcome to Geneva!

For many, you will be reading this greeting from the relaxing environs of Lac Léman (Lake Geneva). Whether it be your first visit to Geneva, or a happy return, the charm and history of Geneva makes this a superb venue for our 63rd General Assembly (GA63).



The deeply imbedded international culture of Geneva is articulated by the fact that it is a diplomatic and banking hub for the world as well as the European headquarters of the United Nations and the Red Cross. The charm of Lake Geneva, accentuated by the Alps and Jura mountains, and the vistas of famous Mt. Blanc, make this an excellent starting point for post meeting travel in the beautiful countryside surrounding Geneva.

I look forward to greeting many of you who were unable to make it to London last year. The world continues to move forward, and it is the hope of the Meetings Subteam that the agenda reflects issues that are pertinent to you and your businesses now, and into the future.

For those who are unable to attend due to continuing Covid-related restrictions, we will miss you and look forward to seeing you next year in Rio de Janeiro.

Sincerely,

Daniel F. Persico, Ph.D.

President

About the T.I.C.

Since its founding, the Tantalum-Niobium International Study Center (T.I.C. or Association) has grown and developed to encompass the changing nature of the tantalum and niobium industries and will continue in the same spirit in facing future challenges. Today our membership represents every aspect of the global tantalum and niobium industries.

The Association

- An international, non-profit association founded in 1974 under Belgian law.
- Around 80 members from 30 countries involved with all aspects of the tantalum and niobium industry supply chain (including mining, trading, processing, recycling, metal fabrication, capacitor manufacturing, medical...).
- The Association is run by its Executive Committee, whose officials are elected annually by the members. The Committee reflects the range of members' activities and their geographic spread.
- The Committee is led by the President. Presidents have been drawn from all sectors of the industry and from many parts of the world (see page 9).
- The T.I.C.'s office is comprised of the Secretary General, the Executive Marketing Manager, Technical Officer, and several external consultants.

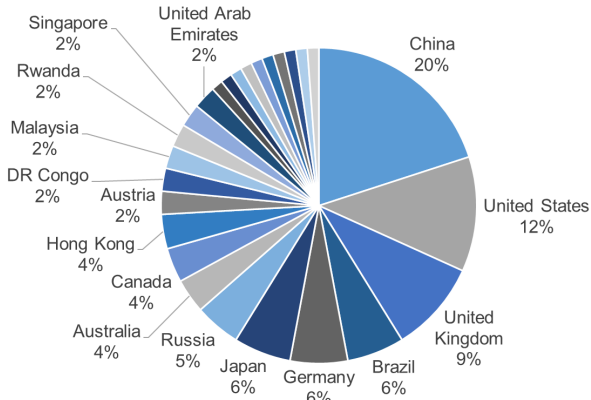
Objectives

- Increase awareness and promote the remarkable properties of tantalum and niobium in all their forms.
- Disseminate information on any matter affecting that industry, excluding price and related information and any other proprietary information.
- Address major issues and challenges facing its industry, including critical raw material and conflict minerals legislation, artisanal and small-scale mining (ASM), and transporting naturally occurring radioactive materials (NORM).
- Organize a General Assembly of the membership in September or October each year for technical presentations and members' annual general meeting. Often the location is chosen to allow a tour of a member company or industrial facility.
- Publish a quarterly newsletter, the Bulletin, covering interesting and informative articles about the T.I.C. and the global tantalum and niobium industries.
- Collect statistics from member companies (via an independent third-party to ensure confidentiality) on tantalum and niobium production, shipments and consumption. Statistics reports are shared with participating members.

Who is the T.I.C.? *

* This snapshot is based on T.I.C. membership in January 2021

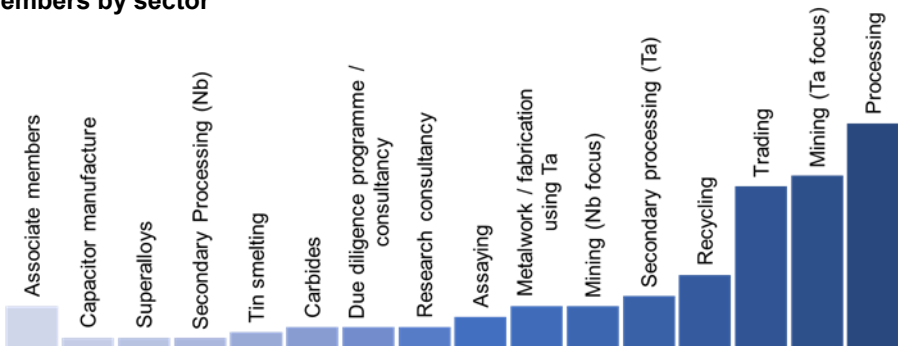
Members by country



Members by location



Members by sector



Executive Committee, Subteams, Officers

Executive Committee

The Executive Committee is drawn from the membership and committee members may be, but need not also be, the delegates of member companies. The Executive Committee named here was elected by the T.I.C. members at the 62nd General Assembly, and consists of (in alphabetical order of member's surname):

Fabiano Costa	fcosta@amg-br.com
John Crowley	jcrawley@rmmc.com.hk
Silvana Fehling	silvana.fehling@taniobis.com
Ronald Gilerman	ronald.gilerman@armerchants.com
David Gussack	david@exotech.com
Jiang Bin	jiangb_nniec@otic.com.cn
Janny Jiang	janny@jiujiangjx.com
Dharam Kotecha	dharam@halcyonmetals.com
Raveentiran Krishnan	raveentiran@msmelt.com
Robert Marchiando	robert.marchiando@materion.com
Candida Owens	candida@mtalx.com
Daniel Persico (President)	daniel.persico@tanb.org



The 2021-22 Executive Committee

The 2022 election to the Executive Committee takes place on October 17th during the Association's annual general meeting (AGM) at the 63rd General Assembly held in Geneva, Switzerland. Those elected stand for one year and there is a maximum of twelve members, according to our Charter of association. Members who wish to make nominations to serve on the Executive Committee must do so at least one month before the annual general meeting.

Subteams

Subteams are advisory groups tasked by the Executive Committee with specific projects. The President holds a supervisory role on all subteams. In October 2022, the following subteams were operational:

Marketing:

Ronald Gilerman
Robert Marchiando
Ian Margerison
Raveentiran Krishnan
Emma Wickens

Meetings:

Fabiano Costa
David Gussack
Candida Owens
Emma Wickens

Supply Chain:

John Crawley
Silvana Fehling
Dharam Kotecha
Raveentiran Krishnan

Statistics:

Ian Margerison
John Crawley
Ronald Gilerman

We are always looking for enthusiastic T.I.C. members to join our range of subteams. If you are interested, please contact Emma Wickens.

Officers of the T.I.C.

At the 63rd General Assembly, held in October 2022, the officers were:

Secretary General	Emma Wickens	emma.wickens@tanb.org
Executive Marketing Manager	Ian Margerison	ian.margerison@tanb.org



The T.I.C. staff team

The T.I.C. also works regularly with several specialist consultants in order to advance the Association's goals. These include Ulric Schwela (NORM transport), Ally Lam (China) and Breno Rezende (Brazil).

Presidents of the Association

1974	Cornelius Herkströter, Thaisarco
1975	Herman Becker-Fluegel, National Resources Trading / Tanco
1976	Paul Leynen, Zairetain
1977	Reinhard Deil, GfE
1978	Joseph Abeles, Kawecky Berylco Industries
1979	Brian Reynolds, Thaisarco
1980	George Korinek, Hermann C. Starck Inc.
1981	Conrad Brown, Fansteel
1982	John Linden, Greenbushes Tin
1983	Robert Franklin, STC Components
1984	Carroll Killen, Sprague Electric Company
1985	Chikara Hayashi, Vacuum Metallurgical Company
1986	Rod Tolley, Datuk Keramat Smelting
1987	Hans-Jürgen Heinrich, GfE
1988	Harry Stuart, Niobium Products Company
1989	George Korinek, NRC
1990	Peter Adams, Thaisarco
1991	Yoichiro Takekuro, Vacuum Metallurgical Company
1992	Peter Maden, Vishay Sprague
1993	Hubert Hutton, Sogem-Afrimet
1994	Peter Kählert, H.C. Starck GmbH
1995	Robert Barron, Cabot Performance Materials, David Maguire, KEMET
1996	Yeap Soon Sit, S.A. Minerals
1997	William Millman, AVX
1998	John Linden, Sons of Gwalia
1999	Charles Culbertson II, KEMET Electronics
2000	Thomas Odle, Cabot Performance Materials
2001	Axel Hoppe, H.C. Starck GmbH
2002	Josef Gerblinger, Epcos
2003	David Reynolds, KEMET Electronics
2004	William Millman, AVX
2005	William Millman, AVX
2006	Axel Hoppe, H.C. Starck GmbH
2007	William Young, Cabot
2008	José Isildo de Vargas, CBMM
2009	Richard Burt, GraviTa Inc.
2010	Richard Burt, GraviTa Inc.
2011	José Isildo de Vargas, CBMM
2012	Daniel Persico, KEMET Electronics
2013	Daniel Persico, KEMET Electronics
2014	David Henderson, Rittenhouse International Resources
2015	David Henderson, Rittenhouse International Resources
2016	David Henderson, Rittenhouse International Resources
2017	John Crawley, Minerals Resources International AG
2018	John Crawley, Minerals Resources International AG
2019	Daniel Persico, KEMET Electronics
2020	Daniel Persico, KEMET Electronics
2021	Daniel Persico, KEMET Electronics

Executive Marketing Manager's Report 2021-2022

Dear Members and Stakeholders,

This last year has been a challenging time for me as the new EMM & TO, trying to give value to members who still cannot easily travel to the GA in Geneva. However, thankfully, most of the pandemic restrictions have now been lifted.

Members have also had to deal with international events that have had large impact on the supply chain of niobium and tantalum markets, aside from the pandemic.

T.I.C. has been getting on with business, working with a number of organisations to improve future market conditions e.g. IAEA (International Atomic Energy Agency), ITSCI (ITRI Tin Supply Chain Initiative) and CRM (Critical Raw Materials Alliance).



Ian Margerison

Since our 62nd General Assembly held in London in November 2021, this Association has continued to invest in more industry-led projects such as the Tarantula project. We have firm foundations for the future. In particular, mention must be made to the Executive Committee for its support during these challenging times.

Tarantula project

The T.I.C. is part of a consortium of 16 organisations to be awarded funding to study innovative new ways to recover niobium (Nb), tantalum (Ta) and tungsten (W) from mine by-products and processing waste streams, materials which are currently considered to be uneconomical. Full details will be reported in future Bulletins and during our 63rd General Assembly in Switzerland.



The T.I.C. is part of a consortium studying innovative new ways to recover niobium (Nb), tantalum (Ta) and tungsten (W) from mine by-products and processing waste streams, materials which are currently uneconomical.

If you are interested in learning more about this project visit <https://h2020-tarantula.eu/> or to register your interest contact the T.I.C. at info@tanb.org. *The TARANTULA project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon 2020 under Grant Agreement No 821159.*



The Anders Gustaf Ekeberg Tantalum Prize

In 2018 the T.I.C. established an annual science award to recognise excellence in tantalum research and innovation, as part of our aim to increase awareness of the many unique properties of tantalum products and the applications in which they excel*.

It was named the Anders Gustaf Ekeberg Tantalum Prize ('Ekeberg Prize') in honour of the Swedish chemist who discovered tantalum in 1802. The medal, made by the Kazakhstan Mint from pure tantalum metal, is awarded to the lead author of the winning publication at our General Assembly each year.



The shortlist

This year there were five publications shortlisted for the prize, showing the great versatility of tantalum. The subjects covered by the shortlisted publications included additive manufacturing, thermal actuators, chemical processing and thin film. Full details and links to all shortlisted publications can be found at www.tanb.org/view/prize.

The judging procedure

The shortlist is judged by an independent panel of experts who have been selected from around the world to provide an impartial assessment on the technical merit of the shortlisted papers. The T.I.C. acts as secretariat to the Ekeberg Prize but is not involved in the judging process.

In 2022 the T.I.C. was privileged to have on the panel (alphabetical by surname):

- **Dr Axel Hoppe**, Commerce Resources / consultant, Canada / Germany (Chair)
- **Professor Elizabeth Dickey**, Carnegie Mellon University, United States
- **Magnus Ericsson**, Luleå University of Technology, Sweden
- **Dr Nedal Nassar**, U.S. Geological Survey (USGS), United States
- **Professor Toru Okabe**, The University of Tokyo, Japan
- **Tomáš Zedníček** Ph.D., European Passive Components Institute (EPCI), Czech Republic

* Although the T.I.C. represents and supports both tantalum and niobium equally, the Ekeberg Prize will focus only on tantalum, but this is only because CBMM's Charles Hatchett Award (www.charles-hatchett.com) already does an excellent job of recognising niobium published research.

The 2022 winning publication

The 2022 Anders Gustaf Ekeberg Tantalum Prize ('Ekeberg Prize') was awarded to a US team, led by Professor Eric J. Schelter, for its paper "Tantalum, easy as Pi: understanding differences in metal–imido bonding towards improving Ta/Nb separations" published in Chemical Science, Royal Society of Chemistry (reprinted in the T.I.C. Bulletin number 189, published in October 2022 and available at www.TaNb.org).



(left to right): Dr Thibault Cheisson, Dr Subhajyoti Chaudhuri, Dr Patrick J. Carroll, Dr Michael R. Gau, Dr Ekaterina Lapsheva, Dr Pragati Pandey, Prof. Eric J. Schelter, Dr Alexander B. Weberg, Prof. George C. Schatz, Mr Christian Uruburo (Photos: by subjects)

The judges' verdict

Announcing the winner Dr Axel Hoppe stated 'The increased use of Ta will draw increased scrutiny towards the process used for its recovery from primary ores, including the utilization of large quantities of highly toxic and corrosive hydrofluoric acid at elevated temperatures. Weberg et al. describe a novel fluoride-free technique for the separation of Ta/Nb. Unlike previous works that were predominantly empirically focused, the work by Weberg et al. provides a more fundamental understanding of the differences in bonding interaction for Ta versus Nb. Although this proof-of-concept is not yet suitable for an industrial setting, it provides key insights that will be necessary for the development of any commercial fluoride-free Ta/Nb separation process.

There had been not too many new ways in separating Ta from Nb apart from either the Marignac Process or the Fluoride route. As such the paper offers an interesting new way.'

The winning team

On receiving the Ekeberg Prize, Professor Eric J. Schelter said, "We are honoured and excited that the publication was chosen for the award". The T.I.C. wishes to congratulate all entrants whose papers are challenging the boundaries of current knowledge of tantalum, and which may well lead to significant breakthroughs into exciting new applications of the element.

The authors of the winning paper are Alexander B. Weberg,^a Subhajyoti Chaudhuri,^b Thibault Cheisson,^a Christian Uruburo,^a Ekaterina Lapsheva,^a Pragati Pandey,^a Michael R. Gau,^a Patrick J. Carroll,^a George C. Schatz^b and Eric J. Schelter^a

^aP. Roy and Diana T. Vagelos Laboratories, Department of Chemistry, University of Pennsylvania, 231 S. 34th St., Philadelphia, PA, 19104, USA.
E-mail: schelter@sas.upenn.edu

^bDepartment of Chemistry, Northwestern University, 2145 Sheridan Rd., Evanston, IL, 60208, USA. E-mail: g-schatz@northwestern.edu

General Assemblies and Symposia

<i>General Assembly Symposium</i>	<i>Month and year</i>	<i>City and country</i>
1st	March 1974	Brussels, Belgium
2nd	September 1974	Brussels, Belgium
3rd	March 1975	Brussels, Belgium
4th	September 1975	Brussels, Belgium
5th	March 1976	Brussels, Belgium
6th	October 1976	Brussels, Belgium
7th	May 1977	Winnipeg, MB, Canada
8th	October 1977	Brussels, Belgium
9th 1st	May 1978	Nürnberg, West Germany
10th	October 1978	Brussels, Belgium
11th	May 1979	Perth, WA, Australia
12th	October 1979	Brussels, Belgium
13th	May 1980	Torquay, United Kingdom
14th	October 1980	Brussels, Belgium
15th	May 1981	Goslar / Bad Harzburg, West Germany
16th	October 1981	Brussels, Belgium
17th	June 1982	Tulsa, OK, United States
18th	October 1982	Brussels, Belgium
19th	May 1983	Penang, Malaysia
20th	November 1983	Brussels, Belgium
21st	June 1984	Stockholm, Sweden
22nd	October 1984	Brussels, Belgium
23rd	June 1985	Boston, MA, United States
24th	October 1985	Brussels, Belgium
25th	May 1986	Kobe, Japan
26th	October 1986	Brussels, Belgium
27th	June 1987	Rio de Janeiro, Brazil
28th	October 1987	Brussels, Belgium
29th 2nd	November 1988	Orlando, FL, United States
30th	October 1989	Frankfurt, Germany
31st	November 1990	Perth, WA, Australia
32nd	October 1991	Philadelphia, PA, United States
33rd	November 1992	Phuket, Thailand
34th	October 1993	Vienna, Austria
35th	October 1994	Aizu-Wakamatsu, Japan
36th 3rd	September 1995	Goslar, Germany
37th	October 1996	Greenville, SC, United States
38th	October 1997	Xian, Shaanxi, China
39th	October 1998	Prague, Czech Republic
40th	October 1999	Perth, WA, Australia
41st 4th	October 2000	San Francisco, CA, United States
42nd	October 2001	Rio de Janeiro, Brazil

43rd	October 2002	Kyoto, Japan
44th	October 2003	Lisbon, Portugal
45th	October 2004	Philadelphia, PA, United States
46th 5th	October 2005	Pattaya, Thailand
47th	October 2006	Innsbruck, Austria
48th	October 2007	Rio de Janeiro, Brazil
49th	October 2008	Shanghai, China
50th	October 2009	Tallinn, Estonia
51st	October 2010	Lake Tahoe, NV, United States
52nd	October 2011	Almaty, Kazakhstan
53rd 6th	October 2012	Cape Town, South Africa
54th	October 2013	York, United Kingdom
55th	October 2014	New York, NY, United States
56th	October 2015	Penang, Malaysia
57th	October 2016	Toulouse, France
58th 7th	October 2017	Vancouver, BC, Canada
59th	October 2018	Kigali, Rwanda
60th	October 2019	Hong Kong SAR, China
61st	October 2020	online
62nd	November 2021	London, UK
63rd	October 2022	Geneva, Switzerland



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If you are interested in learning more about this project visit <https://h2020-tarantula.eu/> or to register your interest contact the T.I.C. at info@tanb.org.

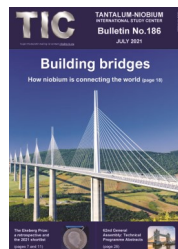


The TARANTULA project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon 2020 under Grant Agreement No 821159.

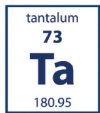
Join our mailing list to receive the Bulletin by email, free each quarter

Our mission with the Bulletin is to provide the global tantalum and niobium community with news, information and updates on our work. We hope you enjoy reading it! Recipients will also receive messages about the T.I.C. and our General Assemblies. Email info@tanb.org to join our mailing list and keep up to date with the T.I.C.

The full archive of Bulletins, including Bulletin Reviews, is available at TaNb.org.

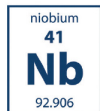


Tantalum and Niobium Suppliers for the Capacitor Electronics, Sputtering Target & Super Alloy Industries Worldwide



Tantalum Products Supplied:

- Tantalum Electron Beam Ingot, Tantalum Vacuum Arc Ingot
- Tantalum Electron Beam Chips, Tantalum Powder
- Tantalum Wire, Tantalum Furnace Parts, Tantalum Strip
- Tantalum Foil, Tantalum Plates – Blanks



Niobium products supplied:

- Niobium Electron Beam Ingot, Niobium Vacuum Arc Ingot
- Niobium Electron Beam Chips, Niobium Plate, Niobium Wire
- Niobium Oxide, Niobium Strip, Niobium Foil

Industries Served:

- Consumer Electronics
- Military Electronics
- Automotive Electronics
- Vacuum Melting
- Sputtering Target
- Deep Drawing
- Medical

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A&R Merchants Inc.
Tantalum & Niobium

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Speakers' Biographies

Biographies are of the lead author of presentations and panellists (alphabetical by surname)

Dr Henry Begg, TWI Ltd



Panellist: Future markets and their evolving material requirements

Having completed a PhD in Materials Science at the University of Oxford, Henry joined TWI as a Project Leader in 2013 within the coatings team. He has led a wide variety of projects on behalf of TWI's industrial members looking into different coatings and surface engineering applications, with a specific focus on cold spray technology. Henry currently leads a team of ~20 scientists, engineers and technicians who undertake industrially-led R&D into coatings and corrosion control

technologies. TWI has previously explored a variety of coating techniques to process tantalum and cold spray in particular has exhibited some excellent potential for both coatings and additive manufacture.

Josephine Carlsson, Church Investors Group



Accelerating impact – the role of the tantalum industry in tackling ASM Child Labour

Josephine is the Secretary for the Church Investors Group, which is a membership organisation representing 65 investors with combined assets under management of £29 billion. Members represent all major Christian denominations, are predominantly based in the UK and Ireland, but also include member organisations in Germany, Norway, France and New Zealand. Since its inception as a network over 10 years ago, Church Group has been leading on initiatives to promote ethical business practices around ESG. It has successfully engaged with businesses and policymakers around issues like Modern Slavery and the Living Wage.

Josephine's personal background involves 12 years as a CEO for an international development NGO, directly involved in programmes in low-income countries in Sub-Saharan Africa, extensive work to evaluate Child Rights programs and journalistic work based in South Africa and Central America with a focus on Human Rights.

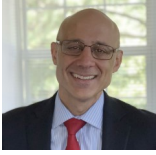
Mike Curtis-Rouse, Satellite Applications Catapult



Panellist: Future markets and their evolving material requirements

Mike is Head of Access for Space for the Satellite Applications Catapult. Mike leads a multi-disciplinary team of engineers, technologists and analysts with mission heritage in spacecraft, launch and operations combined with expertise from automotive, manufacturing and the maritime sectors. The ambition is to ensure that the UK sits in the vanguard of this new era, being competitive in technologies including propulsion development and testing, In-Orbit Servicing and Manufacturing (IOSM), devolved operation centres, space situational awareness, and solar energy from space. He works with many launch vehicle companies across the world and is heavily involved in the UK's launch and spaceport programme. In addition to his Catapult role, he is an advisor for several space companies, a NED for Spacestore Ltd, and a CTO for two disruptive technology companies. Prior to Catapult, Mike worked for Reaction Engines Ltd, the European Space Agency, Rutherford Appleton Laboratory and CERN.

Renzo DeMeo, RCD Strategic Advisors



Structural changes in the electronics supply chain

Renzo has collaborated with companies throughout the electronics supply chain for the past 22 years. From material suppliers to device and equipment makers, Renzo has advised clients on the commercial impact of new technologies and emerging markets within the electronics industry. Projects have spanned across a variety of sectors, from consumer-related markets to the defense businesses. Renzo has experience in several technology sectors including semiconductors, passives, interconnects, and MEMs devices. He has developed subject matter expertise in several areas including: RF, machine learning, and power electronics.

Dr Yuri Freeman, KEMET Yageo



Recent breakthroughs in tantalum capacitors - introduction to the second edition of the Springer book on tantalum and niobium-based capacitors

Yuri, winner of the 2018 Ekeberg Prize, is Fellow/VP in the Tantalum Business Unit at KEMET Yageo. As an adjunct professor, Yuri is also teaching Electronic Components at Clemson University. In 2017 Springer International published Yuri's book "Tantalum and Niobium-based Capacitors: Science, Technology, and Applications" based on his numerous papers and patents. In 2022 Springer published a second expanded edition of the book that includes recent breakthroughs in performance and reliability of tantalum capacitors.

Adria Gallifa Terricabras, CERN, European Organization for Nuclear Research



Present and future applications of Nb and Ta for the CERN accelerator complex & Panellist: Future markets and their evolving material requirements

Adria is a mechanical and materials engineer working in the Mechanical and Materials Engineering Group (EN-MME) of the CERN Engineering Department. He is responsible for the materials testing and consulting for the 'Crab Cavity project', which intends to manufacture ultra-high purity niobium SRF cavities that will be installed in the upgraded version of the world's largest particle accelerator, The Large Hadron Collider (LHC). He has transverse knowledge and hands-on experience in material characterization including mechanical testing at room and cryogenic temperature, optical and electronic microscopy, digital image correlation and image analysis. Before CERN he had worked in the automotive sector, at Delphi Technologies and Robert Bosch GmbH.

Quintin Lake, Fifty Eight



Accelerating impact – the role of the tantalum industry in tackling ASM Child Labour

Quintin is co-founder of Fifty Eight, which brings together research and technology solutions to improve working conditions and address the challenges of modern slavery in global supply chains. Their overarching aim is to ensure good work for people, free from exploitation. Examples of their current work include the Just Good Work platform which aims to create better pathways to employment for migrant workers, and leading the supply chain focus of the PACE partnership to identify effective approaches to prevent and reduce the worst forms of child labour in fragile contexts. Quintin founded and ran a leading New Zealand data solutions and IT provider, consulting widely with companies and governments on modern slavery and ethical supply chains.

Michael Meier, Orano Nuclear Packages and Services – Orano NPS



The management of Class 7 maritime transportation

Michael has over 16 years of experience in Class 7 international freight forwarding activities for ORANO NPS, technical management (international safety and physical protection regulations), management of regulatory deviations / transport dysfunctions and international logistic scheme for radioactive and nuclear shipments. He supports business developments around the world for Class 7 by developing all new logistic schemes for Class 7 flows. Since 2011, he has been in charge of the management of the CMA CGM partnership and has considerable experience of maritime transport, managing +/-1500 Class 7 containers loaded on vessels and opening ports for Class 7. He regularly meets with port authorities and other key stakeholders.

Gerard Nayuburundi, ICGLR Secretariat



ICGLR Regional Certification Manual (RCM) introduces a new status for mine sites and exporters – the “blue status”

Gerard is the Regional Coordinator of the Natural Resources Unit at the International Conference on the Great Lakes Region, the ICGLR, where he leads the role of the ICGLR Secretariat, providing its Member States with technical and advisory support for the implementation of the Natural Resources Regional Initiative and monitoring the implementation of the Initiative. He has proven experience working in both the public and private sectors. Gerard is skilled in project design, planning, management, and monitoring/evaluation with a strong research capacity. He has a Master of Science in Physical Land Resources from Ghent University, Belgium, majoring in Soil Science and specializing in Land Evaluation and Management.

Dr Abraham Padilla, United States Geological Survey



Dynamic material flow analysis of tantalum in the United States between 2002 and 2020

Abraham is a Minerals Intelligence Analyst with the United States Geological Survey (USGS). In his work, he uses a variety of quantitative frameworks such as geospatial analysis (GIS) and material flow analysis (MFA) to better understand the global supply chains and flows of non-fuel mineral commodities that are critical for society, the economy, and national defense.

Recently, he also served as a USGS Mineral Commodity Specialist with focus on analyzing the niobium and tantalum mineral industries, including global production, international trade, domestic (United States) consumption, as well as important trends, events, and legislation that affected the supply and demand of niobium and tantalum materials and their derivative products.

Prof. Eric Schelter, University of Pennsylvania and Director of the Center for Sustainable Separations of Metals

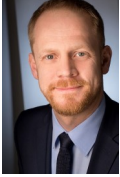


Winner of the 2022 Ekeberg Prize. Tantalum, easy as Pi: understanding differences in metal- imido bonding towards improving Ta/Nb separations

Eric is a Professor of Chemistry at the University of Pennsylvania and Director of the Center for Sustainable Separations of Metals, a U.S. National Science Foundation Center for Chemical Innovation. He obtained his PhD degree in 2004 from Texas A&M University under the direction of Prof. Kim R. Dunbar. Subsequently, he conducted postdoctoral research at Los Alamos National Laboratory as a Frederick Reines Postdoctoral Fellow in Experimental Sciences with Drs Jaqueline Kiplinger,

Kevin John and Joe Thompson. His research interests include synthetic lanthanide and actinide coordination- and organometallic chemistry and sustainable separations chemistry for critical metals. He has received the Harry Gray Award for Creative Work in Inorganic Chemistry by a Young Investigator from the American Chemical Society (2016), the U.S. EPA Green Chemistry Challenge Award (2017), and the Inorganic Chemistry Lectureship Award (2020).

Florian Spielmann, TAM International LP



Transporting radioactive materials in an increasingly challenging global supply chain

Florian is Director European Operations at TAM International. TAM International provides comprehensive, door-to-door global transportation services especially for radioactive materials. He has over 14 years of experience in the transportation and packaging of radioactive materials, particularly uranium hexafluoride (UF₆). He is a subject matter expert in dangerous goods transport regulations and is certified as a dangerous goods safety advisor for road (ADR), rail (RID) and sea (IMDG). In his previous position, he was WNTI HEXT Chair and industry representative in the IAEA TRANSSC WG.

Dr Michael Stawovy, H.C. Starck Solutions



Characterization of pure tantalum manufactured using Laser Powder Bed Fusion (L-PBF)

Mike is a Director of Research & Development with H.C. Starck Solutions located in Euclid, Ohio, USA. He has been with H.C. Solutions for 15 years and has over 25 years of industrial experience in development of refractory metals. He has his PhD degree in Materials Science and Engineering from Virginia Tech University. He currently leads a team of researchers focused on developing refractory metal solutions for customers in aerospace, medical, defense and industrial markets.

For the last 7 years his team has been active in researching additive manufacturing of refractory metals.

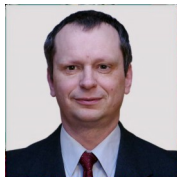
Dr Lourdes Yurramendi, TECNALIA Basque Research & Technology Alliance (BRTA)



Novel technologies for the recovery of tantalum and niobium from tin mining streams

Lourdes is a PhD Chemist from the University of the Basque Country (Spain). She develops her professional activity in the Waste Valorisation Department of TECNALIA as head of projects since 1988. She was responsible for the Organic Environmental Laboratory for ten years. She has large experience in the management of projects related to environmental contamination diagnosis, in the development of technologies for waste treatment and the environmental methodologies impact in the reutilization of wastes as secondary raw materials. During recent years she has been involved in several European projects, in some of them as coordinator, focused on the recovery of strategic and critical elements, by hydro-, iono- and pyrometallurgical technologies.

Dr Tomas Zednicek, EPCI European Passive Components Institute



The next decade capacitor requirements

& Panellist: Future markets and their evolving material requirements

Tomas is author of more than 70 technical papers and 1 US/international patent on capacitors. He has received 4 outstanding/best technical paper awards at passive component conferences and the 2005 Dr Zandman award for a great contribution to the passive components industry. He received his PhD in tantalum capacitors in 2000 and has over 21 years' experience in tantalum capacitors in technical marketing positions. Since 2015, he is president and owner of EPCI, the European Passive Components Institute.

Save the dates



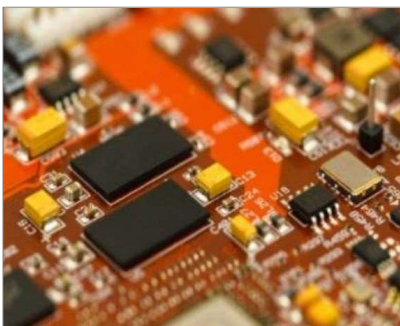
T.I.C.'s 64th General Assembly

(conference and AGM) will take place in

Rio de Janeiro

Brazil, September 10th to 13th 2023

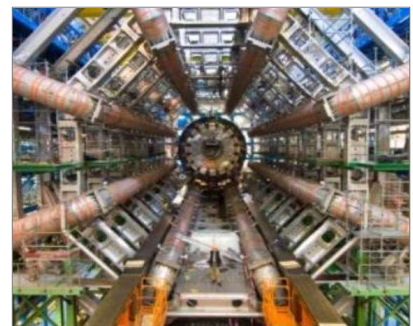
Full details will be published on www.TaNb.org and in the Bulletin quarterly journal in due course.



Capacitors



Superalloys



Superconductors

If you are interested in making a presentation at the T.I.C.'s 64th General Assembly in September 2023 please contact info@tanb.org by March 31st 2023.

Directory of Members

Status October 1st 2022

A&R Merchants

Address: 2101 NW 93rd Avenue, Doral FL 33172, United States
Email: ronald.gilerman@armerchants.com
Website: www.armerchants.com
Activity: Recycling, Trading

Advanced Material Japan Corp.

Address: Sanno park Tower 12F, 2-11-1 Nagata-cho, Chiyoda-ku, Tokyo 100-6112, Japan
Email: dkawamata@amjc.co.jp
Website: www.amjc.co.jp/en
Activity: Trading

Advanced Metallurgical Group N.V. (AMG)

Address: Building 200, 435 Devon Park Drive, Wayne, PA 19087, United States
Email: fcosta@amg-br.com
Website: www.amg-nv.com
Activity: Mining, Processing

Alfred H. Knight International Ltd

Address: Pegasus House, Kings Business Park, Prescot, Knowsley, L34 1PJ, United Kingdom
Email: paul.chew@ahkgroup.com
Website: www.ahkgroup.com
Activity: Assaying

Argus Media Ltd

Address: Lacon House, 84 Theobald's Road, London WC1X 8NL, United Kingdom
Email: london@argusmedia.com
Website: www.argusmedia.com
Activity: Research and Consultancy

AS International Corporation Ltd

Address: Unit 2b, Olympic Way, Sefton Business Park, Liverpool L30 1RD, United Kingdom
Email: Secretary@alexstewartinternational.com
Website: www.alexstewartinternational.com
Activity: Analytical, sampling and inspection services

Australian Strategic Materials Ltd

Address: Level 4, 66 Kings Park Road, West Perth, WA 6005, Australia
Email: Marketing@asm-au.com
Website: www.asm-au.com
Activity: Nb Mining, Processing

Auxico Resources Canada Inc.

Address: 201 Notre Dame West, Suite 500, Montreal QC, H2Y 1T4, Canada
Email: christoph.ebeling@covemin.com
Website: www.auxicoresources.com
Activity: Mining

B.W. Minerals (s) Pte Ltd

Address: 50 Raffles Place, Level 30, Singapore Land Tower, Singapore 048623, Singapore
Email: bwminerals@bwm.com.sg
Website: www.hhezhong.com
Activity: Trading

CBMM

Address: Avenida das Nações Unidas, 12.901, 23º andar, Torre Oeste, Brooklin Novo, São Paulo, 04578-910, Brazil
Email: yuri.miranda@cbmm.com
Website: www.cbmm.com
Activity: Nb Mining, Processing

Central America Nickel Inc.

Address: 201 Notre Dame West, Suite 500, Montreal QC, H2Y 1T4, Canada
Email: christian.falk@covemin.com
Website: www.centralamericanickeluaex.com
Activity: Mining

Chee Ng Minerals Sdn Bhd

Address: 22½ Mile Stone, Ipoh-Kampar Road, 31900 Kampar, Perak, Malaysia
Email: cheengminerals@gmail.com
Website: n/a
Activity: Processing

Chemaf Resources Limited

Address: 30th Floor, Almas Tower, Jumeirah Lake Towers, P.O. Box 340575, Dubai, United Arab Emirates
Email: uday.shetty@chemaf.com
Website: www.chemaf.com
Activity: Mining

Chemaf SA

Address: 144 Avenue Usoké, C/Kampemba, Lubumbashi, Democratic Republic of Congo
Email: shiraz@chemaf.com
Website: www.chemaf.com
Activity: Mining

D Block Metals LLC

Address: 1111 Jenkins Road, Gastonia, NC 29052, United States
Email: craig@dblockmetals.com
Website: www.dblockmetals.com
Activity: Recycling

Duoluoshan Sapphire Rare Metal Co. Ltd of Zhaoqing

Address: No. 83, South of Sihui Avenue, Sihui City, Guangdong, 526200, China

Email: dlsnsy@aliyun.com, dls_purchase@163.com

Website: www.zqdls.com

Activity: Processing

EcoWhite Trading Ltda

Address: Rua Barretos 1191, Vila Elisa, Ribeirão Preto, SP 14075-000, Brazil

Email: gerencia@ecowhite.com.br

Website: www.ecowhite.com.br/en

Activity: Mining, Processing, Recycling

Exotech, Inc.

Address: 1851 Blount Road, Pompano Beach, FL 33069, United States

Email: exotech@exotech.com

Website: www.exotech.com

Activity: Recycling

F&X Electro-Materials Ltd

Address: Yaxi Industrial Development Zone, Xinhui City, Guangdong 529152, China

Email: xyz@uil.com.hk

Website: www.fxelectro.com

Activity: Processing

FIR Metals & Resource Ltd

Address: Jiulong Industrial Zone, Yanling, Zhuzhou, Hunan 412500, China

Email: tang396919@hotmail.com

Website: en.chinatanb.com

Activity: Processing

Globe Metals & Mining Ltd

Address: Unit 1, 26 Elliott Street, Midvale, WA 6056, Australia

Email: gh@globemm.com

Website: www.globemm.com

Activity: Nb Mining

Guangdong Rising Rare Metals-EO Materials Ltd

Address: 2 Kaifa Avenue, South District, Qingyuan Huaqiao Industrial Park, Yingde, Guangdong Province, 511500, China

Email: zh_ctns@126.com

Website: www.gsxc723.com

Activity: Processing

Halcyon Inc.

Address: Mazaya Business Avenue AA1, Level 41, Jumeirah Lake Towers Embankment, P.O. Box 214745, Dubai, United Arab Emirates

Email: admin@halcyonmetals.com

Website: www.halcyonmetals.com

Activity: Trading

ICD Alloys & Metals

Address: 3946 Westpoint Blvd., Winston Salem, NC 27103, United States

Email: steve@icdalloys.com

Website: www.icdalloys.com

Activity: Processing

Imerys Ceramics France

Address: 43 Quai de Grenelle, 75015 Paris, France

Email: shivendra.agrawal@imerys.com

Website: www.imerys.com

Activity: Nb Mining, Ta Mining

International Conference on the Great Lakes Region (ICGLR)

Address: Boulevard du Japon 38, B.P. 7076, Bujumbura, Burundi

Email: secretariat@icglr.org

Website: www.icglr.org

Activity: Associate Member/Trade association

Associate

Jiangxi Tuo Hong New Material Co., Ltd

Address: No.3 Chunyi Road, Economic Development Zone, Yichun, Jiangxi 336000, China

Email: jxthxc@sina.com

Website: www.jxthxc.com

Activity: Processing

Jiujiang Fuxing Tai Trade Co. Ltd

Address: Room 1002, building A, North Area, Lu Feng Xiao Qu, Jiujiang, Jiangxi 332000, China

Email: jiujiangfuxingtai@vip.163.com

Website: www.jjfx.cn

Activity: Trading

Jiujiang Jinxin Non-ferrous Metals Co. Ltd

Address: No. 3 Industrial Zone, Xunyang District, Jiujiang City, Jiangxi Province, China

Email: janny@jiujiangjx.com

Website: www.jiujiangjx.com

Activity: Processing

Jiujiang Tanbre Co., Ltd

Address: No. 62 Jiuhu Road, Jiujiang City, Jiangxi Province 332014, China

Email: import@jitanbre.com.cn

Website: www.jitanbre.com.cn/english

Activity: Processing

Jiujiang Zhongao Tantalum & Niobium Co. Ltd

Address: 801 East Binjiang Road, Jiujiang City, Jiangxi Province, China

Email: tonyzatanb@qq.com

Website: www.zatanb.com

Activity: Processing

KEMET Electronics Corp.

Address: KEMET Tower, 1 East Broward Blvd, 2nd floor, Fort Lauderdale, FL 33301, United States

Email: Kemet.communications@yageo.com

Website: www.kemet.com

Activity: Capacitor Manufacture, Processing

Krome Commodities Limited

Address: 23 Ashburton Avenue, Ilford, Essex IG3 9ET, United Kingdom

Email: psmony48@gmail.com

Website: www.kromecommodities.com

Activity: Trading

Malaysia Smelting Corporation

Address: 27 Jalan Pantai, 12000 Butterworth, Malaysia

Email: msc@msmelt.com

Website: www.msmelt.com

Activity: Tin Smelting

Materion Newton Inc.

Address: 45 Industrial Place, Newton, MA 02461, United States

Email: joseph.sheehan@materion.com

Website: www.materion.com

Activity: Secondary Processing

MERSEN Deutschland Linsengericht GmbH

Address: Lagerhausstrasse 7-9, 63589 Linsengericht, Germany

Email: tobias.schnurpfeil@mersen.com

Website: www.mersen.com

Activity: Design and manufacture of Ta components and equipment

Metal Do Co. Ltd

Address: ONTEX Namba Bld. 11F, 2-2-45, Minatomachi, Naniwa-ku, Osaka 556-0017, Japan

Email: metaldo@raremetal.co.jp

Website: www.raremetal.co.jp/en

Activity: Trading

Metalink International Co. Ltd

Address: Metalink Building, 8 East Jinxin Road, Jiangjun Avenue, Jiangning Economic Development Area, Nanjing, 211153, China

Email: mabuyang@metalink.com.cn

Website: www.metalink.com.cn/en

Activity: Ore processing, Pure metals refining, Master alloys, Special alloys, Recycling

Metallurgical Products India Pvt. Ltd

Address: T-27, MIDC Industrial Area – Talaja, District Raigad, Maharashtra 410208, India

Email: vkumar@mpil.co.in

Website: www.mpil.co.in

Activity: Processing

Metherma KG

Address: Arnheimerstrasse 109, 40489 Düsseldorf, Germany
Email: molybdenum@metherma.de
Website: www.metherma.de
Activity: Recycling, Trading

Mines, Minerals, Metals & Markets Ltd

Address: 229 Dartmouth Road, Paignton, Devon, TQ4 6LG, United Kingdom
Email: w.millman@minesmineralsmetalsmarkets.com
Website: n/a
Activity: Due diligence consultancy

Mining Minerals Resources Sarl

Address: 588 Route de Kipushi, Commune Annexe, Lubumbashi, Democratic Republic of Congo
Email: geoffrey@somika.com
Website: n/a
Activity: Mining

Minor Metals Trade Association (MMTA)

Address: 3-4 Bower Terrace, Tonbridge Road, Maidstone, Kent ME16 8RY, United Kingdom
Email: freya@mmta.co.uk
Website: www.mmta.co.uk
Activity: Associate Member/Trade association

Associate

MinTerra FZE

Address: P2-ELOB Office No. E-30F-11, Hamriyah Free Zone, P.O. BOX No. 50678, Sharjah, United Arab Emirates
Email: trading@minterra.ae
Website: www.minterra.ae
Activity: Trading

Mitsui Mining & Smelting Co. Ltd

Address: Gate City Ohsaki West Tower, 19th floor, 1-11-1 Osaki, Shinagawa-ku, Tokyo, 141-8584, Japan
Email: sakada@mitsui-kinzoku.com
Website: www.mitsui-kinzoku.com/en
Activity: Processing

MTALX Ltd

Address: 166 Hampstead Way, London NW11 7YE, United Kingdom
Email: candida@mtalx.com
Website: www.mtalx.com
Activity: Trading

MTU Aero Engines AG

Address: Dachauerstrasse 665, 80995 München, Germany
Email: Dominik.PITZ@mtu.de
Website: www.mtu.de/en
Activity: Aerospace Alloys, User

Ningxia Orient Tantalum Industry Co., Ltd

Address: 119 Yejin Road, Dawukou District, Shizuishan City, Ningxia 753000, China

Email: jiangb_nniec@otic.com.cn

Website: www.otic.com.cn

Activity: Processing

NPM Silmet OÜ

Address: Keskstr 2, 40231 Sillamäe, Estonia

Email: j.ignatova@neomaterials.com

Website: www.neomaterials.com

Activity: Processing

Orano Nuclear Packages and Services

Address: 1 rue des Hérons, 78180 Montigny-le-Bretonneux, France

Email: [lucie.de-araujo@orano.group](mailto: lucie.de-araujo@orano.group)

Website: www.orano.group/en/nuclear-expertise/comprehensive-range-of-services/transporting-and-storing-nuclear-material

Activity: Transport

Pilbara Minerals Limited

Address: Level 2, 146 Colin Street, West Perth, WA 6005, Australia

Email: [agray@pilbaraminerals.com.au](mailto: agray@pilbaraminerals.com.au)

Website: www.pilbaraminerals.com.au

Activity: Ta Mining

Plansee SE

Address: Metallwerk-Plansee-Str. 71, 6600 Reutte, Austria

Email: [Sandra.Horninger@plansee.com](mailto: Sandra.Horninger@plansee.com)

Website: www.plansee.com

Activity: Secondary Processing

RC Inspection Metals B.V.

Address: Gustoweg 66, 3029 AS Rotterdam, Netherlands

Email: [info@rc-inspection.com](mailto: info@rc-inspection.com)

Website: www.rc-inspection.com

Activity: Assaying

Refractory Metals Mining Co. Ltd

Address: West Wing, 2/F, 822 Lai Chi Kok Road, Cheung Sha Wan, Kowloon, Hong Kong

Email: [info@mmc.com.hk](mailto: info@mmc.com.hk)

Website: n/a

Activity: Mining, Trading

Resind Indústria e Comércio Ltda

Address: Rodovia 265 Km 264, Distrito Industrial, Caixa Postal 157, São João del Rei, MG 36315-000, Brazil

Email: [almirclemente@resind.com.br](mailto: almirclemente@resind.com.br)

Website: www.resind.com.br

Activity: Secondary Processing

Responsible Minerals Initiative (RMI)

Address: 1725 Duke St, Suite 300, Alexandria, VA 22314, United States
Email: mismirnova@responsiblebusiness.org
Website: www.responsiblemineralsinitiative.org
Activity: Associate Member/Trade association

Associate

RFH Recycling Metals Co. Ltd

Address: 1507 Huijie Plaza, NO.268 Zhongshan Road, Nanjing 210008, China
Email: liu_ming@rfh-metals.com
Website: www.rfh-metals.com
Activity: Processing

Roskill Information Services Ltd (transfer of membership to Wood Mackenzie requested at the 2022 AGM)

Address: 54 Russell Road, London SW19 1QL, United Kingdom
Email: Suzanne.shaw@woodmac.com
Website: www.woodmac.com
Activity: Research and Consultancy

Rwanda Mines, Petroleum and Gas Board (RMB)

Address: KN 4 Ave, Kigali, Rwanda
Email: yamina.karitanyi@rmb.gov.rw
Website: www.rmb.gov.rw
Activity: Associate Member/Trade association

Associate

Rwanda Mining Association (RMA)

Address: P.O. Box 1856, Kigali, Rwanda
Email: jeanmalic@yahoo.fr
Website: rma.org.rw
Activity: Associate Member/Trade association

Associate

SAMWOOD NEO Inc.

Address: 3F, No.3 Hayakawa Bldg, 2-2, Kandatacho, Chiyoda-ku, Tokyo, Japan
Email: satomi@sw-neo.com
Website: sw-neo.com
Activity: Recycling, Trading

Specialty Metals Resources Ltd

Address: Room 3602, China Resources Building, 26 Harbour Road, Wanchai, Hong Kong
Email: Ximena.Rodriguez@smr.hk
Website: www.smr.hk
Activity: Trading

Stapleford Minerals and Metals Limited

Address: Wayside, Stapleford Road, Stapleford Abbots, Romford, Essex RM4 1EJ, United Kingdom
Email: jim@staplefordtrading.co.uk
Website: www.staplefordminmet.co.uk
Activity: Trading

SXMINTEC

Address: 5th Floor Tien Chu Commercial Building, 173-174 Gloucester Road, Wanchai, Hong Kong

Email: george.song@sxmintec.com

Website: www.sxmintec.com

Activity: Trading

Taike Technology (Suzhou) Co. Ltd

Address: No. 20 Chengyang Road, Suzhou Xiangcheng Economic Development Area, Suzhou, Jiangsu 215131, China

Email: annali@taike-sz.com

Website: www.taike-sz.com/index-eng/product.asp?classid=125

Activity: Ta Processing

TAM International LP

Address: 1020-606 Spadina Cr. E, Saskatoon, SK S7K 3H1, Canada

Email: kevin.loyens@tamintl.ca

Website: tamintl.ca

Activity: NORM transportation, packaging, and handling

TANIOBIS GmbH

Address: Im Schleeke 78-91, 38642 Goslar, Germany

Email: silvana.fehling@taniobis.com

Website: www.taniobis.com

Activity: Processing

Tantec GmbH

Address: Tantalstraße 1-3, 63571 Gelnhäusen, Germany

Email: g.raab@tantec-group.com

Website: www.tantec-group.com

Activity: Design and manufacture of Ta components and equipment

Telex Metals LLC

Address: 105 Phyllis Drive, Croydon, PA 19021, United States

Email: info@telexmetals.com

Website: www.telexmetals.com

Activity: Recycling

Thailand Smelting & Refining Co. Ltd

Address: 80 Moo 8, Sakdidej Road, Tambol Vichit, Amphur Muang, Phuket 83000, Thailand

Email: sales@thaisarco.com

Website: www.thaisarco.com

Activity: Tin Smelting, high purity refining, powders, granules, shapes and solder production

Traxys

Address: Route d'Arlon 19-21, 8009 Strassen, Luxembourg

Email: loannis.Kallinikos@traxys.com

Website: www.traxys.com

Activity: Trading

Treibacher Industrie AG

Address: Division Hard Metals and Energy Storage, Auer von Welsbachstr. 1, 9330 Treibach-Althofen, Austria
Email: ulf.stromberger@treibacher.com
Website: www.treibacher.com
Activity: Hardmaterials like Carbides, Nitrides, Carbonitrides and Borides

Ulba Metallurgical Plant JSC

Address: 102 Abay Avenue, 070005 Ust-Kamenogorsk, Republic of Kazakhstan
Email: marketing_ta@ulba.kz
Website: www.ulba.kz/en
Activity: Processing

United Spectrometer Technologies Pty LTD

Address: 26 Carbernet Street, Saxenburg Park 1, Blackheath, Cape Town, 7580, South Africa
Email: info@ustech.co.za
Website: www.us-tech.co.za
Activity: Supply of equipment for analysis

Vishay

Address: New Industrial Park, P.O. Box 87, Dimona 86100, Israel
Email: Efi.BenBaruch@vishay.com
Website: www.vishay.com
Activity: Capacitor Manufacture

Ximei Resources Holding Ltd

Address: Qiaotou Town, Yingde City, Guangdong Province, 513055, China
Email: market@ximeigroup.com
Website: hk.ximeigroup.com
Activity: Processing

Yanling Jincheng Tantalum & Niobium Co., Ltd

Address: SME Pioneer Park, Yanling, Zhuzhou, Hunan 412500, China
Email: ireneguan@jinchengtn.com
Website: www.jinchengtn.com
Activity: Processing

Yano Metals Co. Ltd

Address: Tokyo office: 1-19-11, Dogenzaka, Shibuya-ku, Tokyo, 150-0043, Japan
Email: m_abe@yanokinzoku.co.jp
Website: www.yanokinzoku.co.jp/en/index.html
Activity: Recycling, Trading

Zhuzhou Cemented Carbide Works Imp. and Exp. Co.

Address: Diamond Road, Zhuzhou, Hunan 412000, China
Email: zccc@chinacarbide.com
Website: www.chinacarbide.com
Activity: Carbides

Antitrust Compliance Policy

This policy was adopted by the T.I.C. at the 57th General Assembly held on October 17th 2016.

Purpose, Scope and Implementation: The T.I.C. is fully committed to ensuring that all of its activities are carried out in full compliance with all applicable antitrust legislation. Failure to comply with this Policy may result in the association and/or its members violating antitrust legislation and being subject to the imposition of substantial fines or even criminal penalties for individuals.

All T.I.C. employees, consultants and their elected representatives are under an obligation to conduct all business dealings in accordance with any applicable antitrust legislation. The T.I.C. employees, consultants and elected representatives must sign a written undertaking to the effect that they have read and understood the Policy and that they agree to adhere to that Policy in the conduct of their business activities.

Members are to ensure that any of their employees involved in T.I.C. activities and all those carrying out activities within the association on behalf of members are fully informed about the T.I.C.'s Policy. Applicant members will be asked to sign a statement to the effect that they have read and understood the T.I.C.'s Policy and that they will adhere to that Policy if admitted.

T.I.C. activities. Information concerning the Policy is available on the T.I.C.'s web site. All meeting agendas will be sent in advance of the meeting, and they will contain a statement to the following effect: "This meeting will be conducted in full compliance with the T.I.C.'s Antitrust Compliance Policy". All chairpersons will be required to remind group members of the contents of the T.I.C.'s Policy on a regular basis. Minutes of the meetings will be distributed to the participants within a reasonable time after the meetings.

Escalation of concerns. All employees, consultants and members and their representatives are required to report any possible breaches of the Policy. Generally, all actual or potential breaches should immediately be reported to T.I.C.'s legal counsel.

The contact information is as follows:

Jones Day, Att. Luc Houben,
4 Rue de la Régence, 1000 Brussels, Belgium
lhouben@jonesday.com
phone: +32 2 645 14 11
<https://www.jonesday.com/brussels/>.

For further information regarding the basic concepts of antitrust law, including cartel agreements, and types of anti-competitive agreements such as price-fixing, market sharing, quantity-fixing and information exchange, please visit the T.I.C. website at <https://www.tanb.org/view/antitrust-compliance-policy>.

Applying for T.I.C. membership

Who can apply?

Any organisation involved in the tantalum and/or niobium industries may apply for membership. The T.I.C. is composed of companies from the entire niobium and tantalum supply chains, from explorers to miners, traders and processors, through to end users and suppliers of goods and services to the industry.

How much are the annual membership fees?

Annual membership fees for the year 2022/23 are EUR 2750 for corporate members and EUR 500 for associate members, representing excellent value for money.

Corporate or associate membership?

Corporate members are commercially involved in the tantalum and/or niobium industries. They are voting members and make up the majority of the membership.

Associate membership is reserved for non-commercial organisations such as governments, civil society groups and academia. The Executive Committee has the final decision concerning which category is applicable to applicant organisations.

How to apply?

Applications for membership are considered at the annual general meeting held each September / October and should be submitted at least one month beforehand.

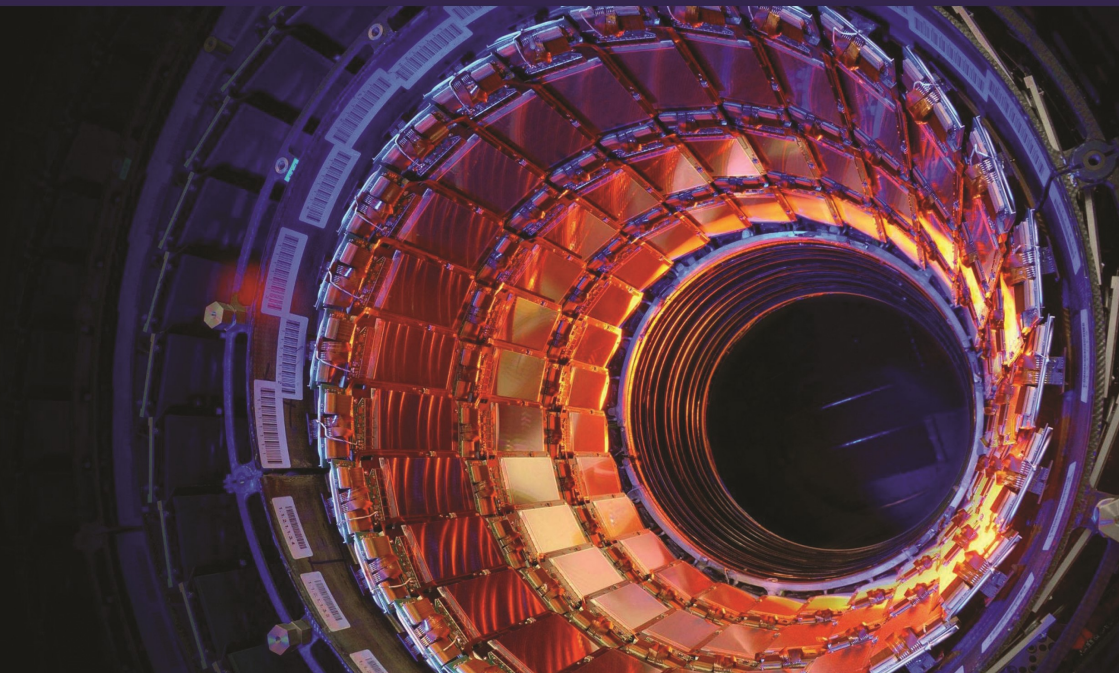
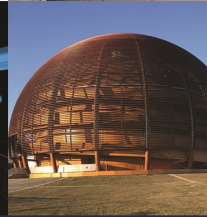
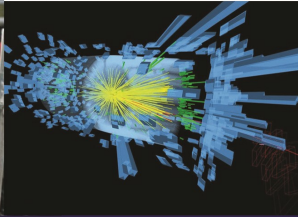
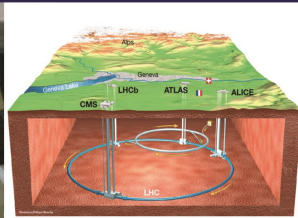
To apply, an organisation needs to:

- Complete the application form at <https://www.tanb.org/view/join-today> or from info@tanb.org.
- Provide a brief description of its activities in tantalum and/or niobium.
- Confirm that it has read and understood the T.I.C.'s current policies*.
- Corporate applicants need the support of two existing corporate members.
- The Executive Committee considers all applications and those that are accepted as valid are invoiced for seven months' membership fee. Full payment is required at least one week before the General Assembly.
- All valid applications for membership are discussed and voted on by the existing members at the annual general meeting via an anonymous vote by ballot paper. Applicants may not be present at the meeting during membership discussions and voting.
- Successful applicants are considered to be a member of the T.I.C. for the year during which they were accepted. Regardless of the voting outcome, applicants are free to attend the technical conference that follows the members' general meeting.

If you are interested in joining the T.I.C. please contact emma.wickens@tanb.org.

*In October 2022, these are the Artisanal and Small-scale Mining Code of Conduct, Transport Policy, Data Protection Policy and Antitrust Compliance Policy. All four are available at www.TaNb.org.

FIELD TRIP TO



Benefits of T.I.C. Membership

The T.I.C. undertakes a wide range of activities in support of its members' interests. The benefits of corporate membership include*:

Information services for members

- Monthly updates giving news and information about our industries.
- Quarterly niobium and tantalum statistics reports.
- The Bulletin, our printed newsletter packed with technical papers and news.
- Digital archives of tantalum and niobium technical papers, patents and statistical reports on the members' area of www.TaNb.org.

Technical services

- Priority advice and support from the T.I.C. Technical Officer.
- Guidance on pertinent subjects, such as artisanal and small-scale mining, additive manufacturing, antitrust and transport.
- Liaising with governments and other stakeholder organisations on subjects relevant to our industry including:
 - ◇ Supply chain due diligence and other mineral legislation.
 - ◇ Transport of naturally occurring radioactive materials (NORM).
 - ◇ Critical raw materials.

The General Assembly, our annual technical conference

- Priority booking and exclusive early-bird discounts to attend the world's leading tantalum and niobium conference.
- Exclusive networking opportunities at the annual members' meeting.

Benefit from T.I.C.'s promotion of niobium and tantalum

- Exhibiting and presenting at relevant conferences.
- Commissioning research and reports about critical aspects of the global tantalum and niobium industries.
- T.I.C. is home to the Anders Gustaf Ekeberg Tantalum Prize.

Members decide the T.I.C. policies and strategy

- All members can take part in the T.I.C.'s governance at the AGM.
- Corporate members can nominate representatives to stand for election to the Executive Committee and/or volunteer to serve on a subteam.
- Free listing in the Annual Report and on our comprehensive website.

**Apply today and join the world's largest community
focused on tantalum and niobium!**

* For further information, including benefits of associate membership, please contact the T.I.C. For details of how to apply for membership please see page 32.



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