

FOR IMMEDIATE RELEASE

The Anders Gustaf Ekeberg Tantalum Prize 2020: SHORTLIST ANNOUNCED

Brussels, Belgium, July 10th 2020

Recognising excellence in tantalum research and innovation

The Anders Gustaf Ekeberg Tantalum Prize ('Prize') is awarded annually for outstanding contribution to the advancement of the knowledge and understanding of the element tantalum (Ta).

Announcing the 2020 shortlist, the Director of the T.I.C., Roland Chavasse, said that technology-driven innovations will ensure the long-term future of the tantalum market and that the Ekeberg Prize will encourage research and development. "Winners of the Anders Gustaf Ekeberg Tantalum Prize will be acknowledged as true leaders in this field", he added.

The award is administered by the Tantalum-Niobium International Study Center (T.I.C.), the global trade body representing the tantalum and niobium industry.

The seven publications on the short list show the great versatility of tantalum:

- Fabrication of porous tantalum and tungsten black coatings for artificial earth satellites
- Tantalum (Ta) and niobium (Nb) containing alloy powders for application in additive manufacturing
- Tantalum recycling by solvent extraction: chloride is better than fluoride
- Discovery of ω -free high-temperature Ti-Ta-X shape memory alloys from first-principles calculations
- Tantalum bone implants printed by selective electron beam manufacturing (SEBM) and their clinical applications
- Tantalum(V) 1,3-propanediolate beta-diketonate solution as a precursor to sol-gel derived, metal oxide thin films
- Remelt processing and microstructure of selective laser melted Ti25Ta

The winner will be chosen by the independent panel of experts and the Prize medal, made from pure tantalum metal, will be awarded at the T.I.C.'s 61st General Assembly (annual

conference) in Geneva, Switzerland, in October 2020. The T.I.C.'s conference is the largest annual gathering of tantalum and niobium industry leaders, with delegates from every sector of the global industry.

The 2019 winner was Nicolas Soro and his colleagues for their paper "Evaluation of the mechanical compatibility of additively manufactured porous Ti–25Ta alloy for load-bearing implant applications". Information about this paper, and photos from the award ceremony, are available in [Bulletin #180](#).

Ekeberg Prize Shortlist 2020

Title: **Fabrication of Porous Tantalum and Tungsten Black Coatings for Artificial Earth Satellites**

Author(s): Yu. Zh. Tuleushev ^{a,b}, V. N. Volodin ^{a,c}, E. A. Zhakanbaev ^a, E. E. Suslov ^a, and A. S. Kerimshe ^a

Organisation(s): 050000 Kazakhstan
a. Institute of Nuclear Physics, Almaty, 050032 Kazakhstan
b. National Center of Space Research and Technologies, Almaty, 050000 Kazakhstan
c. Institute of Metallurgy and Ore Beneficiation, Almaty, 050010 Kazakhstan

Full article at: Technical Physics Letters volume 46, pages 319–322 (2020)
<https://link.springer.com/article/10.1134%2FS1063785020040148#citeas>

Title: **Tantalum (Ta) and niobium (Nb) containing alloy powders for application in additive manufacturing**

Author(s): Ilka Kaczmarek, Markus Weinmann, Melanie Stenzel and Christoph Schnitter

Organisation(s): TANIOBIS GmbH (H.C. Starck Tantalum and Niobium GmbH), Im Schleeke 78-91, 38642 Goslar, Germany

Full article at: International Journal of Powder Metallurgy, Volume 55, No. 4, 2019
[https://www.semanticscholar.org/paper/TANTALUM-\(Ta\)-AND-NIOBIUM-\(Nb\)-CONTAINING-ALLOY-FOR-Kaczmarek-Weinmann/8883a4bffa6075046fdb8ace639c9b8c408b4267](https://www.semanticscholar.org/paper/TANTALUM-(Ta)-AND-NIOBIUM-(Nb)-CONTAINING-ALLOY-FOR-Kaczmarek-Weinmann/8883a4bffa6075046fdb8ace639c9b8c408b4267)

Title: **Tantalum recycling by solvent extraction: chloride is better than fluoride**

Author(s): Luke M. M. Kinsman ¹, Rosa A. M. Crevecoeur ¹, Amrita Singh-Morgan ¹, Bryne T. Ngwenya ², Carole A. Morrison ¹ and Jason B. Love¹

Organisation(s): 1. EaStCHEM School of Chemistry, University of Edinburgh, Edinburgh EH9 3FJ, UK;
2. School of Geosciences, University of Edinburgh, Edinburgh EH9 3FE, UK;

Full article at: Metals 2020, 10(3), 346;
<https://doi.org/10.3390/met10030346>

Title: **Discovery of ω -free high-temperature Ti-Ta-X shape memory alloys from first-principles calculations**

Author(s): Alberto Ferrari¹, Alexander Paulsen², Dennis Langenkämper², David Piorunek², Christoph Somsen², Jan Frenzel², Jutta Rogal¹, Gunther Eggeler² and Ralf Drautz¹

Organisation(s): 1. Interdisciplinary Centre for Advanced Materials Simulation, Ruhr-Universität Bochum, 44801 Bochum, Germany
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Full article at: Phys. Rev. Materials 3, 103605 – Published 21 October 2019
<https://journals.aps.org/prmaterials/abstract/10.1103/PhysRevMaterials.3.103605>

Title: Tantalum bone implants printed by selective electron beam manufacturing (SEBM) and their clinical applications

Author(s): H.P. Tang^{1,4}, K. Yang¹, L. Jia¹, W.W. He², L. Yang^{3,5} and X.Z. ZHANG¹

Organisation(s): 1.—State Key Laboratory of Porous Metal Materials, Northwest Institute for Nonferrous Metal Research, Xi'an 710016, China.
2.—Xi'an Sailong Metal Materials Co. Ltd, Xi'an 710016, China.
3.—Army Medical University, Chongqing 400038, China

Full article at: JOM: the journal of the Minerals, Metals & Materials Society
72(3) · January 2020
<https://link.springer.com/article/10.1007/s11837-020-04016-8>

Title: Tantalum(v) 1,3-propanediolate β -diketonate solution as a precursor to sol-gel derived, metal oxide thin films

Author(s): Christopher Beale^{a,b}, Stefanie Hamacher^{a,b}, Alexey Yakushenko^c, Oumaima Bensaid^{a,b}, Sabine Willbold^d, Guillermo Beltramo^e, Sören Möller^f, Heinrich Hartmann^d, Elmar Neumann^g, Gregor Mussler^h, Alexander Shkurmanov^h, Dirk Mayer^a, Bernhard Wolfrum^{a,i} and Andreas Offenhäusser^a

Organisation(s): A. IBI-3, Bioelectronics, Forschungszentrum Jülich GmbH, D-52425, Germany
B. RWTH Aachen University, Templergraben 55, D-52062, Germany
C. Fraunhofer Research Institute for Microsystems and Solid State Technologies, D-80686 Munich, Germany
D. ZEA-3, Analytics, Forschungszentrum Jülich GmbH, D-52425, Germany
E. IBI-2, Mechanobiology, Forschungszentrum Jülich GmbH, D-52425, Germany
F. IEK-1, Materials Synthesis and Processing, Forschungszentrum Jülich GmbH, D-52425, Germany
G. Helmholtz Nano Facility, Forschungszentrum Jülich GmbH, D-52425, Germany
H. PGI-9, Semiconductor Nanoelectronics, Forschungszentrum Jülich GmbH, D-52425, Germany
I. Neuroelectronics, Munich School of Bioengineering, Department of Electrical and Computer Engineering, Technical University of Munich (TUM), D-85748 Garching, Germany

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Full article at: [https://www.researchgate.net/publication/340412244 Tantalumv 13-propanediolate b-diketonate solution as a precursor to sol-gel derived metal oxide thin films](https://www.researchgate.net/publication/340412244_Tantalumv_13-propanediolate_b-diketonate_solution_as_a_precursor_to_sol-gel_derived_metal_oxide_thin_films)

Title: Remelt processing and microstructure of selective laser melted Ti25Ta

Author(s): E.G. Brodie^{a,b}, A.E. Medvedev^{a,c}, J.E. Frith^a, M.S. Dargusch^d, H.L. Fraser^{a,e} and A. Molotnikov^{a,b,c}

Organisation(s): A. Department of Materials Science and Engineering, Monash University, Clayton, VIC, 3800, Australia
B. Monash Centre for Additive Manufacturing (MCAM), 11 Normanby Road, Nottingham, VIC, 3168, Australia
C. RMIT Centre for Additive Manufacturing, RMIT University, Melbourne, Australia
D. Centre for Advanced Materials Processing and Manufacturing (AMPAM), School of Mechanical and Mining Engineering, The University of Queensland, Brisbane, QLD, 4072, Australia
E. Department of Materials Science and Engineering, The Ohio State University, Columbus, OH, 43210, USA

Full article at: <https://www.sciencedirect.com/science/article/abs/pii/S0925838819343282?via%3Dihub>

About the Ekeberg Prize

The Ekeberg Prize is the annual award that recognizes excellence in published research about the element tantalum (Ta). The long-term future of the tantalum market will depend on technology-driven innovations and a new prize dedicated to this rare and critical element will encourage research and development. The Ekeberg Prize increases awareness of the many unique properties of tantalum products and the applications in which they excel.

In 2019 the Ekeberg Prize was awarded to Nicolas Soro, Hooyar Attar, Martin Veidt and Matthew Dargusch from the Centre for Advanced Materials Processing and Manufacturing (AMPAM) at The University of Queensland, Australia, and Erin Brodie and Andrey Molotnikov from the Department of Materials Science and Engineering at Monash University, Australia.

Their work examined the use of tantalum-titanium alloys prosthetic implants made using additive manufacturing. The full paper is available at <https://www.sciencedirect.com/science/article/pii/S1751616119303686?via%3Dihub>

The Prize has been named after Anders Gustaf Ekeberg, who discovered tantalum in 1802. The prize is sponsored by the Tantalum and Niobium International Study Center (T.I.C.) and is central to its efforts to publicise the many exceptional benefits afforded by this element. Director of the T.I.C., Roland Chavasse, said "Winners of the Anders Gustaf

Ekeberg Tantalum Prize are acknowledged as true leaders in this field.” Further information is available at <https://www.tanb.org/view/prize>.

About Dr Anders Gustaf Ekeberg

Born in 1767, Anders Gustaf Ekeberg was a Swedish scientist, mathematician, and poet. He became a professor at Uppsala University in 1794 and initially made his name by developing advanced analytical techniques and by proposing Swedish names for the common chemical elements according to the principles set out by the "father of modern chemistry" Antoine-Laurent de Lavoisier. Ekeberg discovered the oxide of tantalum in 1802, isolating it from samples of two different minerals. According to Ekeberg's friend, the chemist Jacob Berzelius, Ekeberg chose the name 'tantalum' partly to reflect the difficulties that he had experienced in reacting the new element with common acids and partly out of his passion for ancient Greek literature. Tantalus was a demi-god who killed and cooked his son, Pelops, and as punishment was condemned to stand in a pool of water beneath a fruit tree with low branches, with the fruit ever eluding his grasp, and the water always receding before he could take a drink.

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

Since its inception the Tantalum-Niobium International Study Center (T.I.C. or the 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. After initially focusing on just tantalum, in 1986 niobium joined the association and 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 90 member companies from over 25 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. This Committee reflects the range of activities of the members and covers the geographic spread of the membership, too. Presidents have been drawn from all sectors of the industry and from many parts of the world. Elections are held annually.

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 such as conflict minerals legislation, artisanal and small-scale mining (ASM), and the transport of naturally occurring radioactive materials (NORM).
- Organize a General Assembly of the membership in October each year for business and technical presentations. Typically, this includes a field trip to a member company or associated industrial facility.
- Publish a quarterly Bulletin newsletter containing interesting and informative articles about the T.I.C. and the global tantalum and niobium industries.
- Collect statistics from member companies (via an independent company to ensure confidentiality) on tantalum and niobium production, shipments and consumption. Participating members receive quarterly statistics updates.

Contact:

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