BNM 2009

FROM FUNDAMENTALS TO INNOVATIONS

ORGANIZING COMMITTEE:

Chairman: Ruslan Z. Valiev
Co-chairman: Terence G. Langdon

SYMPOSIUM'S COORDINATOR:

Natalya A. Reshetnikova

LOCAL COMMITTEE:

Murat B. Guzairov
Rustam A. Badamshin
Igor V. Alexandrov
Kamil A. Khismatullin
Dmitry V. Gunderov
Andrey V. Scherbakov
Nafisa S. Yakupova
and others.

PROGRAM COMMITTEE:

Chairman: Yuriy D. Tretyakov, *Moscow*
Co-chairman: Igor V. Alexandrov, *Ufa*
Members: Sulkhan T. Davitadze, *Moscow*
Sergey V. Dobatkin, *Moscow*
Evgeny I. Evdokimov, *Moscow*
Aleksandr M. Glezer, *Moscow*
Mikhail I. Karpov, *Chernogolovka*
Yuriy R. Kolobov, *Belgorod*
Eugeny A. Levashov, *Moscow*
Vladimir G. Pushin, *Yekaterinburg*
Vladimir V. Stolyarov, *Moscow*
Boris B. Straumal, *Moscow*

INTERNATIONAL STEERING COMMITTEE:

Ruslan Z. Valiev, *Russia*
Terence G. Langdon, *USA*
Yuri Estrin, *Australia*
Zenji Horita, *Japan*
Michael J. Zehetbauer, *Austria*
Yuntian T. Zhu, *USA*

SECRETARIAT:

Julia V. Bazhenova
Zarema A. Safargalina

SYMPOSIUM'S SECRETARY:

Milyausha R. Salakhova

RUSNANO
Russian Corporation of Nanotechnologies

I S T C
М Н Т Ц
15 лет 15 years

РФФИ

УГАТУ

Федеральная целевая программа «Научные и научно-педагогические кадры инновационной России» на 2009-2013 годы

Торгово-промышленная палата Республики Башкортостан

21 September, Monday

14.00-16.30 ***Registration of participants***

22 September, Tuesday

09.00-10.00 ***Late registration of participants***
10.00-10.40 **Opening of the Congress**. Welcome reports.

10.40-11.00 **Key-note overview report**
Nanomaterials: through science to innovations
H. Hahn
Forschungszentrum Karlsruhe, Institute for Nanotechnology, Karlsruhe, Germany &
Joint Research Laboratory Nanomaterials, Forschungszentrum Karlsruhe and Technische Universität Darmstadt, Darmstadt, Germany

11.00-11.30 ***Coffee-Break/*Opening of the 1st High-Tech Exhibition**

11.30-11.35 **Opening of the Symposium**
11.35-11.45 Opening addresses by the organization committee
11.45-12.00 Introductory addresses by the symposium chairmen

12.00-12.30 **Key-note overview report**
Nanoscience and nanotechnology: quo vadis?
H. Gleiter
Forschungszentrum Karlsruhe, Institute for Nanotechnology, Karlsruhe, Germany

12.30-13.00 **Introductory overview report**
Extraordinary properties of SPD-produced nanometals: origin and strategies for achievements
R.Z. Valiev
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

13.00-13.20 **Introductory overview report**
The impact of bulk nanostructured materials in modern research
T.G. Langdon
Departments of Aerospace & Mechanical Engineering and Materials Science, University of Southern California, Los Angeles, CA, U.S.A., &
Materials Research Group, School of Engineering Sciences, University of Southampton, Southampton, U.K.

13.20-19.00 ***Oral session "Innovation Trends and Commercialization of Nanomaterials"***

13.20-13.40 **Invited report**
ISTC: Partner in science. Partner in commercialization
T. Murray
International Science and Technology Center, Moscow, Russia

13.40-14.00 **Invited report**
RUSNANO: driving the nanotech industry growth
E. Evdokimov, S. Davitadze
Russian Corporation of Nanotechnologies, RUSNANO, Moscow, Russia

14.00-15.00 ***Lunch***

15.00-15.20 **Invited report**
Markets for bulk nanostructured metals
T. Lowe
Manhattan Scientifics Incorporated, New York, NY, USA

15.20-15.40 **Invited report**

Commercial potential of twist extrusion

Y. Beygelzimer, **V. Varyukhin**, S. Synkov

Donetsk Institute for Physics & Engineering named after A.A. Galkin, National Academy of Sciences of Ukraine, Donetsk, Ukraine

15.40-16.00 **Invited report**

Advantages and possible applications of SPD steels

S.V. Dobatkin

A.A. Baikov Institute of Metallurgy and Materials Science, RAS, Moscow, Russia

16.00-16.15 **Oral report**

Ultrafine grained metals in micro-manufacturing

A. Rosochowski and L. Olejnik

Design, Manufacture and Engineering Management, University of Strathclyde, Glasgow, United Kingdom

16.15-16.30 **Oral report**

Bulk ultra fine grained titanium. From research to industry

G. Krallics

Institute for Nanotechnology, Miskolc-Egyetemváros, Hungary

16.30-17.00 ***Coffee-break***

17.00-17.15 **Oral report**

Corrosion resistance and biocompatibility of nanostructured titanium for medical application

E.B. Yakushina, N.A. Amirkhanova, E.Y. Cherniaeva, R.Z. Valiev

Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

17.15-17.30 **Oral report**

Development of a new class of age hardenable bulk nano-intermetallic dispersed amorphous matrix AlCuTi and AlTiSi composites for high specific strength applications

I. Manna

Metallurgical and Materials Engineering Department, Indian Institute of Technology, Kharagpur, India

17.30-17.45 **Oral report**

Nanostructuring of Ti-alloys by SPD for structural application

I.P. Semenova, E.B. Yakushina, G.K. Salimgareeva, V.V. Nurgaleeva, R.Z. Valiev

Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

17.45-18.00 **Oral report**

Industrial methods of ultra-fine grain structure formation in titanium alloy

M.B. Ivanov, Y.R. Kolobov, A.V. Penkin, E.V. Golosov, A.B. Nekrasov

REC Nanostructured Materials and Nanotechnologies, Belgorod State University, Belgorod, Russia

18.00-18.15 **Oral report**

Bulk nanostructured products produced by ECAP, multiple forging and combined with rolling: structure, properties, application

G.A. Salishchev, R.Z. Valiev, S.V. Dobatkin

Belgorod State University, Belgorod, Russia

18.15-18.30

Innovation application of nanostructured TiNi alloys

D. Gunderov[a], **V. Pushin**[b], E. Prokofiev, A. Lukyanov, N. Kuranova, S. Prokoshkin, R. Gizatulin, R. Valiev

[a]*Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia*

[b]*Institute of Physics of Metals UB RAS, Yekaterinburg, Russia*

18.30-18.45 **Oral report**

Application of nanostructural Ti alloy for producing a face plate for a golf club

A.R. Safiullin, **R.V. Safiullin**, A.A. Kruglov

Institute for Metals Superplasticity Problems, Russian Academy of Sciences, Ufa, Russia

18.45-19.00 **Oral report**

Towards fabrication of semi-products out of nanostructured metals and alloys using severe plastic deformation

G. Raab, R.Z. Valiev, I.P. Semenova, D.V. Gunderov

Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

19.00-21.30 ## *Poster session and welcome (beer) party*

A

A-001

Mathematical and computer modeling of superplastic forming and diffusion bonding processes

A.K. Akhunova, S.V. Dmitriev

Institute for Metals Superplasticity Problems, Russian Academy of Science, Ufa, Russia

A-002

The corrosion behaviour of ultrafine-grained materials received by equal channel angular pressing

N.A. Amirhanova

Ufa State Aviation Technical University, Ufa, Russia

A-003

Corrosion resistance of ultrafine-grained materials

N.A. Amirhanova

Ufa State Aviation Technical University, Ufa, Russia

A-004

A comparative study of structure and mechanical properties of low carbon martensitic and ferritic-pearlitic steels processed by equal channel angular pressing

E.G. Astafurova, S.V. Dobatkin, G.G. Zakharova, E.V.Naydenkin, O.F. Vagapova, G.I. Raab

Institute of Strength Physics and Materials Science, Siberian Branch of Russian Academy of Sciences, Tomsk, Russia, & Tomsk State University, Tomsk, Russia

A-005

Processing of nanostructured titanium alloys for manufacturing of composite blade shell

V.V. Astanin, R.Y. Lutfullin, **V.V. Astanin**

Institute for Metals Superplasticity Problems of RAS, Ufa, Russia

A-006

Molecular dynamics simulation of dislocation reactions and climb in a two-dimensional crystal

J.A. Baimova, S.V. Dmitriev, A.A. Nazarov

Institute for Metals Superplasticity Problems of RAS, Ufa, Russia

A-007

Characterization of ultra-fine grained steel samples produced by high pressure torsion via magnetic Barkhausen noise analysis

S. Bayramoglu, C. Hakan Gur, M. Abramova, I. Alexandrov

Metallurgical and Materials Engineering Department, Middle East Technical University, Ankara, Turkey

A-008

Influence of ECAP-PC on ultrafine-grained structure evolution and mechanical behavior of Al 6061 alloy

E.V. Bobruk, M.Y. Murashkin, R.Z. Valiev

Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

A-009

Microstructure evolution during severe plastic deformation in a cast superalloy

B. Bolshakov, O. Kaibyshev, K. Petrin and F. Musin

Ufa State Aviation Technical University, Ufa, Russia

A-010
Simulation of ECAP-Conform and ECAP in parallel channels for production of nanostructured metallic materials
A.V. Botkin, A.N. Abramov, G.I. Raab, E.V. Varenik, A.G. Raab
Ufa State Aviation Technical University, Ufa, Russia

A-011
Mechanical porperties of an ECAP and rolled AA3004
M. Cabibbo, L. Barone, M. El Mehtedi, E.F. Prados, M. Ferrante
Department of Mechanical Engineering, Marche Polytechnic University, Ancona, Italy

A-012
Nanostructuring mechanisms and magnetic properties of FePd intermetallics processed by severe plastic deformation
A. Chbihi, **X. Sauvage**, D. Blavette, R.Z. Valiev, D.V. Gunderov, A.G. Popov
Université de Rouen, CNRS UMR 6634, Groupe de Physique des Matériaux, Faculté des Sciences BP 12, Saint Etienne du Rouvray, France

A-013
Structure and properties of the Al-Mg-Mn-Zr-Sc alloys with different initial states after ECA pressing
S. Dobatkin, Y. Estrin, V. Zakharov, T. Rostova, O. Ukolova,
A. Chirkova
State Technological University "Moscow Steel and Alloys Institute", Moscow, Russia

A-014
Structure and mechanical behavior of submicrocrystalline low carbon steel after equal channel angular pressing and heating
S. Dobatkin, R. Valiev, M. Pankova, V. Semenov, G. Raab and S. Shagalina
A.A. Baikov Institute of Metallurgy and Materials Science, RAS, Moscow, Russia

A-015
Aging of the Mg-Al-Ca-Mn alloy after high pressure torsion
T. Dobatkina, L. Rokhlin, N. Nikitina, I. Korol'kova, S. Dobatkin
A.A. Baikov Institute of Metallurgy and Materials Science, RAS, Moscow, Russia

A-016
Rolling as a method of producing nanocrystalline structure in titanium
G. Salishchev, S. Malysheva, S. Zherebtsov, **G. Djyakonov**, N. Lopatin
Belgorod State University, Belgorod, Russia

A-017
Nanocluster formation in submicrocrystalline Fe-Cr-Ni alloys
A.I. Deryagin, V.A. Zavalishin, V.V. Sagaradze, **V.N. Varyukhin**,
B.M. Efros
Physicotechnical Institute NAN Ukraine, Donetsk, Ukraine

A-018
Amplification of the induced ferromagnetism in the diluted magnetic semiconductor
R.M. Farzetdinova, E.Z. Meilikhov
Kurchatov Institute, Moscow, Russia

A-019
Structure and mechanical properties of steel 20, subjected to equal-channel angular pressing
I.V. Alexandrov, **R.R. Gallyamova**, **N.G. Zaripov**, R.R. Kabirov, V.I. Semyenov
Ufa State Aviation Technical University, Ufa, Russia

A-020
Structure and properties of UFG tungsten processed by SPD techniques
A.V. Ganeev, V.U. Kazykhanov, R.K. Islamgaliev, R.Z. Valiev
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

A-021
The multilayered material from titanium alloy VT6
A.A. Ganeeva, A.A. Kruglov, R.Ya. Lutfullin
Institute for Metals Superplasticity Problems, RAS, Ufa, Russia

A-022
Fatique properties of nanocrystalline titanium
H. Garbacz, **Z. Pakieła**, K. Kurzydłowski
Warsaw University of Technology, Department of Materials Science and Engineering, Materials Design Division, Warsaw, Poland

A-023
Elasticity and anelasticity of ultrafine grained Cu produced by ECAP
I.S. Golovin, V.Y. Zadorozhnyy , Y. Estrin
Moscow Institute for Steel and Alloys, Technical University, Moscow, Russia
Investigation of accumulative roll-bonding process of similar and composite metallic materials and alloys

A-024
Investigation of accumulative roll-bonding process of similar and composite metallic materials and alloys
S.V. Gladkovsky, S.V. Smirnov, E.A. Kokovihin, **I.A. Golubkova**,
T.A. Trunina
Russian Academy of Sciences Urals Branch Institute of Engineering Science, Yekaterinburg, Russia

A-025
A gradual velocity field upper-bound analysis of channel angular deformation
B. Talebanpour, N. Pardis, **M. Hariri** and R. Ebrahimi
Dept. Materials Science and Engineering, School of Engineering, Shiraz University, Shiraz, Iran

A-026
Initial state influence on the nanocrystalline structure formation in the zirconium alloy Zr-2.5%Nb under severe plastic deformation
G.F. Hasanova, I.M. Safarov, R.H. Hisamov, R.R. Mulyukov
Institute for Metals Superplasticity Problems of the Russian Academy of Sciences, Ufa, Russia

A-027
Substantial improvement in mechanical properties by cold rolling and intercritical annealing of Fe-Ni-Mn maraging alloys
S. Hossein Nedjad, M. Kanani, H. Vahdatkhah, M.R. Movaghar Garabagh, H. Shirazi, M. Nili Ahmadabadi
Faculty of Materials Engineering, Sahand University of Technology, Tabriz, Iran

A-028
Mechanical property of magnesium alloy based metal matrix composite materials
S.-J. Huang, Y.-R. Jeng, V.I. Semenov, Y.-Z. Dai
Department of Mechanical Engineering, National Chung Cheng University, Chia-Yi, Taiwan

A-029
Microstructure and precipitation kinetics of coarse and ultrafine grained Al 6063, Al 6061 and Al 7075 alloys
S.K. Panigrahi, P. N. Rao, **R. Jayaganthan**
Department of Metallurgical and Materials Engineering Indian Institute of Technology, Roorkee, India

A-030
Soliton mechanism of Frenkel's pair formation
A.M. Iskandarov, S.V. Dmitriev, A.A. Nazarov
Institute for Metals Superplasticity Problems RAS, Ufa, Russia

A-031
Change coercive force of steel samples with the various plasticity reached by thermomechanical processing, at a stretching
A.M. Ivanov, S.S. Vashenko
Institute of Physical and Technical Problems of the North, SB RAS, Yakutsk, Russia

A-032

Deformation and destruction of the structural steel subjected to severe plastic deformation and thermal processing

A. Ivanov, E.S. Lukin, N.D. Petrova, S.S. Vashenko

Institute of Physical and Technical Problems of the North, SB RAS, Yakutsk, Russia

A-033

The effect of backpressure on microstructure and properties of Mg–3Al–1Zn alloy by equal channel angular pressing

F. Kang, J.Q. Liu, J.T. Wang, X. Zhao, K.N. Xia

Department of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, P.R. China

A-034

Spall fracture ultrafine-grained and coarse-grained FCC metals under irradiation by relativistic high-current electronic beam

E.F. Dudarev, A.B. Markov, G.P. Bakach, A.N. Tabachenko, C.D. Polevin, **O.A. Kashin**, N.V. Girsova, A.B. Scosyrski, M.F. Jorovkov, V.P. Rotstein

Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia

A-035

Application of nanocrystalline VT 22 alloy sheets for GTE components

V.V. Astanin, **P.A. Klassman**, E.Y. Klassman

Institute for Metals Superplasticity Problems RAS, Ufa, Russia

A-036

Structure evolution of submicrocrystalline copper during cyclic deformation

L. Kommel, **S. Dobatkin**, B. Straumal, I. Kommel, A. Kuznetsov

[a]*Tallinn University of Technology, Tallinn, Estonia*

[b]*A.A. Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences, Moscow, Russia*

A-037

Long-term storage of Ti-Ni shape memory alloys after moderate and severe plastic deformation

A. Korotitskiy, K. Inaekyan, S. Prokoshkin, V. Brailovski

Moscow Institute of Steel and Alloys, Moscow, Russia

A-038

Structure and microhardness of nanocrystalline composite alloys based on Al and Ti

N.I. Noskova, R.V. Churbaev, **L.G. Korshunov**, Y.I. Filippov

Institute of Metal Physics, Ural Branch RAS, Yekaterinburg, Russia

A-039

The formation of gradient ultrafine grained structure in the low cobalt hard magnetic alloy of Fe-Cr-Co system during complex loading

A. Korznikov, G. Korznikova

Institute of Metals Superplasticity Problems, Russian Academy of Sciences, Ufa, Russia

A-040

Microstructural stability and creep behavior of a precipitate strengthened binary Cu-Zr alloy processed by ECAP

P. Kral, J. Dvorak, V. Sklenicka, M. Svoboda, I. Saxl

Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Brno, Czech Republic

B

B-001

New generation of nanoparticles disperse-strengthened cobalt and iron based binders for diamond tool

V. Kurbatkina, E. Levashov, A. Zaitsev

State Technological University "Moscow Institute of Steel and Alloys", Scientific -Educational Center of Self-Propagating High-Temperature Synthesis, Moscow, Russia

B-002
The electrochemical behaviour of ultrafine-grained copper received by equal channel angular pressing
J.B. Kutnyakova
Ufa State Aviation Technical University, Ufa, Russia

B-003
Mechanical twinning and phase transformation in nanostructured austenitic stainless steel under severe plastic deformation
I. Litovchenko, N. Shevchenko, A. Tyumentsev, A. Korznikov
Institute of Strength Physics and Material Science SB RAS, Tomsk, Russia

B-004
Features of nanostructured states formation under large plastic deformation of austenitic steels
A. Tyumentsev, **I. Litovchenko**, N. Shevchenko and A. Korznikov
Institute of Strength Physics and Material Science SB RAS, Tomsk, Russia

B-005
Creep - and diffusion measurements on ultra-fine grained copper after high-pressure torsion straining
J. Leuthold, M. Wegner, D. Setman, M. Zehetbauer, S.V. Divinski, H. Rösner and G. Wilde
Institute of Materials Physics, University of Münster, Münster, Germany

B-006
Microstructure refinement of Ti-6Al-4V two-phase titanium alloy during thermomechanical treatment by radial-shear rolling
N. Lopatin, O. Maradudina, G. Salishchev, S. Zherebtsov
Belgorod State University, Belgorod, Russia

B-007
Mechanisms and models of achievement of the minimum size of grain under the severe plastic deformation in TiNi based alloys
A. Lotkov, A. Baturin, V. Grishkov
Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia

B-008
Investigation of impact strength of nanocrystalline titanium alloy Ti-6Al-4V
S. Malysheva, G.Salishchev, N. Izmaylova, E. Saphin
Institute for Metals Superplasticity Problems RAS, Ufa, Russia

B-009
Development of bulk nanstructured steel by prior cold deformation and/or austempering
J. Chakraborty, D. Bhattacharjee, **I. Manna**
Metallurgical and Materials Engineering Department, Indian Institute of Technology, Kharagpur, India

B-010
Mechanism and kinetics of crystallization and wetting of nano-intermetallic phases from amorphous Al-alloy matrix
I. Manna and B.B. Straumal
Metallurgical and Materials Engineering Department, Indian Institute of Technology, Kharagpur, India

B-011
Superstrength nanostructured bulk commercial aluminum products by severe plastic deformation: reality or myth?
M.V. Markushev, M.Yu. Murashkin
Institute for Metals Superplasticity Problems RAS, Ufa, Russia

B-012
Structure and properties of cryorolled Al-Cu-Mg alloy
M.V. Markushev, O.S. Sitdikov, E.V. Avtokratova, E.V. Bobruk and M.Y. Murashkin
Institute for Metals Superplasticity Problems RAS, Ufa, Russia

B-013
Optimization of Cu-Cr alloy thermal treatment after high pressure torsion
N.V. Mazhitova, S.N. Faizova, R.Z. Valiev
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

B-014
Role of grain boundary segregation in "dissolution" of the cementite in the SPD-treated Fe–C alloys
A. Mazilkin, S. Potasova, A. Petelin, S. Dobatkin, B. Straumal, B. Baretzky
Max-Planck-Institut für Metallforschung, Stuttgart, Germany, & Institute of Solid State Physics, RAS, Chernogolovka, Russia

B-015
Influence of severe plastic deformation on second phase refinement in 7475 (Al – Zn) alloy
J. Mizera, B. Adamczyk-Cieślak, Z. Pakieła
Warsaw University of Technology, Faculty of Materials Science and Engineering, Warsaw, Poland

B-016
Intercritical annealing of nanostructured 18Ni maraging steel deformed by equal-channel angular pressing
M.R. Movaghar Garabagh, **S. Hossein Nedjad**, H. Shirazi, M. Nili Ahmadabadi
Faculty of Materials Engineering, Sahand University of Technology, Tabriz, Iran

B-017
Solid state joining in nanostructured titanium alloy VT6
M.K. Mukhametrakhimov
Institute for Metals Superplasticity Problems RAS, Ufa, Russia

B-018
Thermal stability and mechanical properties of nanostructured nickel based alloy Inconel 718
S. Mukhtarov, V. Valitov, N. Dudova
Institute for Metals Superplasticity Problems RAS, Ufa, Russia

B-019
Microstructure evolution in a casting alloy during hot equal-channel angular extrusion
F. Musin, A. Belyakov, R. Kaibyshev, Y. Motohashi, G. Itoh and K. Tsuzaki
Ufa State Aviation Technical University, Ufa, Russia

B-020
Influence of severe plastic deformation on microstructure refinement and thermal stability of the Al AK4-1 alloy
M. Nikitina, R. Islamgaliev, A. Kamalov
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

B-021
Structure and properties of the nanocrystalline Zr-alloys after high pressure torsion
S. Nikulin, S. Dobatkin, V. Kopylov, S. Rogachev
State Technological University "Moscow Steel and Alloys Institute", Moscow, Russia

B-022
Diagnosis of structural state of bulk submicro-and nanocrystalline soft magnetic materials
N.I. Noskova, A.G. Lavrentiev
Institute of Metal Physics, Ural Branch RAS, Yekaterinburg, Russia

B-023
Investigation of different processing routes in simple shear extrusion
N. Pardis, **R. Ebrahimi**
Dept. Materials Science and Engineering, School of Engineering, Shiraz University, Shiraz, Iran

B-024
Possibilities of controlling the structure and properties of metal materials under combined loading
E.G. Pashinska
Donetsk Institute for Physics and Engineering, NAS of Ukraine, Donetsk, Ukraine

B-025
Formation of ultrafine-grained and nano-crystalline structures versus texture development in heat-resistant Ni-based alloys under high-temperature deformation treatment
Y. Perlovich[a], M. Isaenkova, V. Fesenko, O. Krymskaya, **V. Valitov**[b], N. Dudova
[a]*Moscow Engineering Physics Institute (State University), Moscow, Russia*
[b]*Institute for Metals Superplasticity Problems RAS, Ufa, Russia*

B-026
Structure and properties of Al-7075 alloy upon dynamic channel angular pressing
I. Brodova, **A. Petrova**, O. Plekhov, V. Chudinov, V. Leontiev, O. Naimark
Institute of Metal Physics, Ural Division, Russian Academy of Sciences, Yekaterinburg, Russia

B-027
Experimental study of thermodynamics of plastic deformation of nanocrystalline metals
O. Plekhov, V. Chudinov, V. Leontiev, O. Naimark, R. Valiev, I. Semenova
Institute of Continuous Media Mechanics of the Urals Branch of the Russian Academy of Sciences, Perm, Russia

B-028
Features of severe plastic deformation for amorphous alloys
A. Glezer, S.Dobatkin, **M. Plotnikova**, A. Shalimova
I.P. Bardin Central Research Institute for Ferrous Metallurgy, Moscow, Russia

B-029
Influence of low-temperature annealing on structure and properties of Ti subjected to ECAP-Conform and subsequent drawing
A.V. Polyakov, G.I. Raab, D.V. Gunderov, E.P. Soshnikova, R.Z. Valiev
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

B-030
SPD-treated Cu–Co alloys: structure and magnetic properties
S. Protasova, A. Mazilkin, B. Straumal, R. Valiev, E. Rabkin, D. Goll, B. Baretzky
Max-Planck-Institut für Metallforschung, Stuttgart, Germany, & Institute of Solid State Physics, RAS, Chernogolovka, Russia

C

C-001
Processing of IF-steel sheets by continuous equal-channel angular rolling
G. Purcek, O. Saray, T. Kucukomeroglu
Department of Mechanical Engineering, Karadeniz Technical University, Trabzon, Turkey

C-002
Computer simulation of the ECAP-Conform processing of low-carbon steel
A.G. Raab, M.V. Chukin, D.G. Tyulenev, A.V. Botkin
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

C-003
On the way toward innovative application of BNM via international cooperation
Z. Safargalina, N. Reshetnikova, M. Salakhova
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

C-004
Formation of nanocrystalline structure in bulk low carbon steels under warm deformation
I.M. Safarov, A.V. Korznikov
Institute for Metals Superplasticity Problems RAS, Ufa, Russia

C-005
Evolution of microstructure, crystallographic texture, microhardness and deformation behavior in nanostructured tungsten during annealing
D.S. Safina, A.V. Ganeev, Y. Zhang, J.T. Wang, I.V. Alexandrov, R.Z. Valiev
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

C-006
Mechanical properties and application prospects of two-phase titanium alloy Ti-6Al-4V with submicrocrystalline structure
G.A. Salishchev, **S.V. Zherebtsov**, S.P. Malysheva, A.M. Smyslov, E.V. Safin, N.F. Izmailova
Belgorod State University, Belgorod, Russia

C-007
Processing of long-length rods out of nanostructured steel with the carbon content of 0.1% by ECAP-Conform
V.I. Semenov, A.G. Raab, M.V. Chukin
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

C-008
The influence of initial phase state on nanocrystalline structure formation in Cu-3.5%Ag-0.2%Zr alloy
I.M. Safarov, **V.I. Sergeev**
Ufa State Aviation Technical University, Ufa, Russia

C-009
Strain rate effect on new grain development in as-cast 7475 Al alloy during conventional and severe hot deformation
O. Sitdikov, H. Miura, A. Goloborodko, T. Sakai
Institute for Metals Superplasticity Problems RAS, Ufa, Russia

C-010
Texture development in Cu and Ti, subjected to continuous ECAP
I. Alexandrov, N. Enikeev, **V. Sitdikov**, G. Raab, R. Valiev
Ufa State Aviation Technical University, Ufa, Russia

C-011
Crystallographic texture development in CP Ti, subjected to high pressure torsion
V. Sitdikov, I. Alexandrov, J. Bonarski
Ufa State Aviation Technical University, Ufa, Russia

C-012
Influence of the intensive etching processes on structure and properties of CN_x films
R. Shalaev, V. Varyukhin, A. Prudnikov, A. Yakovec, A. Linnik, A. Ulyanov
Donetsk Phys.&Tech. Institute of NASU, Donetsk, Ukraine

C-013
The program and the first results of the research into the bulk nanostructured 18Cr-9Ni steel for possible application in an atomic reactor industry
V.K. Shamardin, I.V. Alexandrov, T.M. Bulanova, M.M. Abramova, N.A. Enikeev, R.Z. Valiev
Federal State Unitary Enterprise "State Scientific Center of Russian Federation – Research Institute of Atomic Reactors", Dimitrovgrad, Russia

C-014
Influence of ECAP conditions on fine structure in the Al-1461 alloy
I. Shirinkina, I. Brodova, M. Murashkin, L. Kaigorodova
Institute of Metal Physics, Ural Division, Russian Academy of Sciences, Yekaterinburg, Russia

C-015
Microstructure and mechanical of gas-turbine engine blades from ultrafine-grained Ti alloy VT6
I.V. Skryabin, N.F. Izmailova, I.P. Semenova, S.P. Pavlinich
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University

C-016
Effect of ECAP on mechanical properties of 8090 Al-Li alloy
M.H. Tahmasebi, M. Shayan, M. Meratian, M.R. Toroghinejad, M.H. Khaleghifar
Department of Materials Engineering, Isfahan University of Technology, Isfahan, Iran

C-017
Cyclic strength of the 0.07%C-17.3%Cr-9.2%Ni austenitic steel after equal channel angular pressing
V. Terentjev, S. Dobatkin, D. Prosvirnin, I. Bannykh, G. Raab, O. Rybalchenko
A.A.Baikov Institute of Metallurgy and Materials Science RAS, Moscow, Russia

C-018
Fatigue of the Mg-3.0%Al-0.8%Zn-0.5%Mn alloy after equal-channel angular pressing
V. Terentjev, S. Dobatkin, D. Prosvirnin, I. Bannykh, V. Kopylov, V. Serebryany
A.A.Baikov Institute of Metallurgy and Materials Science RAS, Moscow, Russia

C-019
Nanocrystalline structure formation in Y-Fe-Co-B alloys and the regularities of their magnetic hysteresis properties
I. Tereshina, G. Burkhanov, S. Dobatkin
A.A.Baikov Institute of Metallurgy and Materials Science RAS, Moscow, Russia

C-020
Role of impurities in steels processed by high pressure torsion
R. Tejedor, K. Edalati, J.A. Benito, J.M. Cabrera, Z. Horita
Department of Materials Science and Metallurgical Engineering, ETSEIB, Universitat Politecnica de Catalunya, Barcelona, Spain

C-021
Influence of degree of deformation and drawing temperature on internal stresses, structure and properties of Cu-Nb nanocomposites
M.A. Tikhonovsky, O.J. Volchok
National Science Center "Kharkov Institute of Physics and Technology", Kharkov, Ukraine

C-022
Experimental investigation of internal stresses in multifilamentary Cu-Nb_3Sn nanocomposites
M.A. Tikhonovsky
National Science Center "Kharkov Institute of Physics and Technology", Kharkov, Ukraine

C-023
Nanostructured high temperature alloys: processing of axial symmetric aircraft engine components
F.Z. Utyashev
Institute of Metals Superplasticity Problems RAS, Ufa, Russia

C-024
Effect of scandium additions on as-cast and ECA pressed Al-2Si alloy
K. Venkateswarlu, V. Rajinikanth, A. K. Ray, C. Xu, T.G. Langdon
National Aerospace Laboratories, Bangalore, India

C-025
Evolution of submicrocrystalline structure in A-Mg-Li and Al-Mg-Si alloys during straining at elevated temperatures
N. Yunusova, R. Islamgaliev, M. Nikitina, R. Valiev
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

C-026

Structure and mechanical properties of Hadfield steel single crystals after high pressure torsion

G.G. Zakharova, E.G. Astafurova, G.Yu. Kazantsev
Tomsk state university, Tomsk, Russia

C-027

Ultrafine-grained structure processing of 18-10 stainless steel using high-pressure torsion

A.A. Zakirova, R.G.Zaripova
Institute for Metals Superplasticity Problems of the Russian Academy of Sciences, Ufa, Russia

C-028

Ultrafine-grained structure processing of 18-10 stainless steel using equal-channel angular pressing

R.G. Zaripova, A.A. Zakirova
Ufa State Aviation Technical University

C-029

Refinement of microstructure of titanium and Ti-6Al-4V titanium alloy by means of hydrostatic extrusion

S. Zherebtsov, W. Lojkowski, G. Salishchev
Belgorod State University, Belgorod, Russia

C-030

Equal channel angular drawing of titanium sheet

A. Zisman, V. Rybin and R. Saznov
CRISM "Prometey", St.-Petersburg, Russia

23 September, Wednesday

09.00-12.00 ***Sightseeing for interested participants***

09.00-12.00 ***Special session for participants of ISTC projects***

10.00-10.20 **Introductory report**
Commercialization of nanostructured materials on the example of nano-Ti to be applied in medicine
A. Shcherbakov
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

10.20-10.35 **Oral report**
Innovations in the sphere of nanomaterials
K. Khismatullin
"NanoMeT", Ltd., Ufa, Russia

10.35-10.50 **Oral report**
Towards commercialization of bulk nanostructured materials
A. Smolyakov
Russian Federal Nuclear Center – VNIIEF, Sarov, Russia

12.00-14.00 ***Lunch (outside of the Venue)***

14.00-18.00 ***Oral session "Processing of Bulk Nanomaterials"***

14.00-14.25 **Key-note report**
High-pressure torsion for improvement of functional properties
Z. Horita
Department of Materials Science and Engineering, Faculty of Engineering, Kyushu University, Fukuoka, Japan

14.25-14.45 **Invited report**
Technologies of nanopowder consolidation
M. Alymov
IMET RAS, Moscow, Russia

14.45-15.05 **Invited report**
Multiphase materials processed by severe plastic deformation, different routes to achieve bulk nanostructured materials
X. Sauvage, P. Jessner, A. Chbihi, D. Gunderov, R. Valiev, A. Popov, E.V. Belozerov
Groupe de Physique des Matériaux - CNRS (UMR 6634), University of Rouen, Rouen, France

15.05-15.25 **Invited report**
Cycling principle for severe plastic deformation
A. Glezer
I.P. Bardin Central Research Institute for Ferrous Metallurgy, Moscow, Russia

15.25-15.45 **Invited report**
Advanced nanostructured and disperse-strengthening by nanoparticles electrodes and diamond tools
E.A. Levashov, V.V. Kurbatkina
State Technological University "Moscow Steel and Alloys Institute", Moscow, Russia

15.45-16.00 **Oral report**
Bulk nanostructured multiphase materials processed by mechanical alloying and equal channel angular pressing
W. Xu, X. Wu, S. Goussous, E. Lui, C. Froidevaux, **K. Xia**
Department of Mechanical Engineering and ARC Centre of Excellence for Design in Light Metals, University of Melbourne, Victoria, Australia

16.00-16.15 **Oral report**

TEM studies on the thermal stability of an AA1200 after ECAP via three different routes: A, C and Bc

M. Cabibbo
Department of Mechanical Engineering, Marche Polytechnic University, Ancona, Italy

16.15-16.30 **Oral report**

Some observations about severe plastic deformations based on their analogy with turbulence

Y. Beygelzimer
Donetsk Physics and Technology Institute, Ukrainian National Academy of Sciences, Donetsk, Ukraine

16.30-17.00 ***Coffee-break***

17.00-17.15 **Oral report**

A new process for ultra-fine grained tubes by severe plastic deformation

M. Arzaghi, J.J. Fundenberger, L. Toth, B. Beausir, O. Bouaziz, R. Arruffat-Massion
LPMM, Université Paul Verlaine Metz, France

17.15-17.30 **Oral report**

Using high pressure torsion for metal processing: a prospective for application

A. Zhilyaev
Institute for Metals Superplasticity Problems, Russian Academy of Science, Ufa, Russia, & Centro National de Investigaciones Metallurgicas, CSIC, Madrid, Spain

17.30-17.45 **Oral report**

Nanoparticle reinforced sheet materials produced by accumulative roll bonding

C. Schmidt, V. Maier, M. Winkler, H.W. Höppel and M. Göken
Elite Master Programme Advanced Materials and Processes, Erlangen, Germany,
& General Materials Properties, Department Materials Science and Engineering, University of Erlangen-Nürnberg, Erlangen, Germany

17.45-18.00 **Oral report**

Development of SPD-based manufacturing technology of high-strength nanostructured copper-rich alloys for electrical application

S.N. Faizova, R.Z. Valiev, G.I. Raab, N.V. Mazhitova, D.A. Aksenov, E.A. Sarkeeva
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

24 September, Thursday

09.00-11.30 — ***Oral session "Deformation Mechanisms"***

09.00-09.20 — **Invited report**
The effect of hydrostatic pressure on microstructure and properties evolution during deformation
Y.C. Dong, J.X. Wang, **J.T. Wang**
Nanjing University of Science and Technology, Nanjing, P.R. China

09.20-09.40 — **Invited report**
Cooperative effects in plastic deformation of nanocrystalline materials
Y. Ivanisenko, L. Kurmanaeva, K.Yang, H.-J. Fecht
Institute of Nanotechnology, Forschungszentrum Karlsruhe, Karlsruhe, Germany

09.40-10.00 — **Invited report**
Deformation behavior features in nanostructured alloys at tension with current
V. Stolyarov
Mechanical Engineering Research Institute of RAS, Moscow, Russia

10.00-10.15 — **Oral report**
Plastic strain localization of nanostructured materials produced by severe plastic deformation
E.V. Naydenkin, G.P. Grabovetskaya
Institute of Strength Physics and Materials Science, SB RAS, Tomsk, Russia

10.15-10.30 — **Oral report**
Solid-phase joint formation in Ti-6Al-4V alloy under conditions of low temperature superplasticity
R.Y. Lutfullin, M.K. Mukhametrakhimov
Institute for Metals Superplasticity Problems, RAS, Ufa, Russia

10.30-10.45 — **Oral report**
Corrosion and in vitro biocompatibility evaluation of amorphous TiNi alloy produced by HPT
F.L. Nie, Y.B. Wang, E.A. Prokofiev, S.C. Wei, **Y.F. Zheng,** D.V. Gunderov and R. Valiev
State Key Laboratory for Turbulence and Complex System and Department of Advanced Materials and Nanotechnology, College of Engineering, Peking University, Beijing, China,
& Center for Biomedical Materials and Tissue Engineering, Academy for Advanced Interdisciplinary Studies, Peking University, Beijing, China

10.45-11.15 — ***Coffee-break***

11.15-11.30 — **Oral report**
Microstructure changes during low temperature superplastic deformation of bulk nanostructured Ni-Cr-Fe-Nb base superalloy
V. Valitov, Sh. Mukhtarov, O. Ruano, A. Zhilyaev
Institute for Metals Superplasticity Problems of Russian Academy of Sciences, Ufa, Russia

11.30-18.45 — ***Oral session "Microstructure Evolution and Nanostructuring"***

11.30-11.55 — **Key-note report**
Deformation and grain boundary diffusion of SPD-processed materials
G. Wilde, S. Divinski, H. Rösner
University of Münster, Institute of Materials Physics, Münster, Germany

11.55-12.15 — **Invited report**
The role of diffusion-controlled processes in the formation of nanostructured state and metallic materials properties
Y.R. Kolobov
REC Nanostructured Materials and Nanotechnologies, Belgorod State University, Belgorod, Russia

12.15-12.35 **Invited report**

Mechanical and physical properties of multilayered composed materials in nanometric area

M.I. Karpov
Institute of Solid State Physics RAS, Chernogolovka, Russia

12.35-12.50 **Oral report**

The microstructure and its formation mechanism of fine-grained magnesium alloy under dynamic loading condition

S. Yang
School of Materials Science and Engineering, Beijing Institute of Technology, Beijing, China

12.50-13.05 **Oral report**

Gradient matrix method to derive crystal curvature from discrete orientations: case study of low-angle boundaries in IF steel with EBSD data

A. Zisman, M. Seefeldt and S. Van Boxel
CRISM "Prometey", St.-Petersburg, Russia

13.05-13.20 **Oral report**

Al-sandwich and laminate structures processes by accumulative roll bonding

V. Maier, T. Hausöl, M. Winkler, H. W. Höppel, M. Göken
Insitute of Advanced Materials and Processes (ZMP), Fürth, Germany

13.20-13.35 **Oral report**

Creep in copper processed by equal-channel angular pressing

J. Dvorak, **V. Sklenicka**, P. Kral, M. Svoboda, I. Saxl
Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Brno, Czech Republic

13.35-13.50 **Oral report**

Microstructural evolution of pure Ti fabricated by severe plastic deformation

Y. Chen, H. Roven, Y. Li, S. Dumoulin, J. Walmsley
The Norwegian University of Science and Technology, Department of Materials Technology, Trondheim, Norway

13.50-14.05 **Oral report**

Miraculous non-equilibrium grain boundaries in severely deformed materials: do they really exist?

S. Divinski, G. Wilde
Institute of Materials Physics, University of Münster, Münster, Germany

14.05-14.20 **Oral report**

Fragmentation of the structure in Al-base alloys upon high speed effect

I. Brodova, E. Shorokhov, I. Zhgiliev, I. Shirinkina
Institute of Metal Physics, Ural Division, Russian Academy of Sciences, Yekaterinburg, Russia

14.20-14.35 **Oral report**

Specific features of formation and nanocrystal structure in amorphous metallic matrix

G. Abrosimova, A. Aronin
Institute of Solid State Physics RAS, Chernogolovka, Russia

14.35-14.50 **Oral report**

Structure and properties of the Ni-based amorphous ribbons consolidated by high pressure torsion

G. Korznikova, T. Czeppe, Y. Kurganova, A. Korznikov
Institute for Metals Superplasticity Problems of the Russian Academy of Sciences, Ufa, Russia

14.50-15.05 **Oral report**

Microstructure, corrosion and anodizing behavior of UFG powder metallurgical Al-Cu alloy and Al-Cu/Al_2O_3 composites

B. Wielage, Th. Lampke, **D. Nickel**, G. Alisch, H. Podlesak. M. Hockauf
Chemnitz University of Technology, Institute of Materials Science and Engineering, Chemnitz, Germany

15.05-16.00 ***Lunch***

16.00-16.20 **Invited report**

Structural-scaling transitions in defects ensembles and bulk fine grain state of polycrystalline materials

O.B. Naimark, R.Z. Valiev
Institute of Continuous Media Mechanics of the Urals Branch of the Russian Academy of Sciences, Perm, Russia

16.20-16.40 **Invited report**

Influence of structural condition and HPT processing condition on fine-grain structure formation in 6082 aluminium alloy

J. Zrnik, R. Pippan, S. Scheriau
Comtes FHT, Inc., Dobrany, Czech Republic, & Technical University of Kosice, Kosice, Slovak Republic

16.40-16.55 **Oral report**

Grain and subgrain structure of copper and aluminum produced by ECAP

I. Saxl, V. Sklenicka, L. Ilucova, M. Svoboda, P. Kral, J. Dvorak
Mathematical Institute, Academy of Sciences of the Czech Republic, Prague, Czech Republic

16.55-17.30 ***Coffee-break***

17.30-17.45 **Oral report**

Emission Mössbauer Spectroscopy of Grain-Boundaries of Coarse-grained and Nanostructured Materials

V.V. Popov
Institute of Metal Physics, Ural Division of Russian Academy of Sciences, Yekaterinburg, Russia

17.45-18.00 **Oral report**

Microstructure evolution in commercially pure titanium during ECAP processing

Y. Li, Y. Chen, J. Walmsey, S. Dumoulin, H.J. Roven
SINTEF Materials and Chemistry, Trondheim, Norway

18.0-18.15 **Oral report**

Dislocation-grain boundary interactions in deformation mechanism of metal with small grain size

J.P. Couzinié, A. Rebhi, N. Njah, Y. Bréchet and **Y. Champion**
ICMPE-CNRS Université Paris, Thiais, France

18.15-18.30 **Oral report**

Formation of nanocrystals at severe plastic deformation of amorphous Fe-based alloys

A. Aronin, G. Abrosimova, S. Dobatkin, D. Matveev, O. Rybchenko
Institute of Solid State Physics RAS, Chernogolovka, Russia

18.30-18.45 **Oral report**

Microstructural evolution and mechanical properties of severely deformed Al-12Si casting alloy by equal-channel angular extrusion

G. Purcek, O. Saray, O. Kul
Department of Mechanical Engineering, Karadeniz Technical University, Trabzon, Turkey

18.45-19.00 **Oral report**

Grain refinement by cold rolling and annealing of steels containing titanium oxide nanoparticles

S. Hossein Nedjad, Y. Zahedi Moghadam, A. Mirsepasi, A.V. Mamdouh, A. Farzaneh
Faculty of Materials Engineering, Sahand University of Technology, Tabriz, Iran

25 September, Friday

09.00-14.00 ***Oral session "Physical and Mechanical Properties"***

09.00-09.25 **Key-note report**
Bulk functional nanomaterials by severe plastic deformation: chances and pitfalls
M.J. Zehetbauer
Physics of Nanostructured Materials, University of Vienna, Vienna, Austria

09.25-09.45 **Invited report**
The characteristics of superplastic flow in electrodeposited nano-Ni and alloys
M.J.N.V. Prasad and **A.H. Chokshi**
Department of Materials Engineering, Indian Institute of Science, Bangalore, India

09.45-10.05 **Invited report**
Enhancement of fatigue of ultra-fine grain metals
A. Vinogradov, S. Hashimoto
Osaka City University, Osaka, Japan

10.05-10.20 **Oral report**
Comparison of the mechanical properties of equally strained ultrafine grained Al 99.5 produced by accumulative roll bonding and equal channel angular pressing
A. Boehner, V. Maier, H.W. Hoeppel and M. Goeken
University of Erlangen-Nuernberg, Department of Materials Scienece and Engineering, Erlangen, Germany

10.20-10.35 **Oral report**
Structure and functional properties of titanium nickelide after nanocrystallizing thermomechanical treatment
S. Prokoshkin, V. Brailovski, K. Inaekyan, V. Demers, A. Korotitskiy, I. Khmelevskaya, A. Glezer
Moscow Institute of Steel and Alloys, Moscow, Russia

10.35-10.50 **Oral report**
Equal-channel angular processing of particulate-reinforced AA2017 produced by powder metallurgy
L.W. Meyer, **M. Hockauf,** R. Schönherr, H. Podlesak, S.Mücklich
Institute for Materials and Impact Engineering, Chemnitz University of Technology, Chemnitz, Germany

10.50-11.05 **Oral report**
Mechanical properties of the SPD-processed TiNi alloys with an amorphous and nanocrystalline structure
D.V. Gunderov, A.V. Lukyanov, E.A. Prokofiev, V.G. Pushin, R.Z. Valiev
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

11.05-11.20 **Oral report**
Dual equal channel lateral extrusion as a prototype of equal channel angular extrusion
B. Talebanpour, R. Ebrahimi**,** K. Janghorban
Dept. Materials Science and Engineering, School of Engineering, Shiraz University, Shiraz, Iran

11.20-11.35 **Oral report**
Influence of reversible hydrogen alloying on grain refinement in titanium and zirconium alloys subjected to plastic deformation
M. Murzinova, G. Salishchev
Institute for Metals Superplasticity Problems of Russian Academy of Sciences, Ufa, Russia

11.35-12.00 ***Coffee-break***

12.00-12.25 **Key-note report**
Deformation physics and ductility of nanostructured materials
Y. Zhu
Department of Materials Science and Engineering, North Carolina State University, Raleigh, NC, USA

12.25-12.45 **Invited report**

Ferromagnetism in nanograined pure and doped ZnO

B.B. Straumal, B. Baretzky

Max-Planck-Institut für Metallforschung, Stuttgart, Germany, & Institute of Solid State Physics RAS, Chernogolovka, Russia

12.45-13.00 **Oral report**

Mechanical properties and microstructure of ultrafine grained zirconium at low temperatures

E.D. Tabachnikova, A.V. Podolskiy, M.A. Tikhonovsky, A.N. Velikodny, B. Bonarski, C. Mangler, M. Kerber, M.J. Zehetbauer

B. Verkin Institute for Low Temperature Physics & Engineering, NASU, Kharkov, Ukraine

13.00-13.15 **Oral report**

High cycle fatigue and crack growth properties of AA6060 after equal-channel angular pressing combined with subsequent short-time aging

L.W. Meyer**, K. Hockauf,** T. Halle, M. Hockauf

Institute for Materials and Impact Engineering, Chemnitz University of Technology, Chemnitz, Germany

13.15-13.30 **Oral report**

Influence of ECAP routes on the mechanical properties of pure aluminum

M.H. Tahmasebi, M. Shayan, M. Meratian, M.R. Toroghinejad

Department of Materials Engineering, Isfahan University of Technology, Isfahan, Iran

13.30-13.45 **Oral report**

Distribution of structural parameters and mechanical properties in an aluminum billet processed by ECAP

K.V. Ivanov, E.N. Naidenkin

Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia

13.45-14.00 **Oral report**

Microstructural aspects of superplasticity in ultrafine-grained aluminum alloys

R.K. Islamgaliev, N.F.Yunusova, M.A.Nikitina, K.M. Nesterov

Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

14.00-15.00 ***Lunch***

15.00-18.20 ***Special session for young scientists (PhDs & PhD students) "Nanomaterials and Nanotechnologies in Metallurgy and Materials Science"***

15.00-15.10 **Oral report**

Limitations in the refinement by severe plastic deformation: the effect of processing

A. Bachmaier, R. Pippan

Erich Schmid Institute of Materials Science – Austrian Academy of Science, Leoben, Austria

15.10-15.20 **Oral report**

Diffusion of deformation induced lattice defects in HPT processed Fcc nanometals as observed by differential scanning calorimetry and radiotracer diffusion measurements

D. Setman, S. Divinski, G. Wilde, M.J. Zehetbauer

Physics of Nanostructured Materials, University of Vienna, Vienna, Austria

15.20-15.30 **Oral report**

Strength and ductility enhancement in ultrafine-grained Ti-6Al-4V ELI alloy processed by severe plastic deformation

V.V. Nurgaleeva, I.P. Semenova, R.Z. Valiev

Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

15.30-15.40 **Oral report**

X-ray line-profile analysis of HPT-deformed nickel

M.B. Kerber, E. Schafler, L. Balogh, S. Scheriau, T. Ungar, M.J. Zehetbauer

Physics of Nanostructured Materials, Faculty of Physics, University of Vienna, Vienna, Austria

15.40-15.50 **Oral report**

Grain size refinement during recrystallisation of Ti49.4Ni50.6 alloy processed by high pressure torsion

A. Lukyanov, D. Gunderov, E. Prokofiev, R. Valiev, X. Sauvage

Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

15.50-16.00 **Oral report**

Ultra fast diffusion and internal porosity in ultra fine grain copper produced by equal channel angular pressing

J. Ribbe, D. Baither, G. Schmitz, S. Divinski

Institute of Materials Physics, University of Münster, Münster, Germany

16.00-16.10 **Oral report**

Nanostructuring of high-electroconductive Cu-0.5%Cr-0.1%Ag alloy by equal channel angular pressing

S.N. Faizova, G.I. Raab, **D.A. Aksenov**, E.F. Islamgulova

Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

16.10-16.20 **Oral report**

Grain boundary self-diffusion in ultra-fine grained nickel after equal channel angular pressing

G. Reglitz, R.Lapovok, Y. Estrin, S. V. Divinski, G. Wilde

Institute of Materials Physics, University of Münster, Münster, Germany

16.20-16.30 **Oral report**

Deformation behavior and microstructure of nanocrystalline Pd and Pd-10 at.% Au alloy investigated by mini-compression test

L. Kurmanaeva, Y. Ivanisenko, J. Markmann, H.-J. Fecht

Institute für Nanotechnology, Forschungszentrum Karlsruhe, Karlsruhe, Germany

16.30-17.00 ***Coffee-break***

17.00-17.10 **Oral report**

Study of lattice defects annealing behavior in nanostructured fcc metals

E. Korznikova, E. Schafler and M.J. Zehetbauer

Institute for Metals Superplasticity Problems, Ufa, Russia

17.10-17.20 **Oral report**

Ultra-fast diffusion in NiTi and Ti after severe plastic deformation

J. Fiebig, R. Singh, H. Rösner, R. Valiev, Y. Estrin, S. Divinski, G. Wilde

Westfälische Wilhelms Universität, Münster, Germany

17.20-17.30 **Oral report**

Local strengthening mechanisms and annealing response of an aluminium alloy after ECAP

X.G. Qiao, M.J. Stranik, N. Gao

Materials Research Group, School of Engineering Sciences, University of Southampton, Southampton, UK

17.30-17.40 **Oral report**

Influence of DCAP Process on the Mechanical Properties of 6061 Al-Alloy Sheet

E. Tan, C. Hakan Gür

Department of Metallurgical and Materials Engineering, Middle East Technical University, Ankara, Turkey

17.40-17.50 **Oral report**

Hardening mechanism by Cu precipitates in iron. MD simulation of dislocation-nanoparticles interaction

I. Karkin, Y. Gornostyrev and L. Karkina

Institute of Metal Physics, Yekaterinburg, Russia

17.50-18.00 **Oral report**

Structure and properties of composite materials, after high pressure torsion

T.A. Chernyshova, **К.О. Baykalov**, U.A. Kurganova

A.A. Baikov institute of Metallurgy and Material Science, Russian Academy of Science, Moscow, Russia

18.00-18.10 **Oral report**

Superplasticity and cavitation in a magnesium alloy processed by ECAP

R.B. Figueiredo and T.G Langdon

Materials Research Group, School of Engineering Sciences, University of Southampton, Southampton, U.K.

18.10-18.20 **Oral report**

Development of ultrafine grained Al alloy sheets with enhanced strength and ductility

S.K. Panigrahi, R. Jayaganthan

Department of Metallurgical and Materials Engineering, Indian Institute of Technology, Roorkee, India

18.20-19.00 ***Free time***

19.00-22.30 ***Farewell dinner***

Awarding of participants (best poster presentations, best presentations in the session for young scientists)

26 September, Saturday

10.00-13.30 ***Oral session "Modeling of Nanostructured Materials and Texture Analysis"***

10.00-10.25 **Invited report**

Disclination-based model for orientation fragmentation during the first passes of ECAP on b.c.c. metals

M. Seefeldt

K.U. Leuven – Department of Metallurgy and Materials Engineering, Kasteelpark Arenberg, Leuven, Belgium

10.25-10.45 **Invited report**

Modeling of grain refinement, texture and strain hardening during severe plastic deformation

L.S. Tóth, Y. Estrin, R. Lapovok

Department of Materials Engineering, Monash University, Clayton, Australia,
&Laboratoire de Physique et Mécanique des Matériaux, Université Paul Verlaine Metz, Metz, France

10.45-11.05 **Invited report**

The role of disclinations in bulk nanostructured materials and nanoparticles

A.E. Romanov, A.L. Kolesnikova, E.C. Aifantis

[a] A.F.Ioffe Physico-Technical Institute, RAS, St.-Petersburg, Russia
[b] Polytechnic School, Aristotle University of Thessaloniki, Thessaloniki, Greece

11.05-11.20 **Oral report**

Analysis of enhanced strength of UFG Al alloys produced by high pressure torsion

M.Y. Murashkin, **N.A. Enikeev**, E.V. Bobruk and R.Z. Valiev

Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, Ufa, Russia

11.20-11.35 **Oral report**

Multiscale modeling of back-stress evolution in equal-channel angular pressing

E. Chen, L. Duchene, A.-M. Habraken, B. Verlinden

Katholieke Universiteit Leuven, Department of Metallurgy and Materials Engineering, Heverlee, Belgium

11.35-11.50 **Oral report**

Classical simulation of interatomic bonds on the grain boundaries and joints

D. Titorov

Physical-Technical Institute, Ural Branch of the RAS, Izhevsk, Russia

11.50-12.15 ***Coffee-break***

12.15-12.30 **Oral report**

Optimum route for grain refinement in equal channel angular extrusion: A new perspective from crystal plasticity modelling

S. Li

School of Mechanical Engineering, South China University of Technology, Guangzhou, P.R. China

12.30-12.45 **Oral report**

Modeling of the deformation behavior of bimodal nanostructured metals

I.V. Alexandrov, **R.G. Chembarisova**

Ufa State Aviation Technical University, Ufa, Russia

12.45-13.00 **Oral report**

Model of structural fragmentation induced by high pressure torsion

J. Kratochvil, M. Kruzik, R. Sedlacek

Czech Technical University, Faculty of Civil Engineering, Prague, Czech Republic

13.00-13.15 **Oral report**

Microstructural investigation of MD simulated nanocrystalline palladium by "virtual" x-ray diffraction

J. Markmann, A. Stukowski, D. Bachurin and J. Weissmüller

Universität des Saarlandes, Saarbrücken, Germany, &
Forschungszentrum Karlsuhe, Institut für Nanotechnologie, Karlsruhe, Germany

13.15-13.30 **Oral report**

Finite Element Analysis of Simple Shear Extrusion as a New Severe Plastic Deformation Method

N. Pardis, **R. Ebrahimi**

Dept. Materials Science and Engineering, School of Engineering, Shiraz University, Shiraz, Iran

13.30-14.15 ***Special Session "BNM. 20 years of R&D: from discoveries to applications"***

13.30-13.45 **Invited report**

Special tribute to Ruslan Valiev

T.G. Langdon

Departments of Aerospace & Mechanical Engineering and Materials Science, University of Southern California, Los Angeles, CA, U.S.A,
& Materials Research Group, School of Engineering Sciences, University of Southampton, Southampton, U.K

13.45-14.00 **Oral report**

Bulk nanostructured materials: to education from research and development

I.V. Alexandrov, R.Z. Valiev, N.G. Zaripov, A.K. Emaletdinov

Ufa State Aviation Technical University, Ufa, Russia

14.00-14.15 **Oral report**

From "NanoSPD" to "BNM" meetings

S.V. Dobatkin

A.A. Baikov Institute of Metallurgy and Materials Science, RAS, Moscow, Russia

14.15-14.45 ***Concluding address and closing of BNM-2009***