Opening Session

Main Auditorium

Gerard Bernhart, I*CSAM 2012 Chairman, Ecole des Mines albi, France*
Eiichi Sato, *ICSAM International Board Chairman, JAXA, Japan*
Alain Schmitt, *Director, Ecole des Mines Albi, France*
Patrick Garnier, *Deputy Major of Albi city in charge of Education and Research, Albi, France*

Honored plenary lectures

Main Auditorium
Chairman : Gerard Bernhart*, Ecole des Mines Albi, France*

9h20
Material, technology and Process Innovation for A350 Aircraft Structures
Bruno Beral
Structure Policy & Development, Airbus, Toulouse, France

10h00
The success story of the Rolls Royce DB/SPF Wide Chord Fan Blades
Mike Wallis
Rolls-Royce, Barnoldswick, Colne, Lancashire, BB18 5RU, England

Session 1A : Mechanisms of grain boundary sliding

Main Auditorium
Chairman : Jean-Jacques Blandin*, SIMAP, France*

11h00 (invited lecture)
Grain Boundary Sliding during low temperature creep of Ultrafine Grained Aluminum and HCP metals
Eiichi Sato [1]***, Kaoru Ishiwata*** [1]***, Tetsuya Matsunaga*** [2]
1. Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency
3-1-1. Yoshinodai, Chuo, Sagamihara, 252-5210, Japan
2. Institute for Materials Research, Tohoku University
2-1-1. Katahira, Aoba, Sendai, 980-8577, Japan

11h30
On the controversy about the presence of grain boundary sliding in magnesium AZ31
C. Boehlert [1,2,3]***, Z. Chen*** [1]***, I. Gutiérrez-Urrutia*** [4]***, J. Llorca*** [2,3] ***and M.T. Pérez-Prado*** [3]
1. Michigan State University, East Lansing, Michigan 48824-1226, USA
2. Department of Materials Science, Polytechnic University of Madrid, 28040 Madrid, Spain
3. IMDEA Materials Institute, Calle Profesor Aranguren, s/n, 28040 Madrid, Spain
4. Max Planck Institute for Iron Research, Max Planck Strasse, 1, 40237 Düsseldorf, Germany

11h55
Common mechanism for optimal superplastic deformation in different classes of materials
K. A Padmanabhan [1] ***and H. Gleiter*** [2]
1. School of Engineering Sciences & Technology and Centre for Nanotechnology, University of Hyderabad, Hyderabad 500046, India
2. KIT Campus North, Institute of Nanotechnology, P.O. Box 3640, 0721 Karlsruhe, Germany

12h20
Slip Induced Strain Rate Sensitivity for Superplastic Material?
Hector Basoalto. Paul L. Blackwell
Advanced Forming Research Centre, University of Strathclyde, 85 Inchinnan Drive, Renfrew, PA4 9LJ, UK

Session 1B : Finite element forming simulation

Auditorium 1
Chairman : Sean Leen*, University of Galway, Ireland*

11h00 (invited lecture)
Modeling the Super Plastic Forming of a Multi-Sheet Diffusion Bonded Titanium Alloy Demonstrator Fan Blade
P. Wood [1]***, M. J. Qarni*** [1]***, P. Blackwell*** [1]***, V. Cerny*** [2]***, P. Brennand*** [3]***, S. Wilkinson*** [3]***, A. Rosochowski*** [4]
1. Advanced Forming Research Centre, University of Strathclyde, Inchinnan, PA4 9LJ, UK
2. ESI UK Ltd, Cannock, WS11 8JB, UK
3. Rolls-Royce plc, Barnoldswick, BB18 5RU, UK
4. DMEM, University of Strathclyde, Glasgow, G1 1XJ, UK

Simulation based approach for process and die optimisation
R. Said [1]***, K. Muhammad*** [2]***, M. Pizzingrilli*** [2]***, V. Cerny*** [1]***, J. Luquet*** [3]***, A. Heath*** [3] ***, Y. Dammak*** [3] ***and C. Borot*** [3]
1. ESI - UK, 16 Morston Court, Kingswood Lakeside, Cannock, WS11 8J .UK
2. RTI Advanced Forming Ltd. watchmead, Welwyn Garden City, Herts, AL71LT. UK
3. ESI Group, 99 rue des Solets Silic 112 94513 Rungis Cedex France

11h55
FEM modelling of superplastic forming of three-layered hollow structures
Angelina Kh. Akhunova, Sergey V. Dmitriev, Arthur R. Safiullin, Rinat V. Safiullin
Institute for Metals Superplasticity Problems RAS,Khalturin Str. 39, 450001 Ufa, Russia

12h20
Development of double-action SPF forming process by finite element simulation for A380 part
Gilles Marin [1]***, Olivier Barrau*** [1]***, Fabien Nazaret*** [1]***, Nicolas, Guégan*** [2]***, Benoit Marguet*** [2]
1. Aurock company, 54 rue Gustave Eiffel, 81000 Albi, France
2. Airbus France SAS, 316 route de Bayonne, B.P.E5001, 31060 Toulouse cedex9, France

Session 2A : Superplasticity in light alloys

Main Auditorium
Chairman : Yoshinobu Motohashi, *Ibaraki University, Japan*

14h00 (invited lecture)
Superplastic Behaviour of Magnesium Alloys
Richard Dashwood [1]***, Roger Grimes*** [1]
1. WMG, International Manufacturing Centre, University of Warwick, Coventry. UK

14h30
Effect of alloying elements on the origin of threshold-stress-like behavior in superplastic magnesium alloys
Hiroyuki Watanabe [1]***, Akira Owashi*** [2]***, Tokuteru Uesugi*** [2]***, Yorinobu Takigawa*** [2]***, Kenji Higashi*** [2]
1. Osaka Municipal Technical Research Institute, Osaka, Japan

2. Department of Materials Science, Osaka Prefecture University, Sakai, Japan

14h55
High-Temperature Deformation of Mg Elektron 43
Alexander J. Carpenter[1], Anthony J. Barnes[2], and Eric M. Taleff[1]
1. The University of Texas at Austin, Department of Mechanical Engineering, 1 University Station C2200, Austin, TX 78712-0292, USA
2. Superform USA, 6825 Jurupa Ave., Riverside, CA 92504, USA

15h20
Development of ultrafine grains in Mg-8Al-0.5Zn magnesium alloy and optimization of its superplasticity
Rahul Kulkarni[1], Rajendra Doiphode[1], Nityanand Prabhu[1], Peter Hodgson[2], Bhagwati Kashyap[1]
1. Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, 400076, India
2. Institute for Technology Research and Innovation, Deakin University, Warun Ponds, Victoria 3217, Australia

Session 2B : Superplasticity in ceramics

Auditorium 1
***Chairman : Thierry Cutard**, Ecole des Mines Albi, France*

14h00 (invited lecture)
Superplasticity of silicon carbide ceramics
Yutaka Shinoda[1], Takashi Akatsu[1], Fumihiro Wakai[1],
1. Secure Materials Center, Materials and Structures Laboratory, Tokyo Institute of Technology,4259-R3-23, Nagatsuta-cho, Midori-ku, Yokohama, 226-8503, Japan

14h30
Microstructure and Superplasticity of Al_2O_3/YAG/ZrO_2 eutectic ceramic composite
Guoging Chen[1], Xuesong Fu[1], Junting Luo[2], Yufei Zu[1], Wenlong Zhou[1]
1. School of Materials Science and Engineering, Dalian University of Technology, Dalian 116085, P.R. China
2. State Key Laboratory of Metastable Materials Science and Technology, Yanshan University, Qinhuangdao 066004, P.R. China

14h55
Superslastically foaming method for reliable porous ceramics
Akira Kishimoto[1], Takashi Teranishi[1], Hidetaka Hayashi[1]
1. I Division of Chemistry and Biochemistry, Graduate School of Natural Science and Technology, Okayama University, 3-1-1 Tshushima-naka, Kita-Kku, Okayama, Japan

15h20
Recent insights on the superplastic behaviour of ceramics
Diego Gómez-García, Santiago de Bernardi-Martín, Bibi Malmal Moshtaghion, Robert Luis González Romero and Arturo Domínguez-Rodríguez
Department of Condensed Matter Physics, University of Seville, P.O Box 1065, 41080 Seville (SPAIN)

Session 3A : Fine grain material processing

Main Auditorium
***Chairman : Terry Mc Nelley,** Naval Postgraduate School, USA*

16h05 (invited lecture)
Low temperature superplasticity of two-phase titanium alloys produced by warm multi-directional forging
Gennady Salishchev[1], Egor Kudrjavtsev[1], Sergey Zherebtsov[1], Lee Semiatin[2]
1. Laboratory of Bulk Nanostructured Materials, Belgorod State University, Pobeda-85, Belgorod, Russia
2. Air Force Research Laboratory, Materials and Manufacturing Directorate, AFRL/RXLM, Wright-Patterson Air Force Base, OH 45433-7817, USA

16h35
Superplasticity of Mg-Zn-Y alloy prepared by extrusion of machined chip
Takaomi Itoi[1], Syuichi Fudetani[1] and Mitsuji Hirohashi[1]
1. Department of Mechanics Engineering, Chiba University, Chiba 263-8522, Japan

17h00
Superplasticity of Ultrafine Grained AL-Mg-Sc-Zr Alloys Produced by Equal-Channel Angular Pressing
Rustam Kaibyshev, Daria Zhemchuzhnikova, Anna Mogucheva
Belgorod State University, Pobeda 85, Belgorod, 308015, Russia

17h25
High strain rate blow formability of the Al-Mg-Mn alloy
Tomoyuki Kudo[1], Akira Goto[2], Kazuya Saito[3]
1. Technical Research Div., Furukawa-Sky Aluminum Corp., 1351, Uwanodai, Fukaya City, Saitama Prefecture, 366-8511, Japan
2. Department 2,Technology Research Division 6, Automobile R&D Center ,Honda R&D Co.,Ltd.,4630 Shimotakanezawa,Haga-machi, Haga-gun,Tochigi,321-3393,Japan
3. Body Die & Molding Engineering Div., Honda Engineering Co.,Ltd.,6-1,Hagadai,Haga-Machi, Haga-Gun, Tochigi Pref. 321-3395 Japan

Session 3B : Industrial applications 1

Auditorium 1
***Chairman : Chistoph Pirchl,** ALU-SPF, Liechtenstein*

16h05 (invited lecture)
Recent application of *superformed* 5083 Aluminum alloy in the aerospace industry
Anthony J. Barnes[1], Hari Raman[1], Andrew Lowerson[2] and David Edwards[2]
1. Superform USA 6825 Jurupa Ave., Riverside Ca 92504
2. Superform Aluminium, Cosgrove Close, Worcester. WR3 8UA. UK

16h35
Superplastic forming in rotary-wing aircraft
Mauro Pizzingrilli[1], W Swale[2], Ed McCullagh[3]
1. RTI Advanced Forming, Ltd. Watchmead, Welwyn Garden City, Herts, AL7 1LT, UK

17h00
Mechanical Properties of Titanium alloy SP 700 after Superplastic Forming
Pitt Franna, Ramulu Mamidala
Department of Mechanical Engineerin,g University of Washington, Seattle, WA, USA

17h25
Diffusion bonding of a Ti6-4 matrix with embedded hi-temp/hi-strength Ti- and TiAl alloys
Werner Beck[1], Stefan Schöps[1], Joachim Klose[2]
FormTech, Germany
GFE-FREMAT, Germany

19h00 : Albi Cathedral Guided Tour

Honored plenary lectures

Main Auditorium
Chairman : Richard Dashwood, *University of Warwick, UK*

8h40
Development of High-Strain-Rate Superplastic Oxide Ceramics based on Flow mechanism
Koji Morita
National Institute for Materials Science (NIMS), Advanced Ceramics Group,Tsukuba, Ibaraki 305-0047, Japan

Session 1C : Superplasticity in intermetallics

Main Auditorium
Chairman : Richard Dashwood, *University of Warwick, UK*

9h20 (invited lecture)
Superplasticity of Intermetallics synthesized by powder metallurgy
Kaifeng Zhang, Shaosong Jiang, Zhen Lu, Guofeng Wang, Chunping Zhang, Jiliang Yu
School of Materials Science and Engineering, Harbin Institute of Technology, Harbin, China

9h50
Improving thickness uniformity of Ti_3Al sheet SPF by reverse-preforming
Huiyuan Xu[1], Rongxia Zhang[1],Yuansong Zeng[1]
1. Metal Forming Department,BAMTRI,Baliqiaobei, Chaoyang district, Beijing, China

10h15
Superplastic bulging of nanocrystalline Ni-Co alloy with different heating method
Guofeng Wang[1], Shaosong Jiang , Zhen Lu, Kaifeng Zhang
1. National Key Laboratory of Precision Hot Processing of Metals, Harbin Institute of Technology, Harbin 150001, China

Session 1D : Superplastic forging and rolling

Auditorium 1
Chairman : Rustam Kaibyshev, *Belgorod State University, Russia*

9h20 (invited lecture)
A numerical simulation of superplastic double-sideed roll forming of discal parts
Quanlin JIN
Advanced Manufacture Technology Center, China Academy of Machinery Science & Technology, Address, Beijing, P.R.China

9h50
Forging of articles out of aluminum alloys under superplastic conditions – Difficulties and Methods of their overcoming
Vadim Trifonov
Institute for Metals Superplasticity Problems, Khalturina 39, Ufa, 45000, Russia

10h15
Microstructural Control of a Zn-22Al Alloy by Rolling Process
Toshiaki Manaka[1], Goroh Itoh[1], Nguyen The Loc[2], Yoshinobu Motohashi[1], Takaaki Sakuma[1]
1. College of Engineering, Ibaraki University, 4-12-1 Nakanarusawa, Hitachi-City, 316-8511 Japan
2. Graduate Student, Graduate School of Science and Engineering, Ibaraki University, 4-12-1 Nakanarusawa, Hitachi-city, 316-8511 Japan

Session 2C : Mechanisms of superplasticity

Main Auditorium
Chairman : Eiichi Sato*, JAXA, Japan*

11h00 (invited lecture)
The importance of inhomogeneity in determining the kinetics of superplastic flow
Richard Todd, Martin Rust
University of Oxford, Department of Materials, Parks Road, Oxford, OX1 3PH, UK

11h30
Enhanced Plastic Deformation of magnesium alloy produced through accumulative diffusion bonding
Koichi Kitazono[1], Yutaro Shimoda[1], and Shigeki Kato[1]
1. Graduate School of System Design, Tokyo Metropolitan University, 6-6 Asahigaoka, Hino, Japan

11h55
Measured actual stress tensor to discuss possible mechanism of superplasticity
Shun-Ichiro Tanaka
Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, 2-1-1 Katahira, Aoba-ku, Sendai Japan

12h20
EBSD study of microstructural development during hybrid superplastic forming
Jun Liu[1], Ming-Jen Tan[1], Sylvie Castagne[1], Samuel C.V.Lim[2]
1. School of Mechanical & Aerospace Engineering, Nanyang Technological University, Singapore 639798, Singapore
2. Singapore Institute of Manufacturing Technology, Singapore 638075, Singapore

Session 2D : Numerical simulation

Auditorium 1
Chairman : Eric Taleff, *The University of Texas at Austin, USA*

11h00 (invited lecture)
Numerical study of radiation and temperature phenomena for improved super-plastic sheet metal forming
Michal Mis[1], Richard Hall[1], Julian Spence[1], Nwabueze Emekwuru[1], Kevin Kibble[2]
1. Midlands Simulation Group, School of Technology, University of Wolverhampton, WV1 1SB, Wolverhampton, United Kingdom
2. School of Technology, University of Wolverhampton, WV1 1SB, Wolverhampton, United Kingdom

11h30

Superplastic forming of Friction Stir processed magnesium alloys for aeronautical applications: a Modeling approach
***Luigi Carrino*[1], *Antonino Squillace*[1], *Valentino Paradiso*[1], *Stefano Ciliberto*[1], *Mario Montuori*[1]**
1. University of Naples Federico II, Department of Materials and Production Engineering,P.le Tecchio 80, 80126, Naples Italy

11h55
Superplastic Forming Response of a Friction Stir Processed Mg Alloy Sheet – A Numerical Approach
Mohammad Albakri, Ahmad. Albakri, Bilal Mansoor, Hani Nassar, Marwan Khraisheh
Masdar Institute of Science and Technology, Abu Dhabi, United Arab Emirates

12h20
Pressure profile optimization on a superplastic aluminum alloy
***Donato Sorgente*[1], *Luigi Tricarico*[1]**
1: Dipartimento di Ingegneria Meccanica e Gestionale, Politecnico di Bari, Viale Japigia, 182 - 70126 Bari, Italy

Session 3C : Deformation and cavitation

Main Auditorium
Chairman : Gennady Salishchev, *Belgorod State University, Russia*

14h00 (invited lecture)
4D damage characterisation during superplastic deformation of magnesium alloys
***P. Lhuissier*[1], *M. Scheel*[2], *L. Salvo*[1], *E. Boller*[2], *M. Di Michiel*[2], *J.J. Blandin*[1]**
1. Université de Grenoble / CNRS, Laboratoire SIMAP, Grenoble INP, UJF, Domaine Universitaire, 38402 Saint-Martin d'Hères, France
2. European Synchrotron Radiation Facility (ESRF), Grenoble, France

14h30
Evaluation of Plastic workability of Mg Alloy in High Temperature Uni- and Bi-axial Test by Cavitations
***Kunio Funami*[1], *Daisuke Yamashita*[2], *Kohji Suzuki*[1] and *Masafumi Noda*[1]**
1. Department of Mechanical Science and Engineering, Chiba Institute of Technology,2-17-1 Tsudanuma, Narashino 275-0016, Japan
2. Graduate Student, Chiba Institute of Technology

14h55
Effect of porosity on Tensile and compressive deformations of superplastic Zn-22Al alloy foam
Kenji Sekido*, *Naoki Ishikawa, Koichi Kitazono
Graduate School of System Design, Tokyo Metropolitan University, 6-6, Asahigaoka, Hino, Tokyo, Japan

15h20
The two-dimentional observation of grain movements during superplastic deformation
***Satoshi Taniguchi*[1], *Eichi Sato*[1], *Nobuaki Kawai*[1]**
1. Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency
3-1-1. Yoshinodai, Chuo, Sagamihara, 252-5210, Japan

Session 3D : Industrial applications 2

Auditorium 1
Chairman : Kaifeng Zhang, *Harbin Institute of Technology, China*

14h00 (invited lecture)
Friction stir welding combined with superplastic forming for monolithic titanium aircraft structure : influence of Post Welding thermal treatments on weld nugget residual stress
***Daniel Sanders*[1,2], *Paul Edwards*[1,2]**
1. Boeing, P.O. Box 3707 MS5K-63, Seattle, WA, 98124, U.S.A
2. University of Washington, Seattle, WA, U.S.A

14h30
Predicting defects and grain structure in cast Nickel and Chromium alloy super plastic forming tools by casting simulation
***P. Wood*[1], *J. Gebelin*[2], *O. Koeser*[3], *J. Chippendale*[4], *M. J. Qarni*[1], *A. Rosochowski*[5]**
1. Advanced Forming Research Centre, University of Strathclyde, Inchinnan, PA4 9LJ, UK
2. IRC, University of Birmingham, Edgbaston, B15 2TT, UK
3. ESI UK Ltd, Cannock, WS11 8JB, UK
4. BAE Systems (Operations) Limited, Farnborough, Hants, GU14 6YU, UK
5. DMEM, University of Strathclyde, Glasgow, G1 1XJ, UK

14h55
Form problem solving by Shainin method
Cécilia Lapeyrade
R& T/Department, Airbus Toulouse, 316 route de Bayonne, Toulouse, France

15h20
New coating generation for SPF tools made of Reinforced refractory castable reinforced with metallic fibres
***Thierry Cutard*[1], *Olivier Barrau*[2], *Fabien Nazaret*[2], *Aurélien Mazzoni*[1],**
1. Institut Clemnt Ader, Campus Jarlard, 81013 Albi Cedex, France
2. Aurock company, 54 rue Gustave Eiffel, 81000 Albi, France

Session 4C : Poster

Main Auditorium
Chairman : Rajab Said, *ESI, UK*

16h05
Poster short presentation by authors (2 minutes per poster)

Around Main Auditorium
16h35 : posters

Honored plenary lectures

Main Auditorium
Chairman : Richard Todd, *University of Oxford, UK*

8h40
Thoughts on superplasticity in general and on its role in Earth deformation
John Wheeler
Dept Geology and Geophysics, School of Environmental Sciences, University of Liverpool

Session 1E : Microstructure and texture

Main Auditorium
Chairman : Richard Todd, *University of Oxford, UK*

9h20 (invited lecture)
Characteristics of the GBS – SDC transition during bi-axial forming of AA5083
Terry McNelley[1], Keiichiro Oh-Ishi[2], Srinivasan Swaminathan[3], Paul Krajewski[4], Eric Taleff[5]
1. Naval Postgraduate School, Department of Mechanical and Aerospace Engineering, Monterey, CA 93940 USA
2. Nagaoka University of Technology, Department of Mechanical Engineering, Nagaoka 940-3188 JAPAN
3. GE Global Research, Bangalore 560066 INDIA
4. GM Research and Development Center,Warren, MI 48090 USA
5. University of Texas – Austin, Austin TX 78712 USA

9h50
Texture manifestations of the superplastic flow under the deformation treatment of Zr-based alloys
Yuriy Perlovich*, *Margarita Isaenkova, Olga Krymskaya, Vladimir Fesenko
National Research Nuclear University "Moscow Engineering Physics Institute", Kashirskoe shosse 31, Moscow 115409, Russia

10h15
Precise Calibration of Displacement vector map during superplastic deformation in Tetragonal zirconia polycrystal
***Kouichi Yasuda*[1], *Taku Okamoto*[1]**
1. Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, Ookayama 2-12-1-S7-14, Meguro-ku, Tokyo 152-8552, JAPAN

Session 1F : High strain rate & low temperature superplasticity

Auditorium 1
Chairman : Dan Sanders, *Boeing, USA*

9h20 (invited lecture)
Extraordinary high strain rate superplasticity of an Al-Mg-Sc-Zr alloy subjected to equal channel angular pressing
Elena Avtokratova*, *Oleg Sitdikov, Michael Markushev, Radik Mulyukov
Institute for Metals Superplasticity Problems, Khalturin St. 39, Ufa, 450001, Russia

9h50
Research on high rate superplastic forming for aluminium alloy
***Hai Jian Liang*[1], *Xiao Wei Wu*[1], *Yong Wang*[1], *Zhao Li Ma*[2], *Shuang Sheng Feng*[3],**
1. Beijing Research Institute of Mechanical & Electrical Technology, Beijing 100083, China
2. Beijing University of Aeronautics and Astronautics, Beijing 100191, China
3. Great Wall Motor Company Limited, Baoding 071000, China

10h15
Low temperature superplasticity of hydrostatically extruded Mg-Al-Zn alloys
***J. Victoria-Hernandez*[1], *D. Hernandez-Silva*[1], *S. Yi*[2], *D. Letzig*[2], *and J. Bohlen*[2]**
1. Department of Metallurgical Engineering, Instituto Politécnico Nacional-ESIQIE, Apdo. Postal 118-392, 07738 Mexico City, Mexico
2. Magnesium Innovation Centre MagIC, Helmholtz-Zentrum Geesthacht, Max-Planck-Strasse 1, D.21502 Geesthacht, Germany

Session 2E : Grain refinement

Main Auditorium
Chairman : Mike Wallis, *Rolls Royce, UK*

11h00 (invited lecture)
Microstructure Control and Mechanical Properties of Multipass Friction Stir Processed High Strength Aluminum Alloy
***Yutaka Matsuda*[1,2], *Goroh Itoh*[1], *Yoshinobu Motohashi*[1]**
1. Graduate School of Science and Engineering, Ibaraki University, 4-12-1Nakanarusawa, Hitachi-city, Ibaraki, 316-8511 Japan
2. Japan Boiler Association, 5-3-1 Shimbashi, Minato-ku, Tokyo, 105-0004 Japan

11h30
New type of ultra-fine grained microstructure in Ti-6Al-4V alloy for enhancing superplasticity
***Hiroaki Matsumoto*[1], *Sang-Hag Lee*[2], *Yoshiki Ono*[2], *Akihiko Chiba*[1]**
1. Institute of Materials research, Tohoku University, 2-1-1 Katahira, Aoba-ku, Sendai Japan
2. NHK SPRING CO., LTD., 3-10, Fukuura, Kanazawa-ku Yokohama Japan

11h55
Severe groove rolling of Mg-3Al-1Zn alloy for developing superplasticity
***Rajendra Doiphode*[1], *Rahul Kulkarni*[1], *Susrala Murty*[2], *Nityanand Prabhu*[1], *Bhagawati Kashyap*[1]**
1. Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, 400076, India
2. Special Materials Division, Vikram Sarabhai Space Center, Indian Space Research Organization, Tiruanantpuram, Kerala, India

12h20
Superplasticity Improvement of aluminum 7475 industrial sheets using a heat treatment
Patrick Romilly
ACB, 27 rue du Ranzai, Nantes, France

Session 2F : Material and structure modeling

Auditorium 1
Chairman : Marvan Kraisheh, *Masdar Institute of Science and Technology, UAE*

11h00 (invited lecture)
A Time-dependent Material Model for the Simulation of Hot Gas-pressure Forming of Magnesium Alloy AZ31

Alexander J. Carpenter [1] **,** ***Eric M. Taleff*** [1] **,** ***Louis G. Hector*** [2] **, Jr., Jon T. Carter** [2] ***and Paul E. Krajewski*** [2]
1. The University of Texas at Austin, Department of Mechanical Engineering, 1 University Station C2200, Austin, TX 78712-0292, USA
2. General Motors, Research and Development, MC480-106-212, 30500 Mound Rd., Warren, MI, 48090-9055, USA

11h30
New Strategy for the prediction of the Gas Pressure Profile of Superplastic Forming of Al-5083 Aluminium Alloy
N. Otegi [1] ***1, L. Galdos1, I. Hurtado1, S.B.. Leen2***
1. Mondragon University – Mechanical and Manufacturing Department – Spain
2. Glaway University – Mechanical and Biomedical Department – Ireland

11h55
Structure design, optimization and experimental verification of SPF/DB wing structure
Jie shao [1] **,** ***Zhiqiang Li*** [2] **,** ***Xiuquan Han*** [3] **,** ***Xiaoning Han*** [4]
1,2. Beijing Aeronautical Manufacturing Technology Research Institute ,Beijing, P.R.China

12h20
Failure prediction during superplastic deformation using finite element method
M. E. Hosseini [1] **,** ***S. J. Hosseinipour*** [1]
1. Metal Forming Research Group, Faculty of Mechanical Engineering, Babol Noshirvani University of Technology, Shariati Ave., P. O. Box 484, Babol, Iran

Session 3E : Fine grain Titanium alloys : Superplastic Forming versus Hot Forming ? Presentations and Pannel discussion

Main Auditorium
Chairman : Werner Beck*, Formtech, Germany*

14h00 (invited lecture)
Current status of research and development on superplastucity at the institute for metals superplasticity problems
Radik R. Mulyukov
Institute for Metals Superplasticity Problems, Russian Academy of Sciences, Ufa, Russia

14h25 (invited lecture)
Elevated Temperature Forming of Titanium Aircraft Hardware
Larry Hefti
The Boeing Company, Seattle, USA

14h50 (invited lecture)
Superplasticity in the aerospace titanium alloy Ti-5553
Takashi Maeda ***and Yoshihisa Shirai***
Corporate Research Laboratories, Sumitomo Metal Industries, Ltd., 1-8 Fuso-cho, Amagasaki, 660-0891 Japan

15h15 : Panel discussion
Radik R. Mulyukov, Institute for Metals Superplasticity Problems, Russia
Larry Hefti, Boeing, USA
Takashi Maeda, Sumitomo Metal Industries, Japan
Mauro Pizzingrilli, RTI Advanced Forming, UK
Alain Dupuy, Airbus, France
Peter Stewart, BAE Systems, UK

Session 4E : Material testing

Main auditorium
Chairman : Vincent Velay, *Ecole des Mines Albi, France*

16h05
Instrumentation and control of a bulge test on a superplastic Pb-Sn alloy
Erick Petta Marinho **,** ***Alberto Sakata, Erika Fernanda Prados, Gilmar Ferreira Batalha***
Escola Politécnica, Departamento de Engenharia Mecatrônica e de Sistemas Mecânico, Universidade de São Paulo Av. Prof. Mello Moraes, 2231 – Cidade Universitária, CEP: 05508-030 - São Paulo – SP, Brazil

16h35
Experimental study of the mechanical behavior of materials under transient regimes of superplastic deforming
Olga Bylya **,** ***Rudolf Vasin, Peter Chystyakov, Anatoly Muravlev***
Institute of Mechanics, Lomonosov Moscow State University, Michurinsky prosp. 1, Moscow, Russia

Session 4F : Industrial applications 3

Auditorium 1
Chairman : Landers Galdos, *Mondragon University, Spain*

16h05
Application of new generation Titanium chemical etching bath for alpha-case decontamination
Yves Marcel, ***Stéphane Barutello***
Bonnans SAS, Colomiers, France

16h35
Inclination angle effect on the thickness distribution in a superplastic formed long rectangular pan
Firas Jarrar [1] **,** ***Mohammad Nazzal*** [2]
1. Department of Mechanical Engineering, University of Jordan, 11942, Amman, Jordan
2. Department of Mechatronics Engineering, German Jordanian University, Amman, Jordan

Closing Session

Main Auditorium

19h00 : TOULOUSE-LAUTREC Museum Guided Tour

Poster session

Main Auditorium

Finite element simulation for superplastic blow forming of toroidal Ti-6Al-4V fuel tank
Jong-Hoon Yoon [1], ***Ho-Sung Lee*** [1], ***Yeng-Moo Yi*** [1], ***Joon-Tae Yoo*** [1]
1. Korea Aerospace Research Institute, 45 Eoeun-Dong Yuseong-Gu Daejeon 305-333 Republic of Korea

Magnetic and Mechanical properties of magnetically hard alloys of the Fe-Cr-Co system subjected to complex loading in superplastic conditions
Elena Korznikova [1], ***Anna Korneva*** [2], ***Galia Korznikova*** [1],
1. Institute for Metals Superplasticity Problems of RAS, 450001, 39, Khalturin Str., Ufa, Russia

A robust numerical method for validating mesoscopic grain boundary sliding controlled flow model for structural superplasticity
K. A Padmanabhan [1], ***Sriharsha Sripathi*** [1]
1. School of Engineering Sciences and Technology, University of Hyderabad, Gachibowli, Hyderabad – 500 046, India

Estimation of input to plastic deformation of non-crystallographic intergranular slip
Yuriy Perlovich, Margarita Isaenkova, Olga Krymskaya, Vladimir Fesenko
National Research Nuclear University "Moscow Engineering Physics Institute",Kashirskoe shosse 31, Moscow 115409, Russia

Recrystallization Behaviour by Heat Treatment of SAF 2205 Duplex Stainless Steel
Ouali Naima [1], ***Bouabdallah Mabrouk*** [2], ***Badji Riad*** [1]
1. Welding and Control Research Center, CSC, BP64, Route de Dely Brahim, Chéraga, Algiers, Algeria
2. Laboratoire de Génie sismique et dynamique des Structures. Ecole Nationale Polytechnique,10 Avenue Hassan Badi, El Harrach, Algiers

A new model to determine the activation energy for super plastic flow in advanced materials
Juan Daniel Muñoz-Andrade [1]
1. Departamento de Materiales, División de Ciencias Básicas e Ingeniería, Universidad Autónoma Metropolitana Unidad Azcapotzalco Av. San Pablo 180, Col. Reynosa Tamaulipas, 02200 México Distrito Federal, México.

A Study on preform die shape in two-stage superplastic forming of conical cups
A. Shamsi-Sarband [1], ***S.J. Hosseinipour*** [1], ***M. Bakhshi-Jooybari*** [1], ***M. Shakeri*** [1]
1. Metal Forming Research Group, Faculty of Mechanical Engineering, Babol Noshirvani University of Technology, Shariati Ave., P. O. Box 484, Babol, Iran

Superplastic forming and pressure welding of multilayer cellular structures
Rinat V. Safiullin
Institute for Metals Superplasticity Problems RAS,Khalturin Str. 39, 450001 Ufa, Russia

Superplasticity of AlCoCrCuFeNi high-entropy alloy
A.V. Kuznetsov [1], ***D.G. Shaysultanov*** [1], ***N.D. Stepanov*** [1], ***G.A. Salishchev*** [1], ***O.N. Senkov*** [2]
1. Laboratory of Bulk Nanostructured Materials, Belgorod State University, Pobeda 85, Belgorod, 308015, Russia
2. UES, Inc., 4401 Dayton-Xenia Rd., Dayton, OH 45432, USA

Low-temperature superplasticity in conventional Al–Mg–Mn alloy processed by ECAP and subsequent isothermal rolling
Ilya Nikulin, Alla Kipelova, Rustam Kaibyshev
Laboratory of mechanical properties of nanoscale materials and superalloys, Belgorod State University, Pobeda 85, Belgorod 308015, Russia

Superplasticity of an AA5024 alloy processed by Severe Plastic deformation
Anna Mogucheva, Diana Tagirova, Rustam Kaibyshev
Belgorod State University, Pobeda 85, Belgorod, 308015, Russia

Fine-grained structure and superplasticity of Al – Cu – Mg – Fe - Ni alloys
Anton Kotov, Anastasia Mikhaylovskaya*, Vladimir K. Portnoy
National University of Science and Technology "MISIS",119049 Leninsky Prospect, 4, Russian Federation

Innovative superplastic forming based on IN-SITU Infra-RED sheet heating
Gerard Bernhart [1], ***Jean-Paul Arcens*** [1], ***Yannick Le Maoult*** [1]
1. Universite de Toulouse, Institut Clément Ader, Mines Albi, Campus Jarlard, 81013 Albi, France

Modification of tool steel by friction stir processing
Toru Nagaoka [1], ***Hiroyuki Watanabe*** [1], ***Masao Fukusumi*** [1], ***Yusuke Kitamura*** [2], ***Tadashi Mizuno*** [2], ***Genryu Abe*** [2], ***Yoshiaki Morisada*** [3], ***Hidetoshi Fujii*** [3]
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2. AMC Corporation, 6-2-29 Izuo Taisho-ku, Osaka city, Japan
3. Joining and Welding Research Institute, Osaka University, 11-1 Mihogaoka, Ibaraki city, Japan

Microstructural Control of a Zn-22Al Alloy by Rolling Process
Toshiaki Manaka [1], ***Goroh Itoh*** [1], ***Nguyen The Loc*** [2], ***Yoshinobu Motohashi*** [1], ***Takaaki Sakuma*** [1]
1. College of Engineering, Ibaraki University, 4-12-1 Nakanarusawa, Hitachi-City, 316-8511 Japan
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