



INTERNATIONAL SYMPOSIUM

**BULK NANOSTRUCTURED  
MATERIALS:**  
from fundamentals to innovations



**Technical program**

Ufa State Aviation Technical University  
12 K. Marx St., Ufa, 450000 Russia

**14-18 August 2007**  
**Ufa, Russia**

***Organizing committee:***

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

***International steering committee on SPD nanomaterials:***

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

***Program committee:***

**Chairman:** Yuriy D. Tret'yakov, *Moscow*  
**Co-chairman:** Igor V. Alexandrov, *Ufa*  
**Members:** Sergey V. Dobatkin, *Moscow*  
Aleksandr M. Glezer, *Moscow*  
Yuriy R. Kolobov, *Belgorod*  
Valeriy V. Rybin, *St.-Petersburg*  
Vladimir G. Pushin, *Yekaterinburg*  
Vladimir V. Stolyarov, *Moscow*

***Local committee:***

**Chairman:** Murat B. Guzairov  
**Co-chairmen:** Rustam A. Badamshin  
Igor V. Alexandrov  
**Members:** Natalia A. Reshetnikova  
Airat A. Nazarov  
Gennadiy A. Salishev  
Farid Z. Utyashev

## 14 August (Field (outside) session)

**14.00-15.30** Registration of participants  
**15.30-16.00** Committee meeting  
**17.00-20.00** Introductory session  
*Welcome party*

## 15 August

**08.00-09.00** Late registration of participants  
**09.00** Opening of the symposium  
**09.05-09.15** Opening address by the administration of USATU  
**09.15-09.30** Introductory addresses by the symposium chairmen

**09.30-10.00** **Key-note overview report**  
**T.G. Langdon**  
*Research on Bulk Nanostructured Materials in Ufa: Twenty Years of Scientific Achievements*

**10.00-10.30** **Key-note introductory report**  
**H. Hahn**  
*Bulk Nanomaterials: Historical Aspects and Perspectives for Nanoscience and Innovations*

**10.30-11.00** **Introductory overview report**  
**R.Z. Valiev**  
*New Trends in SPD Processing for Fabrication of Bulk Nanostructured Metals for Advanced Applications*

**11.00-11.30** *Coffee-break*

**11.30-18.45** *Oral session "Processing of Bulk Nanomaterials"*

**11.30-11.55** **Key-note report**  
**J.T. Wang**  
*A New Scheme for Creating Bimodal Grain Size Distribution with Adapted Microstructural Parameter Control*

- 11.55-12.15**      **Invited report**  
**G. Wilde**, H. Rösner  
*Bulk Nanostructured Composites – Synthesis and Characterization*
- 12.15-12.30**      **Oral report**  
**Y. Beygelzimer**, V. Varyukhin, S. Synkov, D. Orlov, A. Reshetov and A. Synkov  
*Properties of Twist Extrusion and Its Potential as a Severe Plastic Deformation Technique*
- 12.30-12.45**      **Oral report**  
**L.J. Kecskes**, S.N. Mathaudhu, R.E. Barber, and K.T. Hartwig  
*Severe Plastic Deformation of Nickel-Coated Aluminum Powders: Effects of Temperature, Passes, and Route*
- 12.45-13.00**      **Oral report**  
**V. Stolyarov**, I. Trubitsyna, S. Prokoshkin  
*Electroplastic Deformation as Processing Method of Bulk Long-Length Nanomaterials*
- 13.00-13.15**      **Oral report**  
**V. Urbanovich**, R. Andrievski  
*High Pressure Sintering as Effective Method of Obtaining of Nanostructured Materials Based on High-Melting Point Compounds*
- 13.15-13.30**      **Oral report**  
**G. Krallics**, A. Fodor, I. Barkai and J. Gubicza  
*Manufacturing of Al 6082 Ultra-Fine Grained Alloy by ECAP Combined with Traditional Forming Processes*
- 13.30-15.00**      **Lunch**
- 15.00-15.25**      **Key-note report**  
**Y.D. Tretyakov**, E.A. Goodilin  
*In the Search for New Functional Nanomaterials*
- 15.25-15.50**      **Key-note report**  
**V.V. Rybin**  
*Grain Fragmentation and Evolution of High-Angle Boundaries during Large Plastic Strains of Metals*
- 15.50-16.10**      **Invited report**  
**S.V. Dobatkin**  
*Development of SPD Continuous Processes for Strip Production*
- 16.10-16.25**      **Oral report**  
**M. Furukawa**, Z. Horita and T.G. Langdon  
*Principles of Deformation in Single Crystals Processed by Equal-Channel Angular Pressing*

- 16.25-16.40**            **Oral report**  
**A. Rosochowski** and L. Olejnik  
*Concept of a New SPD Process of Incremental ECAP*
- 16.40-16.55**            **Oral report**  
**Y.A. Perlovich**, M.G. Isaenkova, V.A. Fesenko and M.M. Grekhov  
*Texture Aspects of the Deformation Process by Equal-Channel Angular Pressing*
- 16.55-17.10**            **Oral report**  
D.R. Leiva, **H.-J. Kestenbach**, L.F. Chanchetti, A.M. Jorge Jr., and  
W.J. Botta Filho  
*Grain Refinement in Magnesium by High Pressure Torsion*
- 17.10-17.25**            **Oral report**  
**S.N. Mathaudhu**, L.J. Kecskes, and K.T. Hartwig  
*Fabrication of Hf-Based Amorphous Metal Matrix Composites by Severe Plastic Deformation*
- 17.25-17.40**            *Coffee-break*
- 17.40-18.05**            **Key-note report**  
**Z. Horita**  
*Conditions for Grain Refinement Using Severe Plastic Deformation*
- 18.05-18.25**            **Invited report**  
**R.A. Andrievski**  
*Megainformationon in the Nanoworld*
- 18.25-18.45**            **Invited report**  
**A. Glezer**, S. Dobatkin, M. Plotnikova, A. Shalimova, N. Perov  
*The Anomaly of Saturation Magnetization and Nanocrystallization Effects at the Severe Plastic Deformation of Amorphous Ni-Fe-Co-Si-B Alloys*
- 18.45-20.00**            *Poster session A (boards will be available from 08.00. till 20.00)*
- A-001**  
*Ultrafine-Grained Ti-6Al-4V Alloy Processed by Thermohydrogen Treatment*  
**M.B. Ivanov**, Y.R. Kolobov, S.S. Manohin, and T.N. Vershinina
- A-002**  
*Investigation of Storage Energy Change of Steel Fe360 Subjected To Equal Channel Angular Pressing*  
**A.M. Ivanov**, E.S. Lukin

**A-003**

*Substructure Anisotropy of ECAP Rods, Observable by the New X-ray Method of Generalized Pole Figures*

**M. G. Isaenkova**, Y.A. Perlovich, V.A. Fesenko and M.M. Grekhov

**A-004**

*In-situ X-ray Bragg Profile Analysis during Dformation of SPD Nanometals*

**M.B. Kerber**, E. Schafler, A.K. Wieczorek, G. Ribarik, S. Bernstorff and M.J. Zehetbauer

**A-005**

*The Characteristics of Superplastic Flow in Metals with Ultrafine Grain Sizes*

M. Kawasaki, R.B. Figueiredo, C. Xu and **T.G. Langdon**

**A-006**

*Application of Radial-Shear Rolling for Producing Submicrocrystalline Structure Rods out of C10A Steel*

N.P. Barykin, A.A. Kuzminyh, **N.V. Lopatin**

**A-007**

*Equipment for Producing of Nanostructural Carbonic Materials*

A.G. Tkachev, **N.R. Memetov**, S.V. Blinov and D.A. Turlakov

**A-008**

*Investigations of Nanostructured Copper by Inelastic Slow Neutron Scattering*

**R.M. Mazitov**, V.A. Semenov, Yu.A. Lebedev, R.Z. Valiev, G.I. Raab, V.N. Danilenko, and E.L. Yadrovski

**A-009**

*Application of Equal-Channel Angular Pressing to Ferritic Stainless Steel Sheets to Enhance Formability*

**H. Miyamoto**, N. Jinbo and T. Mimaki

**A-010**

*Nanocrystallization of HPT Processed NiTi*

**M. Peterlechner**, Th. Waitz and H.P. Karnthaler

**A-011**

*Effect of Thermal Treatment on Structure and Mechanical Properties of CP Nanostructured Ti VT1-0 Processed by SPD Combined with ECAP-Conform*

**G.I. Raab**, A.V. Polyakov, D.V. Gunderov, E.P. Soshnikova and N.G. Baushev

**A-012**

*Superplastic Forming and Pressure Welding of Advanced Sheet Materials*

**R.V. Safiullin**, M.A. Murzinova, A.R. Safiullin

**A-013**

*Effect of Microstructure on Parameters of Plastic Frictional Contact*  
**V.S. Semenov**, L.Sh. Shuster, G.I. Raab and S.V. Chertovskikh

**A-014**

*Severe Plastic Deformation of Metals under Dynamic Loading*  
**E. Shorokhov**, I. Zhgiliev, I. Khomskaya, et al.

**A-015**

*Severe Thermomechanical Processing as an Effective Method of Preparation of Bulk and Sheet Semifinished Products from Nickel Alloys with SMC and NC Structures*  
**V. Valitov**

**A-016**

*Fe-C Bulk Nanocomposites Prepared by Mechanical Alloying and Magnetic Pulse Compaction*  
**E. Yelsukov**, V. Ivanov, S. Zayatz, S. Lomayeva and A. Syugaev

**19.20-20.30**

*Dinner (optional) – the dinning-hall at the House of Trade Unions will be opened till 20.30*

**20.30-23.00**

*City sight-seeing tour*

**16 August**

**09.00-13.25**

*Oral session “Structural Characterization”*

**09.00-09.20**

**Invited report**  
**J. Weissmüller**

*Alloy Equilibrium in Nanostructures: Effects of Interface Stress and Interface Tension*

**09.20-09.40**

**Invited report**  
**A.E. Romanov**

*Disclinations in Nanostructured Materials*

**09.40-09.55**

**Oral report**

Y.R. Kolobov, **M.B. Ivanov**, G. Grabovetskaya, K. Ivanov, E. Golosov  
*Interface Diffusion Phenomena in Nanostructured Materials*

**09.55-10.10**

**Oral report**

E. F. Prados, V.L. Sordi, **M. Ferrante**

*Microstructural Development and Tensile Strength of ECA Deformed Al-4%Cu Alloy*

- 10.10-10.25**      **Oral report**  
**V. Pantsyrny**, A. Shikov, A. Vorobieva, N. Khlebova, N. Kozlenkova, N. Beliakov, V. Drobyshev  
*High Strength High Conductivity Cu-Nb Metal Matrix Composites with Nanoscaled Microstructure*
- 10.25-10.40**      **Oral report**  
**S. Li**  
*Orientation Persistence in Equal Channel Angular Extrusion*
- 10.40-10.55**      **Oral report**  
E.N. Naidenkin, G.P. Grabovetskaya, I.V. Ratochka, **K.V. Ivanov** and Y.R. Kolobov  
*The Effect of Structural-Phase State on Superplastic Properties of Ultrafine-Grained Multiphase Alloys*
- 10.55-11.10**      **Oral report**  
**A. Tyumentsev**, I. Litovchenko, N. Shevchenko and Y. Pinzhin  
*Atomic Models of the Formation of Dislocations and Mechanical Twinning in Nanocrystals with a fcc Lattice*
- 11.10—11.40**      *Coffee-break*
- 11.40-12.00**      **Invited report**  
**E.C. Aifantis**  
*Internal Lengths and Size Effects in SPD Materials*
- 12.00-12.20**      **Invited report**  
B. Efros, V. Pilyugin, A. Patselov, S. Gladkovskii, N. Efros, L. Loladze and **V. Varyukhin**  
*Martensitic Transitions in Nanocrystalline Metastable Materials*
- 12.20-12.40**      **Invited report**  
**R.R. Mulyukov**  
*Effect of Severe Plastic Deformation on the Multi-Scale Structure of Materials*
- 12.40-12.55**      **Oral report**  
**C. Xu** and T.G Langdon  
*Homogeneity Development in Aluminum and Aluminum Alloys Processed by High-Pressure Torsion*
- 12.55-13.10**      **Oral report**  
**M. Liu**, H. J. Roven, M. Murashkin  
*Structural Characterization of HPT-Processed Al–Mg Alloys Using High-Resolution Electron Microscopy*
- 13.10-13.25**      **Oral report**  
**I. Saxl**, V. Sklenicka and M. Svoboda



*Is the Substructure a Controlling Factor of Creep Life in ECAP Materials?*

**13.25-15.00**

**Lunch**

**15.00-17.40**

*Oral session "Physical and Mechanical Properties"*

**15.00-15.20**

**Invited report**

**A.R. Yavari**, K. Ota, F. Charlot, A. LeMoulec and G. Vaughan  
*Bulk Nanocrystalline Copper-Based Alloys with Superior Mechanical Properties and Controlled Color*

**15.20-15.40**

**Invited report**

M.J.N.V. Prasad and **A.H. Chokshi**  
*The Mechanical Characteristics of Nanometals with a Bimodal Grain Size Distribution*

**15.40-15.55**

**Oral report**

**Y. Ivanisenko**, R. Theissmann, A. Minkov, K. Yang, R. Valiev and H.-J. Fecht  
*Thermal Stability and Annealing Behaviour of HPT Processed Iron*

**15.55-16.10**

**Oral report**

**I. Karaman**, G.G. Yapici, I. Beyerlein, C.N. Tomé  
*Common Trends in Texture Evolution and Flow Anisotropy of Ultra-Fine Grained HCP Materials during Strain Path Changes*

**16.10-16.25**

**Oral report**

**D.V. Gunderov**, A.G. Popov, V.G. Pushin, V.V. Stolyarov, N.N. Kuranova, A.V. Lukyanov, E.A. Prokofiev, N.N. Schegoleva  
*SPD - Nanostructuring of Coarse-Grained Nd-Fe-B, Ti-Ni Alloys and Their Amorphous Rapid - Quenched Analogues for Superior Properties*

**16.25-16.40**

**Coffee-break**

**16.40-16.55**

**Oral report**

**M. Kawasaki** and T.G. Langdon  
*The Flow Behaviour of a Superplastic Zn-22% Al Alloy Processed by ECAP*

**16.55-17.10**

**Oral report**

**I.P. Semenova**, G.K. Salimgareeva, V.V. Latysh  
*Enhanced Fatigue Properties of Ultrafine-Grained Titanium Rods Produced by Means of Severe Plastic Deformation*

**17.10-17.25**

**Oral report**

**R.K. Islamgaliev**, G.V. Nurislamova, N.F. Yunusova, N.A. Krasilnikov, V.A. Markovchev and M.A. Bardinova

*Structure and Mechanical Properties of Sheets and Profiles from the UFG  
1421 Alloy*

17.25-18.05  
18.05)

*Poster session B (boards will be available from 08.00. till*

**Invited poster** **B-001**  
*Structural Changes during Grain Boundaries Migration of  
Submicrometer-Grained Alloy Al-3%Mg*  
**N.K. Tsenev**, R. N. Hisaev, A.N. Tsenev

**Invited poster** **B-002**  
*Properties of HPT Processed Al Alloys*  
**M.Y. Murashkin**, M.A. Nikitina, A.R. Kilmametov, R.Z. Valiev

**B-003**  
*Characterization of the Microstructure of Ultrafine-Grained Materials by  
X-ray Line Profile Analysis*  
**I. Alexandroy**, T. Ungar

**B-004**  
*Structural Alteration of As-Received Cu-1Cr-0.7Al-0.2Zr Alloy After  
High Pressure Torsion*  
S.N. Faizova, G.I. Raab, I.V. Alexandrov and **N.V. Balabanova**

**B-005**  
*The Increasing of Corrosion Resistance of UFG Materials in Comparison  
to CG Materials*  
**N.A. Amirhanova**

**B-006**  
*The Corrosion Behavior of UFG Materials in Comparison to CG  
Materials*  
**N.A. Amirhanova**

**B-007**  
*Formation of Submicrocrystalline Structure upon Dynamic Deformation of  
Aluminum Alloys*  
**I.G. Brodova**, O.A. Antonova, T.I. Yablonskikh, V.V. Astafiev, I.G.  
Shirinkina, E.V. Shorokhov, I.I. Zhgiliev

**B-008**  
*Specific Features of the Structure Formation in the Al – Mg – Sc Alloys  
during SPD*  
**S.V. Dobatkin**, V.V. Zakharov, V.N. Perevezentsev, G.I. Raab, T.D.  
Rostova and E.N. Bastarache

**B-009**  
*Thermal Stability of Nano- and Submicrocrystalline Low Carbon Steels*

**S.V. Dobatkin**, P.D. Odessky, E.V. Naidenkin, S.V. Shagalina and G.I. Raab

**B-010**

*Precipitation Hardening of Copper Alloys after Severe Plastic Deformation Methods*

**S.N. Faizova**, G.I. Raab

**B-011**

*RKKY Interaction of Magnetic Moments in Nanosized Systems*

E.Z. Meilikhov and **R.M. Farzetdinova**

**B-012**

*Fatigue Behavior of Ultra-Fine Grained NiTi-Stents*

**M. Frotscher**, K. Neuking, R. Böckmann, K.-D. Wolff and G. Eggeler

**B-013**

*Increase of Mechanical Properties of Steel Wire by Formation of Submicrocrystalline Structure of Surface Coating in the Process of Equal Channel Angular Drawing*

**G.C. Gun**, **M.V. Chukin**, M.P. Baryshnikov, **D.G. Emaleeva**

**B-014**

*Fracture Toughness and Crack Propagation Measurements in Ultrafine-Grained Materials*

**A. Hohenwarter**, R. Pippan

**B-015**

*Formation of Submicrocrystalline Structure in  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$  Superconductor during Deformation by Torsion under Pressure*

**M. Imayev**, S. Zabolotny, R. Khazgaliev

**B-016**

*The Effect of Structural-Phase State on Superplastic Properties of Ultrafine-Grained Multiphase Alloys*

E.N. Naidenkin, G.P. Grabovetskaya, I.V. Ratochka, **K.V. Ivanov** and Y.R. Kolobov

**B-017**

*Strain-Rate Sensitivity of Ultrafine-Grained CP Titanium*

**V. Kazykhanov**, N. Enikeev

**B-018**

*The Corrosion Behavior of UFG and CG Aluminum Alloys 1420, 1421, 5083 Received by ECAP*

N.A. Amirhanova, R.Z. Valiev, **R.R. Khaidarov**, M.Y. Murashkin and N.F. Yunusova

**B-019**

*Effect of Equal-Channel Angular Pressing and High Pressure Torsion on Structure and Properties of Ti-Ni-Based Alloys*

**I. Khmelevskaya**, S. Prokoshkin, I. Trubitsyna, M. Belousov, S. Dobatkin, E. Tatyatin, A. Korotitskiy, V. Brailovski, V. Stolyarov and E. Prokofiev

**B-020**

*Effects of the Number of Equal-Channel Angular Pressing Passes on the Anisotropy of Ultra-Fine Copper*

**A. Korshunov**, T. Kravchenko, A. Morozov, A. Smolyakov, I. Vedernikova and L. Polyakov

**B-021**

*Microstructure, Phase Transformations and Mechanical Properties of Severely Deformed Fe-15%Co-25%Cr Hard Magnetic Alloy*

**A.V. Korznikov**, G.F. Korznikova

**B-022**

*Excellence Mechanical Properties of Nanostructured Al-Based Alloy, Prepared by Severe Plastic Deformation*

**N.A. Krasilnikov**, A. Sharafutdinov

**B-023**

*Mechanical Properties and Structure of Materials after Hydroimpulse Treatment*

**N.A. Krasilnikov**

**B-024**

*Microstructure and Mechanical Properties of the Magnesium Alloy AZ91D after ECAP and HPT*

**L.R. Kurmanaeva**, R.K. Islamgaliev

**B-025**

*Influence of Equal Channel Angular Pressing on Corrosion Behaviour of Ultrafine-Grained Copper Received by Various Routes*

N.A. Amirhanova, F.A. Amirhanova, I.V. Alexandrov and **J.B. Kutnyakova**

**B-026**

*Evolution of Mechanical Properties and Microstructure of CP Titanium with Initial Coarse-Grained and Nanocrystalline Structure during Cold Rolling*

**S. Malysheva**, G. Salishchev and E. Jakushina

**B-027**

*Microstructure and Mechanical Behavior of Bulk Tungsten Processed by Severe Plastic Deformation*

**S.N. Mathaudhu**, Q. Wei, L.J. Kecskes and K.T. Hartwig

**B-028**

*Formation of Structure and Substructure during SPD*

**V. Varyukhin**, B. Efros, L. Metlov, N. Efros and V. Ivchenko

**B-029**

*Tribological Properties of Al-Sn, Al-Sn-Pb and Sn-Sb Alloys Subjected to Severe Plastic Deformation*

L. Korshunov, **N. Noskova**, A. Korznikov

**B-030**

*Mechanical Behavior of Ultrafine-Grained Ti-6Al-7Nb Processed Using Severe Plastic Deformation*

**V.V. Nurgaleeva**, I.P. Semenova

**B-031**

*Structure and Mechanical Properties of the Al-Mg-Si Alloy after ECAP*

**G. Nurislamova**, M. Murashkin, R. Islamgaliev and R. Valiev

**B-032**

*Mechanical Properties and Microstructure of 5483 Al Alloy Processed by ECAP*

**Z. Pakiela**, P. Nowakowski, L. Olejnik and **J. Mizera**

**B-033**

*Investigation of Corrosion Properties Ct3 in Coarse-Grained and Ultra Fine-Grained Conditions*

N.A. Amirhanova, G.I. Raab, **A.F. Razyapova**

**B-034**

*Study of the Annealing Effect on Microstructure and Mechanical Properties of Ultrafine-Grained Ti Rods Processed by Severe Plastic Deformation*

**G.K. Salimgareeva**, M. Zehetbauer, H.P. Karnthaler, B. Mingler, I.P. Semenova and R.Z. Valiev

**B-035**

*On Possibility for Obtaining Bulk Amorphous Alloys from a Melt*

**I.V. Sterkhova**, V. Lad'yanov, L.V. Kamaeva and V.V. Molokanov

**B-036**

*Low Temperature Mechanical Properties of a Nanocrystalline Ni - 20%Fe Alloy*

**E.D. Tabachnikova**, A.V. Podolskiy, V.Z. Bengus, S.N. Smirnov, H. Li, P.K. Liaw and H. Choo

**B-037**

*Structure and Mechanical Properties of Severe Deformed Nanocomposites*

**M.A. Tikhonovsky**, A.A. Kupriyanov, A.I. Pikalov

**B-038**

*Structure Features and Properties of Zirconium after Severe Plastic Deformation*

V.M. Azhazha, A.N. Velikodny, **M.A. Tikhonovsky**, I.D. Tolmachev, N.F. Andrievskaya and T.Yu. Rudicheva

**B-039**

Nanostructures and Grain Boundaries Migration at the Atomic Scale

**D. Titorov**

**B-040**

*Microstructure and Mechanical Properties of the Alloys of the System Cu-Al Subjected to High Pressure Torsion*

Sh. Xia, **L. Vychigzhanina**, A. Sharafutdinov, J.T. Wang, I.V. Alexandrov

**B-041**

*Controllable Bimodal Structures in Hypo-Eutectoid Cu-Al Alloy for Both High Strength and Tensile Ductility*

Sh. Xia, A.V. Ganeev, **J.T. Wang**, I.V. Alexandrov and R.Z. Valiev

**B-042**

*Microstructure and Mechanical Behavior of Ultrafine Grained Tantalum Processed by Equal Channel Angular Extrusion up to 16 Passes*

**Q. Wei**, S.N. Mathaudhu, L.J. Kecskes, K.T. Hartwig, K.T. Ramesh, and R.Z. Valiev

**B-043**

*Correlation of Fractal Dimensionality with Physical and Mechanical Properties of Deformed Cu*

**A. Zavdoveev**, **Y. Beygelzimer**, B. Efros and A. Davidenko

**18.05-18.45**

*Free time*

**18.45-22.30**

*Banquet (optional) – buses will leave for the banquet place (Olympic Park) at 18.45 from the House of Trade Unions*

**17 August**

**09.00-12.15**

*Oral session “Deformation Mechanisms and Their Transformation”*

**09.00-09.25**

**Key-note report**

**Y.T. Zhu**

*Deformation Physics and Ductility of Nanostructured Materials*

**09.25-09.45**

**Invited report**

Y. Ivanisenko and **H.-J. Fecht**

*Plastic Deformation Mechanisms of Fully Dense Nanocrystalline Material*

**09.45-10.05**

**Invited report**

**O. Naimark**

*Structural-Scaling Transitions and Mechanisms of Deformation in Meso- and Nanostructural Materials*

- 10.05-10.20**      **Oral report**  
**E. Schafler**, M. Zehetbauer and T. Ungár  
*X-ray Diffraction Analysis of Planar Faulting in SPD-Metals*
- 10.20-11.00**      *Coffee-break*
- 11.00-11.20**      **Invited report**  
**Y.N. Gornostyrev**  
*Effect of Grain Boundaries in Martensite Transformation: MD Simulation*
- 11.20-11.40**      **Invited report**  
**X. Sauvage**  
*The Contribution of Phase Transformations, Dynamic Segregations and Heterophase Boundaries on the Grain Size Refinement by SPD*
- 11.40-12.00**      **Invited report**  
**B.B. Straumal**, O.A. Kogtenkova, R.Z. Valiev, A.A. Mazilkin, P. Zięba and B. Baretzky  
*Grain Boundary Phase Transitions in Bulk Nanostructured Materials*
- 12.00-12.15**      **Oral report**  
**J. Zrník**, T. Kovarik, Z. Novy, M. Cieslar  
*Ultrafine Grained Structure Development and Deformation Behavior of Aluminum Processed by CGP*
- 12.15-13.35**      *Oral session "Modeling of Nanostructured Materials"*
- 12.15-12.35**      **Invited report**  
**H.S. Kim**  
*Finite Element Simulation of Severe Plastic Deformation Methods*
- 12.35-12.50**      **Oral report**  
**I. Alexandrov**, R. Chembarisova, V. Sitdikov  
*Analysis of the Deformation Behavior of Nanostructured Metals by Means of Kinetic Modeling*
- 12.50-13.05**      **Oral report**  
**A.A. Nazarov**  
*Modeling and Simulation of Grain Boundaries and Their Junctions in Bulk Nanostructured Materials*
- 13.05-13.20**      **Oral report**  
**N.A. Enikeev**, M.F. Abdullin, A.A. Nazarov, A.A. Smolyakov, V.P. Soloviev, A.I. Korshunov, I. Beyerlein, S. Li, I.V. Alexandrov

*Microstructure and Texture Evolution at ECAP Described by a Combined Viscoplastic Selfconsistent - Disclination model*

**13.20-13.35**

**Oral report**

**A.R. Shahab**, S.A.A. Akbari Mousavi, M. Mastroori  
*Numerical Investigations of 3 Pass Accumulative Stress and Strain Distributions in Twist Extrusion Process for Ti-6Al-4V*

**13.35-15.00**

**Lunch**

**15.00-16.00**

**Special Public Lecture “Modern Tendencies of Development of Nanotechnologies in Russia” (in the Russian language)**

**Y.D. Tretyakov**

**16.00-19.10**

*Special oral session for young scientists (PhDs & PhD students)*

**16.00-16.10**

**Oral report**

**S. Divinski**, J. Ribbe, Y. Estrin, Y. Amouyal, E. Rabkin, G. Schmitz and Ch. Herzig

*Radiotracer Investigation of Interface Diffusion in Bulk Nanocrystalline and Ultra Fine Grained Materials*

**16.10-16.20**

**Oral report**

**O. Kulyasova**, R. Islamgaliev, B. Mingler, A. Minkow, M. Zehetbauer  
*Structure and Fatigue Properties of AM60 Magnesium Alloy as Processed by ECAP*

**16.20-16.30**

**Oral report**

**R.B. Figueiredo**, T.G. Langdon  
*Superplastic Behavior in a ZK60 Magnesium Alloy*

**16.30-16.40**

**Oral report**

**L. Saitova**, H.W. Höppel, I.P. Semenova, G.I. Raab, R.Z. Valiev, M. Göken

*Fatigue Behaviour and Damage Mechanisms of Ultrafine-Grained Ti-6Al-4V ELI Alloy for Medical Application*

**16.40-16.50**

**Oral report**

**J. May**, H.W. Höppel and M. Göken  
*Fatigue Behavior of UFG Al: Influence of the ECAP Route and the Magnesium Alloying Content*

**16.50-17.00**

**Oral report**

**P. Karpuz**, C. Şimşır and C.H. Gür  
*Investigation of Hardening Behavior and Die-Geometry on the Deformation Performance of Equal Channel Angular Pressing by Finite Element Analysis*



- 17.00-17.10** **Oral report**  
**S. Zherebtsov**, M. Murzinova and G. Salishchev  
*Microstructure Evolution of Two-Phase Titanium Alloys during Warm Deformation*
- 17.10-17.20** **Oral report**  
**Y.G. Jin**, Y.-T. Im  
*A Study for Multi-Pass Equal Channel Angular Extrusion with Split Dies for Manufacturing Bulk Nanomaterials*
- 17.20-17.30** **Oral report**  
**E. Korznikova**, D. Setman, A. Korznikov, M. Kerber, E. Schafler and M.J. Zehetbauer  
*Characteristics of Vacancy Type Lattice Defects in SPD Nanometals*
- 17.30-17.50** **Coffee-break**
- 17.50-18.00** **I. Topic**, H.W. Höppel and M. Göken  
*Accumulative Roll-Bonding (ARB), Mechanical Properties and Deformation Behaviour of Aluminium AA1050 and Aluminium Alloy AA6016*
- 18.00-18.10** **Oral report**  
**S.H. Nedjad** and M.N. Ahmadabadi  
*Grain Boundary Precipitation Behavior of Nanostructured Maraging Steel*
- 18.10-18.20** **Oral report**  
**P. Gabor**, H.J. Maier and J. May  
*Fatigue Behavior of Aluminum Alloys at Elevated Temperatures*
- 18.20-18.30** **Oral report**  
**M. Hockauf**, L.W. Meyer, B. Zillmann, C. Kuprin, M. Hietschold and L. Krüger  
*Improvement of Mechanical Properties of Al-Mg-Si Alloys Processed by Equal Channel Angular Extrusion with Subsequent Annealing*
- 18.30-18.40** **Oral report**  
**C. Saldana**, W. Moscoso, J.B. Mann, M.R. Shankar, S. Chandrasekar, W.D. Compton, A.H. King, K.P. Trumble, and P. Yang  
*Bulk Nanostructured Materials by Large-Strain Extrusion Machining and Micro/Meso Scale Components Thereof*
- 18.40-18.50** **Oral report**  
**Th. Niendorf**, H.J. Maier and I. Karaman  
*Microstructural Stability of UFG IF Steel under Cyclic and Thermal Loading*
- 18.50-19.00** **Oral report**  
**M. Hüller**, J. Vlcek, H.W. Höppel and M. Göken  
*Consolidation of Nanocrystalline AlMg4.8 Powder via ECAP Back Pressure*

19.00-19.10

**Oral report**

**A. Lukyanov**, D. Gunderov, E. Prokofiev, V. Pushin  
*Nanostructure and Properties of the Large Size Ti<sub>49,4</sub>Ni<sub>50,6</sub> alloy Sample, Subjected to High Pressure Torsion Deformation*

19.10-19.50

*Poster session C (boards will be available from 08.00. till 19.50)*

**Invited poster**

**C-001**

*The Effect of Non-Monotony and Deformation Center on Grain Refinement in Metals Imposed to Severe Plastic Deformation*

**F.Z. Utyashev**, G.I. Raab

**C-002**

*The Role of Processing and Sample Geometry for Ductility of SPD Nanocrystalline Metals*

A.K. Wiczorek, M.J. Zehetbauer, M. Lewandowska, K. Wawer and **E.C. Aifantis**

**C-003**

*Evolution of Residual Stresses, Crystallographic Texture and Microhardness in Cu and Ti Subjected to Equal-Channel Angular Pressing*

**L.V. Alexandrov**, J. Bonarski, A.I. Korshunov, V.D. Sitdikov and L. Tarkowski

**C-004**

*Computer Simulation of Material Flow during Equal-Channel Angular Pressing*

V. Zhernakov, I. Budilov, **I. Alexandrov**

**C-005**

*The Effects of Conventional Direct Extrusion of the Twist Extruded Ti-6Al-4V by Means of Finite Element Method*

**A.R. Shahab**, S.A.A. Akbari Mousavi, M. Mastoori

**C-006**

*Molecular Dynamic Simulation of Interaction between Dislocations and Grain Boundaries in Thin Metal Films*

**D. Bachurin**, D. Weygand, P. Gumbsch

**C-007**

*Features of the Formation of the Nanostructured States in V-4Ti-4Cr Alloys under Severe Plastic Deformations*

**I. Ditenberg**, A. Tyumentsev, Y. Pinzhin, A. Korotaev and V. Chernov

**C-008**

*The Grain Boundaries Processes and Micromechanisms of Plastic Deformation of Nanostructured Materials*

**A.K. Emaletdinov**

**C-009**

*Microstructure, Microtexture and GBs Evolution in FCC Materials during Ultra-High Strain Deformation*

**A.A. Gimazov**, A.P. Zhilyaev

**C-010**

*Atomistic Simulations of Wedge Disclinations in a [123] Tilt Grain Boundary*

**A.M. Iskandarov**, A.A. Nazarov

**C-011**

*Formation of Ultrafine Grained Structure in Low Carbon Steel during ECAP*

**R.R. Kabirov**, N.G. Zaripov, G.I. Raab, N.G. Baushev

**C-012**

*Technological Parameters Optimization of the Process for Producing Bulk Nanostructured Semi - Products Made of Ti*

**I.V. Kandarov**, V.V. Latysh, V.M. Polovnikov, G.H. Salimgareeva, R.Z. Valiev, I.V. Alexandrov

**C-013**

*Atomistic Modeling of the Nanoparticle Agglomeration*

**I.I. Karkin**, L.E. Karkina and Yu.N. Gornostyrev

**C-014**

*Electron Microscopy Analysis of Disclination Defects in Severe Deformed Metals*

V. Klemm, P. Klimanek, **A.L. Kolesnikova**, M. Masimov, M. Motylenko, A.E. Romanov

**C-015**

*A Study on Hard Cyclic Viscoplastic Deformation Behavior of Bulk UFG Metals*

**L. Kommel**

**C-016**

*Computational Atomic Scale Materials Design: Bridging Theory and Experiment, Scales and Areas of Application*

**A. Korkin**

**C-017**

*Formability of Nanocrystalline VT6 Titanium Alloy Sheet*

**A.A. Kruglov**, R.Ya. Lutfullin, O.A. Rudenko and R.V. Safiullin

**C-018**

*Mechanisms of Nanostructured States Formation in Austenitic Stainless Steels Under Severe Plastic Deformation*

**I.Yu. Litovchenko**, N.V. Shevchenko, A.N. Tyumentsev and A.V. Korznikov

**C-019**

*Fracture of Bulk Ultrafine Grained Aluminum Alloys Processed by Severe Plastic Deformation*

**M.V. Markushev** and M.Yu. Murashkin

**C-020**

*Pressure Welding of VT6 Titanium Alloy under Conditions of Low Temperature Superplasticity*

**M.Kh. Mukhametrakhimov**, R.Ya. Lutfullin and A.K. Galimov

**C-021**

*Processing and Mechanical Properties of Bulk Nanostructured Nickel-Based Alloys*

**Sh. Mukhtarov**, N. Dudova and V. Valitov

**C-022**

*Vacancies in the Stress Fields of Disclinations: Relation to Bulk Nanomaterials*

**R.T. Murzaev** and A.A. Nazarov

**C-023**

*Diffusion-Controlled True Grain-Boundary Sliding in Nanostructured Metals and Alloys*

**E.F. Dudarev**, G.P. Pochivalova, Yu.R. Kolobov, E.V. Naydenkin, O.A. Kashin

**C-024**

*Mechanical Behavior of Nanostructured Ti6Al4V ELI Alloy under Tension and Compression at 4.2, 77 and 300 K*

**E.D. Tabachnikova**, **A.V. Podolskiy**, V.Z. Bengus, S.N. Smirnov, K. Csach, J. Miskuf, L.R. Saitova, I.P. Semenova and R.Z. Valiev

**C-025**

*Effect of Severe Plastic Formation on Tensile Properties and Impact Toughness of a Zinc-Based (Zn-40wt.%Al) Alloy*

**G. Purcek**, O. Saray, I. Karaman and T. Kucukomeroglu

**C-026**

*Dissipation and Deposition Discontinuous Harden Particles in Cu-1Cr-0.7Al-0.2Zr Alloy by ECAP*

S.N. Faizova, V.V. Latysh, I.V. Alexandrov, V.N. Danilenko,

**E.A. Sarkeeva** and I.V. Kandarov

**C-027**

*Bulk Nanostructured Materials: Pathways for Commercialization*

**A. Shcherbakov**

**C-028**

*The Nanocrystalline Material LitAr and the Compositions Diagram of the System Collagen– CaO – P<sub>2</sub>O<sub>5</sub> – H<sub>2</sub>O*

**A.I. Sechnoy**, T.V. Sudakova and **S.D. Litvinov**

**C-029**

*Modeling of Isothermal Forging of Compressor Blade Made of Nanostructured Ti-6Al-4V Alloy*

A.V. Botkin, **A.F. Shayahmetov**, A.A. Kuzminyh

**C-030**

*Numerical Simulation of Multipass ECAP Process and Comparison with Experiment*

**A.A. Smolyakov**, V.P. Soloviev, A.I. Korshunov, N.A. Enikeev

**C-031**

*Formation of Submicrocrystalline Structure in Carbon Steel during HPT*

**Zakirova A.A.**, Zaripova R.G., Semenov V.I., Ivanov S.

**C-032**

*Brittle-Ductile Transition in Commercial Pure Tungsten with Ultrafine-Grained Microstructure*

**Y. Zhang**, J.T. Wang, J.Q. Liu, I.V. Alexandrov, R.Z. Valiev

**C-033**

*Influence of the Scale Factor on Strain Fields in the Materials Processed by Equal-Channel Angular Pressing*

**V. Zhernakov**, A. Ermolenko

**C-034**

*Mechanics of Plastic Deformation of Cu and Ti Ingots during Multipass Combined ECAP*

I. Budilov, Yu. Lukaschuk and **V. Zhernakov**

**19.50-23.00**

*Social program (optional)*

**18 August**

**09.00-12.55**

*ISTC session “Innovation Trends and Applications of Nanomaterials”*

**09.00-09.25**

**Key-note report**

**L. Schmidt Williams**

*Commercialization and Innovation Support Opportunities Available Through the ISTC*

**09.25-09.50**

**Key-note report**

**T. Lowe**

*Key Technical Advances for Optimizing Bulk Nanostructured Metals for Applications*

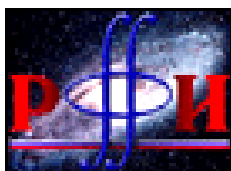
- 09.50-10.10**      **Invited report**  
**P. Vitiiaz**, V. Urbanovich  
*Research and Development of Nanomaterials and Nanotechnologies in Belarus*
- 10.10-10.25**      **Oral report**  
**V. Pushin**, R. Valiev, **D. Gunderov**, S. Prokoshkin  
*High Strength Nanostructured TiNi-Based Shape Memory Alloys and Their Applications*
- 10.25-10.40**      **Oral report**  
**G. Salishchey**, S. Zherebtsov, S. Malysheva, O. Valiakhmetov, R. Galeyev, A. Smyslov, E. Saphin, S. Pavlinich and N. Izmaylova  
*Commercialization of Nanocrystalline Two-Phase Titanium Alloys Produced by Severe Plastic Deformation*
- 10.40-10.55**      **Oral report**  
**A. Korkin**  
*Know-How Trade: Open Forum for Trading Science and Technology Ideas and Solutions, Know-How, Patents, and Software*
- 10.55-11.20**      *Coffee-break*
- 11.20-11.40**      **Invited report**  
**J.I. Pradas-Poveda**  
*ISTC as a Bridging Mechanism for Cooperation with EU*
- 11.40-11.55**      **Oral report**  
**G.I. Raab**, R.Z. Valiev, Y.T. Zhu, T.C. Lowe  
*Development of SPD Techniques for Effective Grain Refinement*
- 11.55-12.10**      **Oral report**  
**V.V. Latysh**, V.M. Polovnikov, I.V. Kandarov, G.H. Salimgareeva, R.Z. Valiev, T. Lowe  
*Development of the Combined Technology for Producing Long-Sized Nanostructured Ti Semi-Products for Structural Application*
- 12.10-12.25**      **Oral report**  
M. Yu. Murashkin, A.V. Scherbakov, **J.V. Bazhenova**, R.Z. Valiev  
*Nano Light Alloys for Advanced Applications: Offer for Commercialization*
- 12.25-12.40**      **Oral report**  
**R.Ya. Lutfullin**, A.A. Kruglov, R.V. Safiullin, M.Kh. Mukhametrakhimov, O.A. Rudenko  
*Processing Properties of Nano- and Submicrocrystalline Ti-6Al-4V Titanium Alloy*

- 12.40-12.55**      **Oral report**  
**T.R. Idrisov**, A.N. Zaitsev  
*Precision Pulse Electrochemical Machining of Nanostructured Materials*
- 12.55-13.30**      *Concluding address and closing of BNM-2007.*  
*Awarding of participants (best poster presentations, best presentations in the session for young scientists)*
- 13.30-16.00**      *Lunch*  
*Excursion to USATU (optional)*  
*Excursion to the National Museum (optional)*

INTERNATIONAL SYMPOSIUM

**BULK NANOSTRUCTURED MATERIALS:**  
from fundamentals to innovations BNM<sup>2007</sup>

**Co-organized and sponsored by:**



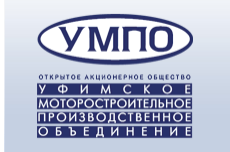
**Russian Foundation for Basic Research (RFBR)**  
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**14-18 August, 2007**  
**Ufa, Russia**