

GAT - 2020

GAMMALLOYS TECHNOLOGY

International Conference on Gammalloys Technology - GAT-2020

August 2 - 6, 2020

Crowne Plaza, Bratislava, Slovak Republic, EU

3rd ANNOUNCEMENT

Abstract Deadline: March 31, 2020

Conference Website: www.gat2020.eu

IMPORTANT DATES

September
2019

1st Announcement

November
2019

2nd Announcement

January
2020

3rd Announcement

March
2020

4th Announcement

May
2020

5th Announcement

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GAMMALLOYS TECHNOLOGY

GENERAL CHAIR

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ORGANIZING COMMITTEE

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CONFERENCE STAFF

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ORGANIZING PROCESS

1. Planning Technical Program
2. Announcements
3. Keynote and Invited Speakers Selection
4. Abstract and Manuscript Review and Selection
5. Integrated Execution of Conference
6. Chart Proceedings
7. Conference Assessment and Review
8. Conference Proceedings

AIM, BACKGROUND

International conference **GAT-2020** is aimed to steer the R&D directions to the target-oriented R&D (**ToRD**) processes that accelerate, or make possible, the development of gammalloy materials with distinctly greater service temperatures and/or reliability. It will also look for subsequent/parallel opportunities in identifying diversified R&D areas in relevant fundamentals as well as supportive technologies.

BACKGROUND

Gamma TiAl alloys, called **Gammalloys**, are emerging as new metallic high temperature structural materials that replace superalloys in certain applications. Their recent applications in aero-engine low pressure turbine (LPT) blades for intermediate service temperatures (<750 °C) and automotive valves and turbocharger (TC) wheels for higher temperatures (800 - 1000 °C) began to establish the foundations of gammalloy materials-processes manufacturing technology. As the application expands massively into several major engine LPTs, demands and the long-lasting desire for higher-temperature capable gammalloy materials have become even greater. Up to now, however, no such gammalloy materials have been realized for aero-engine rotational component applications. This situation has been frustrating and disappointing because in 90's their use temperatures were demonstrated to reach potentially 900 °C and because ever since great deal of worldwide R&D efforts has been made toward the development of such gammalloy materials. On the other hand, service temperatures for the automotive engine components have been gradually raised over the last 15 years through compositional adjustments, however, at the expense of the reliability, which has slowed wide-spread adoption.

TOPIC AREAS

GAT-2020 deals with Gammalloys and their Composites based on γ -TiAl. It will also include alloys based on Orthorhombic Ti_2AlNb . The topic areas include all related areas including:

1. Advances in the understanding of Composition-Microstructure-Property Relationships;
2. Advances in designing Alloy-Process-Microstructure-Property Combinations that will yield balanced improvements in performance of current engineering alloys or newly developed alloys;
3. Recent understanding of the Importance of Damage and Its Tolerance;
4. Advances in Cost-effective or Performance-Improving Processing: Casting (Near-Net or Net), Melting and Ingot Production, Wrought Processing and Forming, Sheet Forming and Fabrication, Powder Metallurgy, and Application or Component-specific Heat Treatments;
5. Advances in Innovative Processing and/or Manufacturing: Additive Manufacturing Processes, Grain Refinement, etc.;
6. Improved or new Automotive Engine Component-Specific Alloy-Process-Microstructure Combinations and their expanded Application Possibilities;
7. Advances in Peripheral or Supporting Technologies (Machining, Joining and Others);
8. Progress in the Understanding of Environmental Effects and Surface Protection Methodologies;
9. Application Efforts and Applications (Aerospace, Automotive, Land-Base Turbine, and Others);
10. Progress in Targeted Fundamental Research in all Areas;
11. Calculation, Modeling and Simulation Efforts that will help refine or speed up the above Processes and/or Results;
12. R&D of Other Areas: Orthorhombic Ti_2AlNb based Alloys, Biomaterials, Nuclear Reactor Materials, etc.;
13. New Ideas, Interpretations/Assessments and Challenges.

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KEYNOTE AND INVITED SPEAKERS

One Keynote is considered to address the critical need of high temperature (750-900 °C) gammalloys and their material.

Invited Speakers are selected from all areas. The process will continue until March 31, 2020 and the progress will be updated in each announcement. Papers of the invited speakers will be published in scientific journal Kovove Materialy-Metallic Materials (www.kovmat.sav.sk)

CONFERENCE PROCEEDINGS

After the conference, submitted papers will be peer-reviewed. The accepted ones will be processed into the „Conference Proceedings“ and sent to Web of Science and Scopus for evaluation and potential indexing as well.

BEST POSTER CONTEST

Condition of participation in the competition is a personal poster presentation at the time of the poster session. The first three winners will be awarded prizes.



TECHNICAL PROGRAM OUTLINE, PAST AND FUTURE GAT MEETINGS

TECHNICAL PROGRAM OUTLINE

Date		Session name	Details
Aug 2 (Sun)	PM	Conference Opening S0 - Special Lectures (3)	<ul style="list-style-type: none"> • Applicable Fundamentals; • Damages (Mechanical/Thermal) and Tolerance; • Current Alloys - Understanding of Design Philosophy and Limitations; • Current R&D Status - Assessing Dilemmas, Implications and Future Directions. <p>Welcome dinner</p>
Aug 3 (Mon)	AM PM	S1 - Oral Presentation S2 - Oral Presentation	Starting with Keynote Lecture
Aug 4 (Tue)	AM PM Eve	S3 - Oral Presentation S4 - Oral Presentation S5 - Poster Presentation	Banquet with a prizes-winning contest
Aug 5 (Wed)	AM PM	S6 - Oral Presentation S7 - Panel Discussion	Topics selected from interrelated areas include: technology readiness level (TRL) of our current status, composition exploration vs. alloy design, microstructure (MS) evolution and control, composition-processing-microstructure-property combinations (CPMP-C), pathways from composition to the final engineering material, target-oriented R&D (ToRD), surface protection and methodologies, novel processing (AM), and contribution of calculation/simulation/modeling efforts
Aug 6 (Thu)	AM	S8 - Oral Presentation Closing Statement Accompanying program	

PAST AND FUTURE GAT MEETINGS

GAT-2021 (to be decided)

GAT-2020 (Bratislava, Slovak Republic)

Proc. Book (eds. J. Lapin and the organizing team) will be published (July, 2020).

GAT-2019 (Dunhuang, China)

Presentation only, org. J.P. Lin, Y-W. Kim, P. Sallot, T. Nakano, et al.

GAT-2018 (Harbin, China)

Presentation only, org. Y. Chen, Y-W. Kim, J.P. Lin, P. Sallot, R. Yang, et al.

GAT-2017 (TMS, San Diego, USA)

Chart Proceedings eds. Y-W. Kim, J.P. Lin and P. Sallot - 62 Presentation Charts.

GAT-2015 (Nanjing, China)

Chart Proceedings, eds. J.P. Lin and Y-W. Kim - 65 Presentation Charts.

GAT-2014 (TMS, San Diego)

Book, eds. Y-W. Kim, W. Smarsly, J.P. Lin, D.M. Dimiduk, and F. Appel, TMS, Warrendale, USA (2014)

GAT-2013 (Toulouse, France)

Chart Proceedings, eds. A. Couret and Organizing Team.

GAT-2012 (Beijing, China)

Charts Proceedings 2012, eds. J.P. Lin and Y-W. Kim - 78 Presentation Charts.

GAT-2008 (SA, TMS, Seattle, USA)

TMS Book, eds. Y-W. Kim, D. Morris, R. Yang, and C. Leyens, TMS, USA (2003) - 412 pages.

GAT-2003 (ISGTA, TMS, San Diego, USA)

Proc. Book, eds. Y-W. Kim, H. Clemens, TMS, Warrendale, USA (2003) - 635 pages.

GAT-1999 (ISGTA, TMS, San Diego, USA)

Proc. Book, eds. Y-W. Kim, D.M. Dimiduk and M. Loretto, TMS, Warrendale, USA (1999) - 851 pages.

GAT-1995 (ISGTA, TMS, Las Vegas, USA)

Proc. Book, eds. Y-W. Kim, R. Wagner and M. Yamaguchi, TMS, Warrendale, USA (1995) - 1,009 pages.

GAT-1990 (TA Symp., Detroit, USA)

Proc. Book, eds. Y-W. Kim and R.R. Boyer, TMS, Warrendale, USA (1991) - 674 pages.

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DEADLINES

MAR
31

ABSTRACTS
DEADLINE

APR
30

MANUSCRIPT SUBMISSION
(ONLY INVITED SPEAKERS)

APR
30

EARLY BIRD REGISTRATION

MAY
10

REGISTRATION DEADLINE

AUG
2

SPECIAL LECTURES

AUG
4

POSTER SESSION

SPECIAL LECTURES

- Damage and Tolerances
- Understanding of Design Philosophy and Limitations
- Assessing Dilemmas, Implications and Future Directions

CONFERENCE FEE

EARLY BIRD UNTIL APRIL 30, 2020

Author of oral presentation/poster **600 EUR**

Other participant and co-author **600 EUR**

Student (gradual or Ph.D.) with oral presentation/poster **350 EUR**

Student (gradual or Ph.D.) - co- authors/without paper **350 EUR**

CONFERENCE FEE AFTER MAY 1, 2020

Author of oral presentation/poster **700 EUR**

Other participant and co-author **700 EUR**

Student (gradual or Ph.D.) with oral presentation/poster **450 EUR**

Student (gradual or Ph.D.) - co- authors/without paper **450 EUR**

KEYNOTE AND INVITED SPEAKERS

Keynote Speaker

Pierre Sallot (SAFRAN Tech, France)

Advanced LPT Blades: Cost vs. Property Improvement Dilemma

Invited Speakers (Partial Listing)

Juraj Lapin (UMMS, Slovakia)

TiAl-Composites: Status and Future RD Directions

Fritz Appel (HGZ, Germany)

Deformation and Damage Mechanisms

Allen Couret (CEMES, France)

Mechanical Properties of SPS-processed Material

Alexander Donchev (DECHEMA, Germany)

Oxidation and Surface Protection by Fluorine

Pavel Panin (VIAM, Russia)

Industrial Melting and Ingot Casting

Daniela Pilone (Sapienza U, Italy)

Land-based Gas Turbine Blades: R&D Status

Florian Pyczak (HGZ, Germany)

Gammalloys R&D Activities at HGZ

Martin Schloffer (MTU, Germany)

Fundamentals of Fracture Resistance

Jan Schievenbusch (ACCESS, Germany)

Advanced NS Casting Technology Development

Julien Zollinger (U. Lorraine, France)

Refinement by Gravity Reduction

Thomas Edwards (EMPA, Switzerland)

Fatigue Damage: Understanding and Microstructure Effects

Radoslaw Swadzba (IMZ, Poland)

Coating Technology: Understanding and Application Potential

Chandan Mondal (DMRL, India)

High Temperature Deformation

Junpin Lin (USTB, China)

High-Nb Gammalloys: Design and Processing and Future Direction

Ruiren Chen (HIT, China)

Directional Solidification: Current Status/Understanding and Future

Wei Chen (ABAMTRI, China)

Additive Manufacturing: Status and Future RD Directions

Rui Hu (NWPU, China)

Development of Hyperperitectic γ -TiAl Casting Alloys with Medium Nb Content

Yuyong Chen (HIT, China)

Hi-Nb Gammalloys: RD Status and Application Potential

Kui Liu (IMR, China)

Beta-Solidified Gammalloys: Hot Working and Future Directions

Lin Song (NWPU, China)

Phase Transformations Research: Status and Future Contributions

Jian Sun (SJTU, China)

Modulated Structures: Understanding and Future RD Direction

Dong-Sheng Xu (IMR, China)

First Principle & Simulation: Specific Examples and Future Direction

Rui Yang (IMR, China)

Processing/Microstructure/Properties of 45XD Alloy

Seung Un Kim (KIMS, Korea)

Alloy Design: Achievements and Future Directions

Takayoshi Nakano (Osaka U, Japan)

Additive Manufacturing: Unique Structure-Property Development

Toshimitsu Tetsui (NIMS, Japan)

Hot-die Forging: Advances, Application Status, and Future

Young-Won Kim (Gamteck, USA)

Alpha Processing for Advanced Aero-engine Rotational Components

Dennis Dimiduk (BlueQuartz, USA)

Machine Learning: Contribution to Gammalloy RD

Alfred Sommer (Del West, USA)

Advances in Gammalloy Valve Production and Manufacturing

Fan Zhang, (CompuTherm, USA)

Thermodynamics Calculations with Specific, Useful Examples

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HOTEL CROWNE PLAZA

The hotel features 224 guest rooms including 15 suites. Each guest room features: air conditioned bed and living room of pure elegance, satellite television with 54 TV channels, free high-speed Internet connection, dual-line telephone with voice mail, in-room electronic safe, minibar with a selection of soft drinks, wine and spirits, bathrobe, hairdryer, free Wireless Internet Access (Wi-Fi). Fitness center, indoor pool with counter flow, sauna, solarium and massage service belong to the Leisure & Spa Facilities. The hotel offers 55 parking places in an underground garage.
More: www.cpbratislava.sk.

CONTACTS

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Scientific Advisory and/or Review Board Members

(Recognized Experts for Scientific Advices and/or Reviews - Selection ongoing)

F. Appel (HZG, Germany) - Deformation
M. Arai (IHI Castings, Japan) - Casting
M. Bak (WI, USA) - Supersonic Propulsion
T. Barrigana (Zollern, Portugal) - Casting
W. Beck (Formtech, Germany) - Joining
E. Bouzy (U Loraine, France) - Refinement/HW
P. Bowen (U Birmingham, UK) - Fatigue Fracture
T. Broderick (AFRL, USA) - History
R. Braun (DLR, Germany) - Oxidation
M. Buenck (ACCESS, Germany) - NNS Casting
K. Chan (SRI, USA) - Fracture Resistance
G. Chen (NJUST, China) - PST Crystal Growth
R. Chen (HIT, China) - Directional Solidification
W. Chen (AVIC Beijing, China) - 3D Printing
Y. Chen (HIT, China) - Beta Solidified Alloys
H. Clemens (U. Leoben, Austria) - TNM
A. Couret (CEMES, France) - SPS
E. Crist (Arconic, USA) - Ingot Production
A. Denquin (ONERA, France) - Transformations
D. Dimiduk (BlueQuartz, USA) - MS/MP Relations
X. Ding (AECC-BIAM, China) - DS
A. Dlouhy (IPM, Czech) - Casting and Creep
A. Donchev (Dechema, Germany) - OR/Coating
D. R-Fagaraseanu (RR, Germany) - HPC Blades
R. Feng (LUT, China) - Fracture
M. Filippini (P. di Milano, Italy) - Fatigue Fracture
J. Foltz IV (ALTI Metals, USA) - PAM
R. Haun (Retech, USA) - Ingot and Powder
U. Hecht (ACCESS, Germany) - MS Refinement
G. Henaff (ENSMA, France) - Fatigue
D. Hu (IRC, UK) - XD Alloy Evaluation
R. Imayev (Ufa, Russia) - Superplasticity
H. Inui (Kyoto U, Japan) - PST Crystal

E. Crist (Arconic, USA) - Ingot Production
P. Janschek (Leistritz, Germany) - ISF of Blades
N. Kashaev (HZG, Germany) - Joining
T. Kelly (GE, USA) - 4822 LPT Blades
H. Kessler (Plansee, Austria) - Sheet and Foil
Y-W. Kim (Gamteck, USA) - CPMP Design-ToRD
S. Knittel (Safran, France) - Surface Protection
H. Kou (NWPU) - Casting and HW
Y. Koyanagi (Daido, Japan) - TC Wheels
J. Lapin (UMMS SAV, Slovak Republic) - Creep and Composites
C. S. Lee (Postech, Korea) - Fatigue and HW
D. B. Lee (SKKU, Korea) - Hot Corrosion
D. Legzdina (Honeywell, USA) - Turbo Application
R. Leholm (Goodrich, USA) - Sheet Components
C. Leyens (Dresden U, Germany) - Coating
T. Liang (RWTH, Germany) - Surface Protection
Y. Liang (USTB, China) - Sheet Fabrication
H. Lipsitt (AFRL, USA) - Early History
K. Liu (IMR, China) - HW of BS Gammalloys
M. Loretto (IRC, UK) - Microstructure Evolution
P. McQuay (PCC, USA) - 4822 Cast LPT Blades
S. Maloy (LANL, USA) - Nuclear Reactor Use
A. Marquardt (AMCD, Germany) - EBM
K. Maruyama (Tohoku U, Japan) - Lath Creep
S. Mayer (U. Leoben, Austria) - TNM Alloy
M. Mills (OSU, USA) - Creep
S. Naka (ONERA, France) - Alloy Design
T. Nakano (Osaka U, Japan) - Specific AM
H. Nan (AECC-BIAM, China) - Casting
T. Nielson (WI, USA) - Small Turbine Disk Material
S. Nishikiori (IHI, Japan) - LPT Blades
M-H. Oh (KIT, Korea) - Joining
D. Pilone (U. Roma, Italy) - Turbine Blades

F. Pyczak (HZG, Germany) - Synchrotron
J. Reitz (RWTH, Germany) - Recycling
R. Ritchie (LBL, USA) - Fatigue Fracture
P. Sallot (Safran, France) - LEAP LPT Blades
M. Schütze (Dechema, Germany) - Coating
L. Semiatin (AFRL, USA) - Wrought Processing
W. Smarsly (MTU, Germany) - TNM LPT Blades
A. Sommer (Del West Eng, USA) - Wrought Valves
L. Song (NWPU, China) - Transformations
N. Sonnentag (ATI, USA) - Isothermal Forging
A. Stark (HZG, Germany) - Synchrotron
S-Y. Sung (Katech, Korea) - TC Wheels
R. Swadźba (IMZ, Poland) - Coating & Oxidation
M. Takeyama (TIT, Japan) - Phase Relations
B. Tang (NWPU, China) - HW and Fatigue
T. Tetsui (NIMS, Japan) - Hot Die Forging
M. Thomas (ONERA, France) - Alloy Design
P. Varghese (S-G, USA) - Grinding
J. Williams (OSU, USA) - LPTB Implementation
P. Withey (RR, UK) - XD LPTB Implementation
M. Weimer (GE, USA) - 4822 LPT Blades
A. Wojcieszynski (ATI Metals, USA) - Powders
X. Wu (Monash, Australia) - Property Evaluation
D. Xu (IMR, China) - Modeling and Simulation
J. Yang (NWPU, China) - MS Evolution
R. Yang (IMR, China) - Processing/Evaluation
F. Yoltson (Crucible, USA) - Powder Applications
F. Zhang (CT, USA) - TD Calculation
J. Zhang (CISRI, China) - Prototype Forming
L. Zhang (USTB, China) - Hot Workability
J. Zollinger (U Lorraine, France) - MS Refinement



Bratislava is the capital city of Slovak Republic that is located in the middle of Europe.

During the history time, the city was called Pressburg or Pozsony and it was one of the most important cities in the Austro-Hungarian Empire. Bratislava's location on the banks of the river Danube at the crossroads of ancient trading routes, right at the heart of Europe predestined it to become a meeting point of various cultures. Experts regard this region as one of the most dynamically developing and most prospective in Europe.

Slovak Republic is a small landscape by the area, but its manifoldness, with its rivers, valleys, hills, mountains, different spa springs, health resorts and number of UNESCO World Heritage sites is great.

Moreover, you need only 1 hour by car to get to Vienna (Austria) or 2 hours to get to Budapest (Hungary).

For more information about Slovak Republic you can visit:

<https://www.slovakia.com/facts/>, <http://slovakia.travel/en>, <https://www.slovakia.com/>

