ADAPT TO NEW CHALLENGES, TAKE ADVANTAGE OF NEW OPPORTUNITIES

COPPER ALLOYS 2024

Conference Programme

Stockholm, Sweden, 08–09 October, 2024

Scientific conference on copper materials

kupfer_ RI. SE

Invitation

Copper Alloys 2024: International arena for scientific and technical development – forum for copper alloys industries, universities and research institutions.

Copper Alloys is the biggest and broadest scientific forum focusing on copper materials sciences. The conference in 2024 aims to further strengthen the copper and copper alloys community by providing up to date research and reflecting necessary R & D approaches against the background of actual megatrends.

The growing awareness for the need to deal with resources more responsibly, environment stability and health protection, as well as the unsecure geopolitical situation, has driven society, politics, and legislation to change agenda priority settings. Circular economy, fossil free energy, green deal, total defense, and other keywords represent this new paradigm, putting high pressure on industry and science to propose and develop innovative solutions.

In response to related challenges, emerging applications and processes are needed, and universities, research institutes and market players along value chains must further strengthen their common efforts. The evolving materials research and development platforms put high demands on optimizing and complementing processing methods, closing gaps in global material flows and implementing loss-free recycling technologies.

Copper Alloys 2024 will give a comprehensive look at challenges and developments of copper user industries and will allow active sharing of knowledge and opinions.

Welcome to Stockholm!

GENERAL INFORMATION

Registration fees
The registration fee: EUR 950 excl. VAT
For students: EUR 250 excl. VAT
Early bookings with a 15 % discount are open till June, 30th 2024

The fee includes conference participation, documentation, lunches, refreshments and conference dinner.

Registration
Use the online registration form for attendee registration and for booking hotel rooms – see our website www.copperalloys.eu

Cancellation and refunds
Cancellation before September 1st, 2024 will be refunded. Thereafter 100 % of the conference fee will be invoiced. Participation can be transferred to a colleague. Register before September 1st, 2024.

Language
The congress language will be English.

Location
The conference will take place October, 8th to 9th, 2024 at the Clarion Hotel Sign, Östra Järnvägsgatan 35, Stockholm, Sweden.

Congress Topics

The focus of the conference this year is on:

- **the importance of copper materials for a sustainable future**
- **the topics of material design and characterisation**
- **casting and parameters**
- **innovative joining techniques**
- **material analysis and digitalisation**
- **material processing**

REGISTRATION DEADLINE

September 1st, 2024

EXHIBITION & SPONSORING

We are offering sponsorship initiatives designed to strengthen your company's image. For further details please contact the congress office or visit our website www.copperalloys.eu.

SCIENTIFIC COMMITTEE

International scientific committee
Wilhelm Erning, BAM, Germany
Ralf Feser, Fachhochschule Südwestfalen, Germany
Joacim Hagström, SWERIM, Sweden
Frank Mücklich, Saarbrücken University, Germany
Klaus Ockenfeld, Kupferverband e.V., Germany
Inger Odnevall, Stockholm University, Sweden
Lorenzo Omodei, Trafilerie Carlo Gnutti, Italy, representing CEN
Kevin Ogle, ParisTech Chemistry, France
Paolo Piccardo, Genova University, Italy
Michael Pohl, Bochum University, Germany
Olivier Rod, SWERIM, Sweden
Roberto Spotorno, Genova University, Italy
Ladji Tikana, Kupferverband e.V., Germany

08.10.2024 // DAY 1

10.00 **Registration**

ROOM 1

10.30 **Welcome – opening of the conference**

10.45 **Material challenges due to electrification of heavy duty vehicles and the role of copper**
I. Annergren, Manager for materials technology at Scania, Sweden

11.30 **Investigation of Copper Alloys after Pressure Hydrogen Charging**
J. Jürgensen, Ruhr-University Bochum, Germany

12.15 **Lunch**

Production & Manufacturing
Chair: Christian Blecking

13.15 **Definition of a Process chain for Additive Manufacturing of Copper Components**
H. von Lintel, K. Jahns, Institute of Materials Design and Structural Integrity, University of Applied Sciences Osnabrück, U. Krupp, Steel Institute, RWTH Aachen University, Germany

13.40 **Additive Manufacturing of Copper Alloys for High Temperature Applications**
E. Medcalf, University of Birmingham, UK

14.05 **New Avenues in Direct Printing of Copper for Electronics via Drop-on-demand Molten Metal Jetting**
N. Gilani, University of Nottingham, UK

14.30 **Investigations on the processability of copper-zinc alloys using wire and arc-based additive manufacturing processes**
M. Schop, T. Ungethüm, H. Ch. Schmale Technical University Dresden, Germany

ROOM 2

Material properties in applications
Chair: Roberto Spotorno

13.15 **Effects of microstructure and chemical composition on the corrosion behavior of Cu-Al-Mn-Ni shape memory alloys under salt spray exposure**
R. Krieg, B. Schelnberger, R. Theiss, P. Dültgen, Forschungsgemeinschaft Werkzeuge und Werkstoffe e.V., Germany; R. Spotorno, E. Fracchia, Genova University, Italy

13.40 **Evaluation of the corrosion resistance of lead-free brass alloys, explored through different accelerated tests**
S. Tomovic-Petrovic[1], S.M Arbo[1], S. Guldbrandsen-Dahl[1], R. Johnsen[2]
[1] Materials Technology, SINTEF Manufacturing, Raufoss, Norway
[2] Department of Mechanical and Industrial Engineering, Norwegian University of Science and Technology, Trondheim, Norway

14.05 **Influence of Operational Parameters on the Corrosion Behavior of Nickel-Aluminum Bronze and Copper-Nickel Alloys in Seawater**
N. Larché, Institut de la Corrosion, Brest, France, J. Blanc, DGA, Toulon, France, B. Sagebiel, KME Germany GmbH & Co. KG, Germany

14.30 **Correlation between microstructure and cavitation erosion behavior of Cu-Al-Mn-Ni**
R. Krieg, B. Schelnberger, R. Theiss, P. Dültgen, Forschungsgemeinschaft Werkzeuge und Werkstoffe e.V., Germany
M. Pohl, N. Maczionsek, Ruhr-University Bochum, Germany

14.55 **Coffee Break** sponsored by Otto Fuchs Dülken GmbH & Co. KG

08.10.2024 // DAY 1

ROOM 1

Production & Manufacturing (continue)
Chair: Joacim Hagström

15.25 **Castability of lead-free brass**
J. Hagström, P-E. Persson, Swerim, Sweden, M. Nordin, Nordic Brass Gusum, Sweden, T. Mangs, FM Mattsson, Sweden

15.50 **Cored Wire introduction in a tundish: How to increase yield and accuracy**
M. Darrington, AFFIVAL SAS, France

16.15 **Functionally Graded Materials: Continuous Casting of Electric Copper Conductors**
S. Kammerloher, Technical University Munich, Germany

16.40 **Poster Session**
Short presentation of presented projects

ROOM 2

Material properties in applications (continue)
Chair: Nicolas Larché

15.25 **Experimental estimations of diffusion rates of phosphorus in creep tested oxygen-free phosphorus doped copper (Cu-OFP)**
S. Kylström, Swerim AB, Sweden, C.Lilja, SKB AB, Sweden

15.50 **Root Cause Analysis of High Temperature Cracking on Cu-OFE for the HL – LHC Current Leads**
P. Moyret, CERN, Switzerland

16.15 **Correlation between corrosion behaviour, metal release and water quality for DZR and non DZR-alloys**
C. Obitz, C. Linder, A. Meroufel, O.Rod, RISE AB, Sweden

16.40 **Comprehensive History of the Use of Copper Alloy CW724R in Drinking Water Applications**
A. Treff, B. Reetz, T. Münch, OTTO FUCHS Dülken GmbH & Co. KG, Germany, P. Skoda, A. Chaczyk, G. Van den Abbeele, SANHA GmbH & Co. KG, Germany

Evening Get Together

19.00 **An evening at the Vasa Museum and dinner**

18.30 **Buses from the hotel to the Vasa Museum**

19.00 **Guided tour at the Vasa Museum**

19.30 **Dinner at the Vasa Museum** sponsored by ergolines lab s.r.l. S.U.

23.00 **Buses back to the hotel**

09.10.2024 // DAY 2

ROOM 1

9.00 **Trends and developments in the copper mining and smelting industry**
Anna Medvedeva, Director Sustainability Technology and Strategy at Boliden Smelters

9.45 **Coffee Break**

New Alloys and Material development

Chair: Lorenzo Omodei

10.15 **Innovative free machining brass - Production, microstructure & properties of the lead-free alloy eZeebrass**
F. Seuss, H. Ricken, P. Feldner, A. Dehnelt, Diehl Brass Solutions Stiftung & Co. KG, Germany

10.40 **Advanced copper-nickel-tin spinodal alloys for high-performance applications**
A. Frehn, S. Mack, S. Surrey, Materion Corporation, Germany

11.05 **Unlocking the Potential of CS4: A Lead-Free Brass Alternative for Enhanced Mechanical Properties and Environment**
N. Dewobroto, Swissmetal Industries SA, Switzerland

11.30 **Individual properties of the alfa and beta phases lead-free brass with different silicon and tin content**
J. Hagström, Swerim, Sweden

11.55 **Lunch**

ROOM 2

Life-cycle and surface properties

Chair: Inger Odnevall

10.15 **Recovery of copper from Waste Electrical and Electronic Equipment: An energy transition approach towards sustainable future**
M. Sajjad, A. M. Parvez, Helmholtz Institute Freiberg for Resource Technology (HIF), Germany

10.40 **An ontology-based data-ecosystem for life cycle data of copper and copper alloys**
M. Eisenbart[1], F. Bauer[1], M. Weber[2], T. Hanke[2], Y. Nahshon[2], H. Beygi-Nasrabadi[3], B. Skrotzki[3], G. Dziwis[4], K. G. van den Boogart[5], A. Parvez[5], L. Tikana[6], S. Klengel[7]
[1] fem Institute, Germany,
[2] Fraunhofer Institute for Mechanics of Materials IWM, Germany
[3] BAM Bundesanstalt für Materialforschung und -prüfung, Germany
[4] InfAI Institut für Angewandte Informatik e.V., Germany,
[5] Helmholtz Institute Freiberg for Resource Technology (HIF), Germany,
[6] Kupferverband e.V., Germany,
[7] Fraunhofer Institute for Microstructure of Materials and Systems IMWS, Germany

11.05 **The impact of blue light illumination on the oxidation and chloride-induced atmospheric corrosion of copper at atmospheric conditions**
T. Chang, G. Herting, C. Leygraf, I. Odnevall
KTH Royal Institute of Technology, Stockholm, Sweden

11.30 **Production, characterization, and protection of artificial patinas on copper**
I. Todua[1,2], L. Toniolo[1] and S. Goidanich[1]
[1] Department of Chemistry, Materials and Chemical Engineering “Giulio Natta”, Politecnico of Milan, Italy;
[2] Department of Sciences of Antiquity, “La Sapienza” University of Rome, Italy

09.10.2024 // DAY 2

ROOM 1

New Alloys and Material devlopment (continue)
Chair: Charlotta Obitz

12.45 **Alloy development of a dezincification-inhibiting brass for the manufacturing of brass instruments**
S. Berndorf, S. Guk, U. Prahl
Technical University Freiberg, Germany

13.10 **Identification of lead-free CuZn-Alloys for Lock Cylinder Manufacturing**
K. Brans[1], M. Meurer[1], T. Bergs[1,2]
[1] Manufacturing Technology Institute (MTI) at RWTH Aachen University, Aachen, Germany
[2] Fraunhofer Institute for Production Technology IPT, Aachen, Germany

13.35 **Computer simulations for Cu-based Alloys – Beyond traditional CALPHAD**
Å. Jansson, H. Mao, Y. Tang, S.Jin, C.-M. Lancelot, A. Malik, Q. Chen, Thermo-Calc, Sweden

14.00 **Using additive manufacturing to process precipitation-strengthened high conductive copper alloys**
A. Hariharan[1], H. von Lintel[2], K. Eichmann[2], L. Mielewczyk[3], S. Hausdorf[3], J. Grothe[3], K. Jahns[2], U. Krupp[1]
[1] Steel Institute, RWTH Aachen University, Aachen
[2] Institute of Materials Design and Structural Integrity, University of Applied Sciences Osnabrück, Osnabrück
[3] Institute of inorganic chemistry, TU Dresden, Dresden

ROOM 2

Historical and Future aspects
Chair: Paolo Piccardo

12.45 **Timeless corrosion: modern understandings applied to the diagnosis of cultural heritage artefacts**
R. Spotorno[1], F. Boragina[1], C. Criaco[1], P. Piccardo[1], J. Tabolli[2], A. Salvi[3], V. Basilissi[4], L. Rivaroli[5]
[1] Università degli studi di Genova, Italy
[2] Università per stranieri di Siena, Italy
[3] Soprintendenza Archeologia Belle Arti e Paesaggio per le province di Siena, Arezzo e Grosseto, Italy
[4] Istituto Centrale per il Restauro, Italy
5LR restauro , Italy

13.10 **Importance of modern and classical investigation techniques to understand ancient metallurgy**
P. Piccardo, University of Genova, Italy
R. Spotorno, M.E.T.A.L., Italy

13.35 **Reconstruction and Casting of a Late Roman Dodecahedron**
J. Hoyer, G. Fuchs, Technical University Munich, Germany

14.00 **New approach for Low Budget Electrification of Railways**
F. Dschung, Furrer+Frey Bern, Switzerland;
M. Hecht, TU Berlin, Germany

14.30 **Final remarks, closing of the conference**

Congress Office
Katarina Bokstrom, Sweden
Bianca Schubert, Kupferverband e.V., Germany

Organisation Committee
Katarina Bokström, RISE, Sweden
Charlotta Obitz, RISE, Sweden
Klaus Ockenfeld, Kupferverband e.V., Germany
Olivier Rod, Swerim, Sweden
Birgit Schmitz, Kupferverband e.V., Germany
Bianca Schubert, Kupferverband e.V., Germany

Sponsoring
Charlotta Obitz, RISE, Sweden
Bianca Schubert, Kupferverband e.V., Germany

WWW.KUPFER.DE
WWW.RI.SE