

**National Academy of Sciences of Ukraine (NASU)  
Russian Academy of Science (RAS)  
International Coordination Council  
on Physics of Strength and Plasticity of Materials (ICC)  
Frantsevich Institute for Problems of Materials Science of NASU  
National Technical University of Ukraine “KPI”  
Kurdumov Institute for Physics of Metals of NASU  
Ioffe Physical and Technical Institute of RAS  
“INTEM” LTD, Ukraine**

***49 INTERNATIONAL CONFERENCE***

# **ACTUAL PROBLEMS OF STRENGTH**

*Dedicated to the 80<sup>th</sup> birthday anniversary of academician of  
National Academy of Sciences of Ukraine and Russian Academy of  
Sciences*

***VICTOR IVANOVICH TREFILOV***



***Preliminary Program***

**June 14-18, 2010**

**Kiev, Ukraine**

## OUR SPONSORS:

*We wish to thank the following for their contribution to the success of this conference:*

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### U.S.Army International Technological Center--Atlantic, Research Division

- National Technical University of Ukraine "Kiev Politechnical Institute"
- Frantsevich Institute for Problems of Materials Science of NASU



Conference sessions will be held in National Technical University of Ukraine "Kiev Polytechnical Institute"

**OPENING and I PLENARY SESSION** on address:

37 Ave. Pobedy, the Main Building, Scientific Council Hall;  
(Metro "Politekhnycheskyi institute").

**The rest of the meetings** will be held on address:

35 Str. Politekhnycheskaya, build.9  
(Metro "Politekhnycheskyi institute")

**On June 15-18 beginning of sessions at 9<sup>30</sup>.**

## **ORGANIZING COMMITTEE**

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(Ekaterinburg, Russia)

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(Donetsk, Ukraine)

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(Tolyatti, Russia)

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**Kotrechko S.A.** - DSc. (Kiev, Ukraine)

**Slezov V.V.** - Corresp.member of NASU

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**Straumal B.B.** - DSc., prof.

(Chernogolovka, Russia)

**Krishtal M.M.** - DSc., prof.(Tolyatti, Russia)

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# THE RULES OF THE CONFERENCE ACTIVITY

## Sunday, June 13, 2010

9<sup>30</sup>-16<sup>00</sup>(building #9. NTUU "KPI") Registration of participants

## Monday, June 14, 2010

From 9<sup>00</sup> (Main building 1, NTUU "KPI") Registration of participants  
9<sup>30</sup>-10<sup>20</sup> Main building 1, NTUU "KPI", Conference hall  
10<sup>20</sup>-13<sup>00</sup> **Opening of the Conference**  
**I Plenary session**  
*Coffee-brake*  
11<sup>00</sup>-11<sup>30</sup> **Continuation of the I Plenary session**  
11<sup>30</sup>-13<sup>00</sup> *Lunch*  
13<sup>00</sup>-14<sup>30</sup>

### Evening meetings on June 14, 2010 Exposition of the posters of Sections 1 and 2 from 14<sup>30</sup> till 18<sup>00</sup>,

14<sup>30</sup>-18<sup>00</sup> Room 1  
Section 1. Fundamental problems of strength and plastisity of metals and alloys  
16<sup>00</sup>-16<sup>30</sup> *Coffee-brake*  
14<sup>30</sup>-18<sup>00</sup> Room 2  
Section 2. Severe plastic deformation

## Tuesday, June 15, 2010

9<sup>30</sup>-11<sup>00</sup> Room 1  
**II plenary session**  
11<sup>00</sup>-11<sup>30</sup> *Coffee-brake*  
11<sup>30</sup>-13<sup>00</sup> **Continuation of the II Plenary session**  
13<sup>00</sup>-14<sup>30</sup> *Lunch*

### Evening meetings on June 15, 2010 Exposition of the posters of Sections 1 and 4 from 14<sup>30</sup> till 18<sup>00</sup>,

14<sup>30</sup>-18<sup>00</sup> Room 1  
Continuation of the Section 1. Fundamental problems of strength and plastisityv of metals and alloys  
16<sup>00</sup>-16<sup>30</sup> *Coffee-brake*  
14<sup>30</sup>-18<sup>00</sup> Room 2  
Section 4. Mechanical behavior of materials under indentation  
19<sup>00</sup>

### Wednesday, June 16, 2010

9<sup>30</sup>-11<sup>00</sup>

Room 1

#### **III Plenary session**

*Coffee-brake*

11<sup>00</sup>-11<sup>30</sup>

11<sup>30</sup>-13<sup>00</sup>

#### **Continuation of the III Plenary session**

13<sup>30</sup>-14<sup>30</sup>

*Lunch*

### **Evening meetings on June 16, 2010 Exposition of the posters of Sections 3 and 5 from 14<sup>30</sup> till 18<sup>00</sup>,**

14<sup>30</sup>-18<sup>00</sup>

Room 1

#### **Section 3. Phase transformations and strength**

*Coffee-brake*

16<sup>00</sup>-16<sup>30</sup>

14<sup>30</sup>-18<sup>00</sup>

Room 2

#### **Section 5. Simulation of deformation and fracture**

### Thursday, June 17, 2010

9<sup>30</sup>-11<sup>00</sup>

Room 1

#### **IV Plenary session**

*Coffee-brake*

11<sup>00</sup>-11<sup>30</sup>

11<sup>30</sup>-13<sup>00</sup>

#### **Continuation of the IV Plenary session**

13<sup>30</sup>-14<sup>30</sup>

*Lunch*

### **Evening meetings June 17, 2010 Exposition of the posters of Sections 1 and 7 from 14<sup>30</sup> till 18<sup>00</sup>,**

14<sup>30</sup>-18<sup>00</sup>

Room 1

#### **Continuation of the Section 1. Fundamental problems of strength and plasticity of metals and alloys**

16<sup>00</sup>-16<sup>30</sup>

*Coffee-brake*

14<sup>30</sup>-18<sup>00</sup>

Room 2

#### **Section 7 Materials science aspects of the processes of friction and wear.**

### Friday, June 18, 2010

#### **Exposition posters of Section 6 from 9<sup>30</sup> till 16<sup>30</sup>**

9<sup>30</sup>-11<sup>00</sup>

Room 1

#### **Section 6. Physics of strength quazikristalline, amorphous-crystalline, multi-component hightropic alloys and other new materials**

11<sup>00</sup>-11<sup>30</sup>

*Coffee-break*

17<sup>00</sup>

#### **SUMMARY DISCUSSING**

#### **CLOSE OF THE CONFERENCE**

*Monday, June 14, 2010*

**OPENING CONFERENCE**

**9.30 -13.00**      **1-th-PLenary Meeting**

*Chairmen: Betekhtin V.I., Milman Yu.V.*

**P-151 V.I.TREFILOV AND PHYSICS OF DURABILITY TODAY**

Firstov S.A.

Frantsevich Institute for Problems of Materials Science of NASU

**30 minutes**

**P-1 NANOSTRUCTURED MATERIALS AS HEAT-RESISTANT AND RADIATION-RESISTANT MATERIALS**

Andrievskiy R.A.

Institute for problems of chemical physics of RAS

**30 minutes**

**COFFEE BREAK      30 minutes**

**P-287 PHYSICAL FOUNDATIONS FOR HIGH-STATES IN TITANIUM ALLOYS**

Ivasishin O.M., Markovsky P.E.

Kurdyumov Institute for Metal Physics. of NASU

**30 minutes**

**P-296 EFFECT OF SEVERE PLASTIC DEFORMATION ON THE DURABILITY AND ELASTIC-PLASTIC PROPERTIES OF ALUMINUM AND ITS ALLOYS**

Betekhtin V.I., Sklenichka V. <sup>(1)</sup>, Kardashev B.K., Kadomtsev A.G. .

Ioffe Physico-Technical Institute. <sup>(1)</sup> Brno, Czech Republic

**30 minutes**

**P-282 BULK NANOSTRUCTURED METALLIC MATERIALS FOR INNOVATION APPLICATIONS**

Valiev R. Z.

Institute of Physics of Advanced Materials and the Nanocenter, Ufa State

Aviation Technical University

**30 minutes**

**P-294 HIGH TEMPERATURE-STRENGTH OF REINFORCED CERAMIC COMPOSITE MATERIALS**

Loboda PI, Bogomol YI

National Technical University of Ukraine "KPI"

**30 minutes**

**DISCUSSION**

**LUNCH BREAK 13.00 -14.30**

*Monday, June 14, 2010*

**Audience 1**

14.30-18.00 **EVENING MEETING**

**Section 1**

**"FUNDAMENTAL PROBLEMS OF STRENGTH AND PLASTICITY OF METALS AND ALLOYS..."**

**Chairmen: *Krasovskii A.Y., Slutsker A.I.***

1

**1-37 TO THE QUESTION ON MECHANISMS OF THE FRAGMENTATION OF SOLID BODIES IN INTENSIVE PLASTIC DEFORMATIONS CONDITIONS**

**Konstantinova T.E.**

Donetsk Institute of Physics and Engineering named after O.O. Galkin NAS of Ukraine

**20 minutes**

**1-42 STRENGTH OF SIC CERAMICS UNDER STATIC LOADING**

Slutsker A.I., Kadamtsev A.G., Betekhtin V.I., Damaskinskaya E.E., Sinani A.B.  
Ioffe Physical Technical Institute of the Russian Academy of Sciences

**20 minutes**

**1-18 ON THE POSSIBLE MECHANISM OF PHASE'S MIXING UNDER SIMPLE SHEAR OF METAL MATERIALS**

Beygelzimer Y.Y

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

**20 minutes**

**1-29 RELATION BETWEEN PERFECT CRYSTAL STRENGTH AND DIMENSIONALITY**

**S. Kotrechko, I.M. Mikhailovskij<sup>(1)</sup>, T.I. Mazilova<sup>2</sup>**

G V Kurdyumov Institute for Metal Physics, National Academy of Sciences of the Ukraine,

<sup>(1)</sup> National Scientific Center, Kharkov Institute of Physics and Technology

**20 minutes**

**1-34 STRUCTURAL-SCALE LEVEL OF PLASTIC STRAIN UNDER CYCLIC LOADING OF POLYCRYSTALS**

**ASSESSMENT IN INCOMPRESSIBLE AND ELASTIC - PLASTIC DEFORMATIONS BEHAVIOR**

Elsukova T.F., Panin V.E., Popkova Yu.F.

Institute of Strength Physics and Materials Science, SB RAS

**20 minutes**

**COFFEE BREAK      30 minutes**

**1-35 THE PROBLEM OF BRITTLENESS OF METALS IN CONSTRUCTION**

Meshkov Yu.Ya., Kotrechko S.A.

G.V.Kurdyumov Institute for Metal Physics of NAS of the Ukraine

**20 minutes**

**1-36 DOPING AND INHOMOGENEOUS DISTRIBUTION OF IR ATOMS EFFECT ON HIGH TEMPERATURE CREEP OF MO SINGLE CRYSTALS**

Dekhtyar A.I., Zasimchuk I.K., Matvienko L.F., Gripachevsky A.N., Tikhonovich V.V.

G.V. Kurdyumov Institute for Metal Physics of National Academy of Sciences of Ukraine

**20 minutes**

**P-8 PHYSICS OF PLASTIFICATION OF METAL ALLOYS UNDER DYNAMIC LOADING**

Zasimchuk E.E., Chausov N.G.<sup>(1)</sup>, Baskova A.I., Gatsenko A.S.

G.V. Kurdyumov Institute for Metal Physics of the National Academy of Sciences of Ukraine

<sup>(1)</sup>National Agricultural University of Ukraine

**20 minutes**

**1-58 ACTIVATION VOLUME OF PLASTIC DEFORMATION AND LOW TEMPERATURE FAILURE PECULIARITIES IN COMPRESSION OF THE NANOCRYSTALLINE NI-20%FE ALLOY**

Tabachnikova E.D., Podolskiy A.V. Bengus V.Z., Smirnov S.N., Li.<sup>(1)</sup>, Liaw P.K.<sup>(1)</sup>, Choo H.<sup>(1)</sup>, Csach K.<sup>(2)</sup>, Miskuf J.<sup>(2)</sup>

B. Verkin Institute for Low Temperature Physics & Engineering

<sup>(1)</sup>Department of Materials Science and Engineering, University of Tennessee,

<sup>(2)</sup>Institute of Experimental Physics, SASia

**20 minutes**

*Monday, June 14, 2010*

*Audience 1*

**14.00 -17.30 Exposition posters sections "1"**

**P-16 THE NON-UNIFORM DISTRIBUTION OF DISLOCATION DENSITY IN TUBES FROM ZR-BASED ALLOYS**

Perlovich Yu.A., Isaenkova M.G.

National Research Nuclear University - MEPHI

**1-17 NONLINEAR OSCILLATORY ELECTRONIC CONCEPT OF THE STRUCTURE, MELTING, DISSOLUTION, STRENGTH AND DUCTILITY SOLIDS**

Kornienko N.E., Kornienko A.N.

Kiev State University

**1-19 EVOLUTION OF DEFECT STRUCTURE OF ALUMINUM ON CREEP UNDER THE ACTION OF THE ELECTRIC POTENTIAL**

Stolboushkina O.A., Konovalov S.V., Ivanov Yu.F.<sup>(1)</sup>,

Gromov V.E.

Siberian State University of Industry

<sup>(1)</sup>Institute of High Current Electronics, Siberian Division of the Russian Academy of Sciences

**1-20 CHARACTERISTIC FEATURES OF LOW-TEMPERATURE PLASTIC DEFORMATION AND CHARGE TRANSFER IN HIGH PURITY ALUMINIUM**

Demyanov S.E., Kalanda N.A., Petrov A.V

Scientific-Practical Materials Research Centre of the National Academy of Sciences of Belarus

**1-21 EFFECT OF FORGING AND CYCLIC LOADING OF STEEL 14X17H2 ON ITS COERCIVE FORCE**

Matsevity V.M., Bezlyudko G.Ya.<sup>(1)</sup>, Kazak I.B., Vakulenko K.V.

Podgorny Institute for Mechanical Engineering Problems NAS of Ukraine

<sup>(1)</sup>"Special scientific developments" company

**1-23 STRESS STATE OF A MULTILAYER FILM COATING.**

Grekov M.A., Kostyrko S.A.<sup>(1)</sup>

St. Petersburg State University, Universitetski pr

**1-24 THE FEATURES OF FORMATION AND DEVELOPMENT OF FIBERS DURING THE SUPERPLASTIC DEFORMATION OF ALUMINUM-BASED ALLOYS**

Bryuhkovetsky V.V., Poyda V.P.<sup>(1)</sup>, Poyda A.V. , Kuznetsova R.I.

Institute of Electrophysics & Radiation technologies NAS of Ukraine

\*V.N. Karazin Kharkiv National University

**1-25 INCREASE IN LIFE OF STRUCTURAL MATERIALS USING SYNERGETIC EFFECTS**

Pereverzev Ye.S., Borschevskaya D.G.

Institute for technical Mechanics of NASU and NSAU

**1-26 DROWING AND FRACTURE OF STEEL WIRE**

Zavdoveev A.V., Grishaev V.V., Beygelzimer Ya.E. , Varyukhin V.N.

Donetsk Physical and Technical University of NAS of Ukraine

**1-27 THE STRENGTH PROBLEMS BY ALLOYS LASER WELDS**

Pugacheva N.B.

Institute of Engineering Science the Ural Branch of the Russian Academy of Sciences

**1-28 IMPROVING THE EFFICIENCY OF CHEMICAL-HEAT TREATMENT OF MATERIALS**

**ELECTRONIC MECHANISM ELECTROPLASTIC DEFORMATION OF METALS**

Didyk R.P., Bezrukavaya V.A.

Mining University

**1-31 CHANGE PHYSICAL-MECHANICAL CHARACTERISTIC ULTRAFIN GRAINET ALUMINUM ALLOY UNDER THE ACTION OF LAZER PULSED RADIATION**

Kikin P.YU., Pchelincev A.I., Rusin E.E. Zemlyakova N.V.

Blagonravov Mechanical Engineering Research Institute of Russian Academy of Sciences

**1-38 DISLOCATION DYNAMICS IN A MEDIUM WITH VARIABLE VISCOSITY**

Beloshapka V.Ya., Maltsev S.I., Semenova K.S., Platkov V.Ya.<sup>(1)</sup>

Berdiansk State Pedagogical University

<sup>(1)</sup>Kharkiv National University of Economics

**1-39 MICROHARDNESS OF NANOCRYSTALLINE TITANIUM**

Lubenets S.V., Fomenko L.S., Rusakova A.V., Moskalenko V.A., Smirnov A.R.

B.I.Verkin Institute for Low Temperature Physics and Engineering

**1-40 MICROMECHANICAL PROPERTIES OF AN ULTRAFINE-GRAINED MAGNESIUM ALLOY AZ31**

Lubenets S.V., Fomenko L.S., Rusakova A.V., Estrin Yu.Z.<sup>(1)</sup>

B. Verkin Institute for Low Temperature and Engineering of NASU

<sup>1</sup>ARC Centre of Excellence for Design in Light Metals, Department of Materials Engineering, Monash University, Clayton

**1-43 1-43 ASSESSMENT IN INCOMPRESSIBLE AND ELASTIC - PLASTIC DEFORMATIONS BEHAVIOR**

Гасанов Р. А., Гюльгазли А. С., Аббасов С. Г.

Azerbaijan State Oil Academ

**1-44 THE INFLUENCE OF PARAMETERS MICROSTRUCTURE ON THE ELASTIC MODULUS OF TI-NB-MO-ZR ALLOYS**

Vershinina T.N., Golosoza O.A., Ivanov M.B., Kolobov Yu.R., Pigorev E.S., Zisman A.A. <sup>(1)</sup>, Betekhtin V.I.

Research Education and Innovative Centre «Nanostructured Materials and Nanotechnologies»

<sup>(1)</sup>CRISM "Prometheus"

<sup>(2)</sup>Ioffe Physical Technical Institute Russian Academy of Sciences

**1-45 MAGNETIC-FIELD-INDUCED CHANGES IN THE NANOSTRUCTURE AND MICROPLASTIC CHARACTERISTICS OF SILICON CRYSTALS**

.Makara V.A, Steblenko L.P., Kuryliuk A.M., Koplak O.V., Krit O.M., Tkach V.M. <sup>(1)</sup>, Kravchenko V.M.<sup>1</sup>

<sup>(1)</sup>Faculty of Physics, Taras Shevchenko National University of Kyiv

V. Bakul Institute for Superhard Materials

**1-46 THE INFLUENCE OF COMPOSITION FEATURES ON MECHANICAL PROPERTIES AND FRACTURE STRENGTH OF CORROSION-RESISTANT STEEL ON FE-CR-NI BASE**

Maltseva L.A., Gladkovsky S.V. <sup>(1)</sup>, Sharapova V.A., Maltseva T.V., Borodin E.M. <sup>(1)</sup>

State Educational Institution of Higher Professional Education «Ural State Technical University – UPI named after the First President of Russia Boris N. Yeltsin»

<sup>(1)</sup> Institute of Engineering Science Russian Academy of Sciences, Urals Branch

**1-51 THE EFFECT OF DOPING ON MECHANISMS OF HIGH-TEMPERATURE CREEP OF ALLOYS BASED ON THE INTERMETALLIC Ni<sub>3</sub>Al**

Kolobov Yu. R., Vershinina T.N., Prozorova M.S., Bazyleva O.AE.<sup>(1)</sup>

<sup>(1)</sup> Research Education and Innovative Centre «Nanostructured Materials and Nanotechnologies», Belgorod State University,

<sup>(2)</sup> All-Russian Scientific Research Institute of Aviation Materials

**1-53 PRECIPITATION HARDENING OF TI-AL-FE INTERMETALLIC ALLOYS VIA HEAT TREATMENT**

Gaisin R.A., Imayev V.M.

Institute for metals superplasticity problems of Russian Academy of Sciences

**1-54 DUCTILITY OF ULTRAFINE GRAINED METALS OBTAINED BY SEVERE PLASTIC DEFORMATION**

Beygelzimer Y.Y., Prokof'eva O.V., Kulagin R.Y., Varyukhin V.M.

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

**1-55 INFLUENCE OF DISSOLVED IRIDIUM (~ 1,5 AT.% IR) TO THE BIRTH OF DISLOCATIONS IN SINGLE CRYSTALS OF MOLYBDENUM**

Dub S.N., Zasimchuk I.K.<sup>(1)</sup>

Institute for Superhard Materials of NASU

<sup>(1)</sup> Institute of Metal Physics NASU

**1-56 MICROMECHANISMS OF DEFORMATION IN ULTRAFINE GRAIEND ZIRCONIUM AT LOW TEMPERATURES**

Podolskiy A.V., Tabachnikova E.D., Bonarski B.<sup>(1)</sup>, Mangler C.<sup>(1)</sup>, Bengus V.Z.,

Smirnov S.N., Velikodny A. N.<sup>(2)</sup>, Tikhonovsky M. A.<sup>(2)</sup>, M. J. Zehetbauer M. J.<sup>(1)</sup>

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

**1-57 TRANSITION FROM ELASTIC TO ELASTIC-PLASTIC DEFORMATION UNDER HIGH NANOKONTAKTNOGO INTERACTION BETWEEN SOLID**

Y.I Golovin, T. Jurin A.I. Shindyapin V.V.

Russia, REC "Nanotechnology and nanomaterials", Tambov G.R.Derzhavin State University named

**1-59 DEGRADATION PROCESSES IN THE COURSE OF THE DEFORMATION DAMAGE OF LOW-CARBON STEELS**

Chukanov A.N., Yakovenko A.A.

SEO HPE «Tula State University»

*Monday, June 14, 2010*

*Audience 2*

14.30-18.0 EVENING MEETING

*Section 2*

*"SEVERE PLASTIC DEFORMATION*

*Chairmen: Varyukhin V.N., Podrezov Yu.N.*

**2-74 MATERIALS WITH HIGH STRENGTH OBTAINED BY DEFORMATION UNDER PRESSURE**

Varyukhin V.M.

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

**20 minutes**

**2-13 THE ROLE OF DEFORMATION LOCALIZATION IN THE FORMATION OF ULTRA-FINE GRAINED STRUCTURES OF ALLOYS BY METHODS OF THE SEVERE PLASTIC DEFORMATION**

Lotkov A.I., Grishkov V.N., Koval Yu.N.<sup>(1)</sup>, Baturin A.A., Kopylov V.I.<sup>(2)</sup>, Firsov G.S.<sup>(1)</sup>, Girsova N.V., Zhapova D.Yu.

Institute of Strength Physics and Material Science SB RAS.

<sup>(1)</sup>G.V. Kurdumov Institute for Metal Physics NAS of Ukraine,

<sup>(2)</sup>The Physical and Technical Institute of NAS of Belorussia

**20 minutes**

**2-32 DEFORMATION MECHANISMS OF AUSTENITIC STEEL IN SUBMICROCRYSTALLINE AND NANOCRYSTALLINE STRUCTURAL STATES PRODUCED BY SEVERE PLASTIC DEFORMATION**

Litovchenko I.Yu., Tyumentsev A.N.<sup>(1)</sup>, Korznikov A.V.<sup>(2)</sup>

Institute of Strength Physics and Material Science SB RAS,

<sup>(1)</sup>Tomsk State University,

<sup>(2)</sup>Institute for metals superplasticity problems RAS

**20 minutes**

**2-11 STRUCTURE AND MECHANICAL PROPERTIES OF TITANIUM SUBJECTED HIGH-SPEED INTENSIVE DEFORMATION BY A METHOD DYNAMIC CHANNEL-ANGULAR PRESSING**

Zel'dovich V.I., Frolova N.Yu., Kheifets A.E., Khomskaya I.V., Shorokhov E.V.<sup>(1)</sup>

Institute of Metal Physics of Ural Division of RAS,

<sup>(1)</sup>All-Russia Research Institute of Technical Physics, Russian Federal Nuclear Center

**20 minutes**

**2-75 STRUCTURE AND MECHANICAL PROPERTIES OF TITANIUM AND TWO PHASE TITANIUM ALLOY SEVERELY DEFORMED BY MEANS OF HYDROSTATIC EXTRUSION**

Zherebtsov S., Lojkowski W.<sup>(1)</sup> Salishchev G.<sup>(2)</sup>

Laboratory of Bulk Nanostructured Materials, Belgorod State University,

<sup>(1)</sup> Institute of High Pressure Physics, Polish Academy of Sciences,

<sup>(2)</sup> Laboratory of Bulk Nanostructured Materials, Belgorod State University

**20 minutes**

**COFFEE BREAK 30 minutes**

**2-284 STRUCTURE OF TRANSITION ZONE AFTER EXPLOSION WELDING  
(TITANIUM – ORTHORHOMBIC TITANIUM ALUMINIDE)**

Rybin V.V., Greenberg B.A.\* , Ivanov M.A.\*\* , Patselov A.M.\*

North-West Division of Prokhorov Engineering Academy,

\*Institute of Metal Physics, Ural Division RAS

\*\*Kurdyumov Institute of Metal Physics, National Academy of Sciences of  
Ukraine

**20 minutes**

**2-73 GETTING SUBMICRO-AND NANOCRYSTALLINE STRUCTURE IN COPPER AND  
BRASS BY DYNAMIC HIGH PRESS**

Chomsky, I.V., Zeldovich V.I. , Shorokhov E.V. <sup>(1)</sup>, Kheifets A.E., Frolova N.Yu.,

Nasonov P.A. <sup>(1)</sup> Establishment of the Russian Academy of Sciences Institute of  
Metal Physics, UB RAS, <sup>(1)</sup> Russian Federal Nuclear Center-VNIIEF

**20 minutes**

**2-234 GAUGE DESCRIPTION OF INELASTIC DEFORMATION OF MEDIA WITH  
DEFECTS**

Grinyaev Yu.V., Chertova N.V.

Institute of Strength Physics and Materials Science, SB RAS

**20 minutes**

*Monday, June 14, 2010*

*Audience 2*

**14.00 -17.30 Exposition posters sections "2"**

**2-71 FEATURES OF FORMATION OF SMZ ANNEALING AUSTENITIC STAINLESS  
STEEL PAST SEVERE PLASTIC DEFORMATION AT CRYOGENIC TEMPERATURES**

Mikhailov, S.B., Mikhailova N.A. <sup>(2)</sup>, Mulyukov R.R. <sup>(1)</sup>, Zaripova R.Z. <sup>(1)</sup>

USTU-UPI,

<sup>(1)</sup> PSI RAS

<sup>(2)</sup> UrSURT

**2-73 GETTING SUBMICRO-AND NANOCRYSTALLINE STRUCTURE IN COPPER AND  
BRASS BY DYNAMIC HIGH PRESS**

Chomsky, I.V., Zeldovich V.I. , Shorokhov E.V. <sup>(1)</sup>, Kheifets A.E., Frolova N.Yu.,  
Nasonov P.A. <sup>(1)</sup>

Establishment of the Russian Academy of Sciences Institute of Metal Physics, UB RAS,

<sup>(1)</sup> Russian Federal Nuclear Center-VNIIEF

**2-77 EFFECT OF SEVERE PLASTIC DEFORMATION ON STRUCTURE AND PROPERTIES OF LOW CARBON STEEL**

Zakirova A.A., Zaripova R.G. <sup>(1)</sup>

Institute for Metals Superplasticity Problems of the Russian Academy of Sciences

<sup>(1)</sup> Ufa State Aviation Technical University

**2-79 INVESTIGATION OF NANOSTRUCTURAL STATES IN SUBSURFACE VOLUME OF ION-IMPLANTED PLATINUM IN ATOM-SPATIAL SCALE USING A COMPUTER SIMULATION OF FIELD ION IMAGES**

Medvedeva E.V., Ivchenko V.A., Ovchinnikov V.V., Machinko F.F., Romanov I.Yu., Alexandrova S.S. <sup>(1)</sup>

Institute of Electrophysics, Ural Branch, Russian Academy of Science,

<sup>(1)</sup> Institute of Ural Branch, Russian Academy of Science

**2-80 SOLID STATE JOINING IN NANOSTRUCTURED TITANIUM ALLOY VT6**

Mukhametrakhimov M.Kh.

Institute for Metals Superplasticity Problems Russian Academy of Sciences

(IMSP RAS)

**2-81 THE FORMATION MECHANISM NANOPHASE SYSTEMS (NPS) IN A STRUCTURE OF METALS AND ALLOYS**

Zabelin S.F., Zelensky V. A. <sup>(1)</sup>, A.A. Vasiliev A.A.

ZabGGPU IMET, Moscow

**2-82 SUBMICROCRYSTALLINE AND NANOCRYSTALLINE IRON-BASED VACUUM CONDENSATES**

Barmin A.E., Illinsky A.I., Zubkov A.I.

National technical university «Kharkov polytechnical institute»

**2-83 STRESSED-STRAINED STATE AND SUBSTRUCTURE OF TITANIUM SEVERELY PLASTICALLY DEFORMED THROUGH UPSETTING-EXTRUSION-DRAWING AT 77K**

Volchok O.I., Kislyak I.F., Kutnij K.V., Neklyudov I.M., Sokolenko V.I., Storozhilov G.E., Tikhonovsky M.A., Kamyshanchenko N.V. <sup>(1)</sup>, Nikulin I.S. <sup>(1)</sup>

National Science Center “Kharkov Institute of Physics & Technology” of NASU

<sup>(1)</sup>Belgorod State University

**2-85 SIZES OF VACANCIES AND PORES IN METALS AND ALLOYS ACCORDING TDAP**

Grafutin V.I., Prokopev E.P., Timoshenkov S.P.Funtikov Yu.V

FSUF SSC RF A.I.Alikhanov Institute for theoretical and experimental physics.

**2-86 FORMATION OF NANOCRYSTALLINE STRUCTURE IN IRON DURING SEVERE PLASTIC DEFORMATION WITH SIMULTANEOUS NITROGEN SATURATION**

Yurkova A., Milman Yu.<sup>(1)</sup>, Byakova A.<sup>(1)</sup>

National Technical University of Ukraine "KPI",

<sup>(1)</sup> Frantsevych Institute for Problems of Materials Science, National Academy of Sciences

**2-88 WARM CROSS-HELICAL ROLLING IN VALKA CONICAL SHAPE AS A METHOD OF SEVERE PLASTIC DEFORMATION**

Penkin A.V. Golosov E.V., Ivanov M.B., Kolobov, Yu.P.

Research and Education and Innovation Centre "Nanostructured Materials and Nanotechnology", Belgorod State University

**2-89 INFLUENCE OF PLASTIC DEFORMATION ON STRUCTURE AND PROPERTIES OF NANOCOMPOSITE COPPER ALLOY**

Kuznetsov A., Stepanov N.<sup>(1)</sup> Salishchev G.<sup>(2)</sup> Pansyrnyi V.<sup>(3)</sup> Khlebova N.<sup>(4)</sup>

Laboratory of Bulk Nanostructured Materials, Belgorod State University

<sup>(1)</sup>Laboratory of Bulk Nanostructured Materials, Belgorod State University

<sup>(2)</sup> Laboratory of Bulk Nanostructured Materials, Belgorod State University

<sup>(3)</sup> JSC A.A. Bochvar high-technology research institute of inorganic materials

<sup>(4)</sup> JSC A.A. Bochvar high-technology research institute of inorganic materials

**2-91 NANO-COATING AS A METHOD TO IMPROVE PHYSICAL AND MECHANIC CHARACTERISTICS OF MATERIALS**

Semukhin B.S., Koval N.N.<sup>(1)</sup>, Goncharenko I.M.<sup>(1)</sup>

Foundation of the Russian Academy of Sciences Institute of Strength Physics and Materials Science Siberian Branch RAS

<sup>(1)</sup>Foundation of the Russian Academy of Sciences the High Current Electronics Institute of the Siberian Branch of the RAS

**2-93 HIGH-STRENGTH NANOCRYSTALLINE COMPOSITE COATINGS BASED ON ALUMINUM AND ITS ALLOYS**

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

Institute of Metal Physics, Ural Division, Russian Academy of Sciences

**2-111 INFLUENCE OF INTERSTITIAL IMPURITIES ON THE MICROMECHANICAL BEHAVIOR OF CHROMIUM COATINGS OBTAINED BY MAGNETRON SPUTTERING**

Firstov S.A., Kulikovskii V.Yu., Rogul T.G., Ponomarev S.S., Kovylyaev V.V., Timofeeva I.I., Dub S.N.<sup>(1)</sup>, Tolmacheva G. N.<sup>(2)</sup>

Frantsevich Institute for Problems of Materials Science of NASU

<sup>(1)</sup>Institute of Superhard Materials of NASU,

<sup>(2)</sup>“Kharkiv Physicotechnical Institute” National Scientific Center

**2-112 YIELD POINT OF THE POLYCRYSTALS IN A WIDE RANGE OF GRAIN SIZES**

Firstov S.A., Rogul T.G., Shut O.A.

Frantsevich Institute for Problems of Materials Science of NASU

**2-113 MICROMECHANICAL BEHAVIOR OF TITANIUM COATINGS OBTAINED BY MAGNETRON SPUTTERING**

Firstov S., Kulikovskii V., Rogyl T., Ponomarev S., Kovylyaev V., Zelyavskii V., Ctvrtlik R.<sup>(1)</sup>

Frantsevich Institute for Problems of Materials Science of NASU

<sup>(1)</sup>Institute of Physics, Na Slovance 2, 182 21, Prague 8, Czech Republic

**2-137 TEMPERATURE INFLUENCE ON STRENGTHENING OF SURFACE LAYERS AT BROACHING DEFORMATION**

Rozenberg O.A., Sheykin S.E., Gorban V.F.<sup>(1)</sup>, Danylenko M.I. <sup>(1)</sup>, Mameka N.A.<sup>(1)</sup>

Bakul Institute for Superhard Materials of NASU

<sup>(1)</sup>Frantsevich Institute for Problems of Materials Science of NASU

**2-152 THE SURFACE MAXIMUM HARDENING OF HIGH-CARBON STEELS**

Shevchenko O.M., Gorban V.F., Shkolnyi V.K., Buzhenets E.I., Maksimova G.A.

Frantsevich Institute for Problems of Materials Science of NASU

**2-255 RELAXATION PROCESSES IN NANOCRYSTAL COPPER AFTER COMBINED DEFORMATION**

Beloshenko V.A., Tokiy V.V., Pilipenko A.N., Davydenko O.A.

Donetsk Institute for Physics and Engineering named after O.O.Galkin of the NAS of Ukraine

**2-274 OSCILATED EVOLUTION OF MATERIAL FEATURES DURING SPD WITH TAKING IN ACCOUNT OF PRE-HISTORY**

Metlov L.S., Pashinska E.G.

Donetsk institute for physics and technology NAS of Ukraine

*Tuesday, June 15, 2010*

**9.30 -13.00**

**2-th PLENARY MEETING**

*Chairmen: Ivasishin O.M., Kozlov E.V.*

**P-6 CLOSE TO THEORETICAL STRENGTH. NEW NANOINDENTATION CAPABILITIES**

Golovin Yu.I.

Center of Nanotechnology and Nanomaterials Tambov State University

**30 minutes**

**P-129 PHYSICAL CONCEPT OF PLASTICITY. THEORETICAL PLASTICITY OF MATERIALS**

Milman Yu.V.

Frantsevich Institute for Problems of Materials Science of NASU

**30 minutes**

**P-144 ON THE HARDNESS OF BRITTLE SOLIDS**

Galanov B.A., Grigoriev O.N.

Frantsevich Institute for Problems of Materials Science of NASU

**30 minutes**

**P-10 EFFECT OF GRAIN SIZE ON A DENSITY OF GEOMETRICALLY NECESSARY DISLOCATIONS**

Kozlov E.V., Trishkina L.I., Popova N.A., Lychagin D.V., Koneva N.A.

Tomsk State University of Architecture and Building

**30 minutes**

**COFFEE BREAK      30 minutes**

**P-297 STRUCTURAL REGULARITIES OF NANOSTRUCTURE FORMATION IN THE TOOL AND CONSTRUCTIONAL MATERIALS DURING ULTRASONIC HARDENING TREATMENT**

Alekhin V.P.

Moscow State Industrial University

**30 minutes**

**P-5 ROLE OF DIFFUSION - CONTROLLED PROCESSES IN THE FORMATION OF STRUCTURE AND PROPERTIES OF NANOSTRUCTURED METALLIC MATERIALS**

Kolobov Yu.R.

Research Education and Innovative Centre «Nanostructured Materials and Nanotechnologies» Belgorod State University

**30 minutes**

**DISCUSSION**

**LUNCH BREAK      13.00 -14.30**

*Tuesday, June 15, 2010*

*Audience 1*

**14.30-18.0**     **EVENING MEETING**

*Continuation of Section 1*

**"FUNDAMENTAL PROBLEMS OF STRENGTH AND PLASTICITY OF METALS AND ALLOYS ".**

*Chairmen: Moskalenko V.A., Pechkovsky E.P.*

**1-76 THREE CRITICAL GRAIN SIZES OF METALLIC POLYCRYSTALS**

Koneva N.A., Popova N.A., Kozlov E.V.

Tomsk State University of Architecture and Building

**20 minutes**

**1-90 DEFORMATION BEHAVIOR, ELASTOPLASTIC PROPERTIES AND FRACTURE OF TITANIUM SUBMICROCRYSTALLINE STRUCTURES FORMED IN WARM ROLLING**

Dudarev E.F., <sup>(1)</sup> Kashin O.A., Skosyrskaya A.B., Tabachenko A.N., Bakach G.P., Pochivalova G.P. <sup>(1)</sup> Lotkov A.I.

Siberian Physico-Technical Institute, Tomsk State University

<sup>(1)</sup> Institute of Strength Physics and Material Science

**20 minutes**

**1-9 USE OF THE NANOSTRUCTURED STRENGTHENING EFFECT FOR THE MASSIVE ARTICLES**

Dyachenko S.S., Ponomarenko I.V.

Kharkov national automobile and highway university

**20 minutes**

**1-217 FORMATION OF THE NANOSTRUCTURE ALLOYED BY ZIRCONIUM ON TINI SUPERFICIAL LAYERS USING THE PULSE ELECTRON BEAMS METHOD**

Mejsner L.L., Mironov Yu.P., Lotkov A.I.

Institute of Strength Physics and Materials Science SB RAS

**20 minutes**

**COFFEE BREAK     30 minutes**

**1-33 CYCLE EVOLUTION DEFECT STRUCTURE IN THE GPU - AN ALLOY OF ZIRCONIUM**

Poletika T.M., Girsova S.L., Pshenichnikov A.P.

Institute of Strength Physics and Materials Science, SB RAS

**20 minutes**

**1-84 MECHANOCHEMICAL SYNTHESIS AND COMPACTING ALLOYS WITH THE NANOCRYSTALLINE ELEMENTS OF THE SUBSTRUCTURE**

Portnoy V. K., Leonov A. V., <sup>(1)</sup> Logachova A.I.

Department of Chemistry, Moscow Lomonosov State University

<sup>(1)</sup>The public corporation «Kompozit»

**20 minutes**

**1-87 THE EFFECT OF GRAIN NANOMETER SIZE ON LOW-TEMPERATURE PLASTICITY OF TITANIUM**

Moskalenko V. A., Smirnov A. R., Smolyanets R. V.

B.I. Verkin Institute for Low Temperature Physics and Engineering, NAS of Ukraine

**20 minutes**

*Tuesday, June 15, 2010*

*Audience 1*

**14.00 -17.30 Exposition posters sections "1"**

**1-60 HEAT ABSORPTION IN SUPERPLASTIC ALLOY ZN-22 WT.%AL UNDER MECHANICAL STRESSES**

Korshak V.F., Tkachenko M.V., Mochalov E.V.

V.N. Karazin Kharkiv National University Kharkiv

Vera.F.Korshak@univer.kharkov.ua

**1-62 RELAXATION STRUCTURE FORMATION IN DEFORMATION OF NICKELE**  
Zasimchuk E.E., Turchak T.V

G.V.Kurdumov Institute for Metal Physics of NAS of Ukraine

**1-63 FRACTURE PECULIARITIES OF THE BACK SURFACE OF TARGETS WHEN PENETRATING LONG PROJECTILES**

Zakharov V.M., Khorev I.E.

Research Institute of Applied Mathematics and Mechanics of Tomsk State University

**1-64 INVESTIGATION OF STRUCTURAL STRENGTH IN ALLOYS, WEAKENED RING STRESS RAISERS**

Gorunov A.I., Bagmutov V.P., Vodop'yanov V.I

Volgograd State Technical University

**1-65 RESEARCH PROCESSES POSTCRITICAL DEFORMATION AND FRACTURE OF MATERIALS FOR COMPLEX THERMOMECHANICAL ACTIONS**

Wildemann V.E., Tretyakov M.P., Sannikova T.V.

Perm State Technical University

**1-66 EFFECTS OF DYNAMIC DEFORMATION AGEING IN HOT-ROLLED SHEETS FROM ALLOYED BCC METALS**

Perlovich Yu.A.  
National Research Nuclear University - MEPHI

**1-67 STRUCTURE AND PROPERTIES OF DEFORMED 08HC STEEL WHICH HAS BEEN COOLED IN THE ROLL**

Kutsova V.Z., Kotova T.V., Ivanchenko V.G.<sup>(1)</sup>

National metallurgical academy of Ukraine,

<sup>(1)</sup>Institute of black metallurgy Z.I. Nekrasov's of National academy of sciences of Ukraine

**1-68 THE INFLUENCE OF X-RAY RADIATION ON THE DEGREE OF PERFECTION OF THE STRUCTURE OF NEAR-SURFACE LAYERS OF SILICON AND DYNAMIC BEHAVIOR OF DISLOCATIONS.**

V.A.Makara, L.P.Stebenko, D.V.Kalinichenko, A.N. Krit, S.N.Naumenko, P.P.Kogutjuk  
Taras Shevchenko Kyiv National University

**1-69 INFLUENCE OF HIGH VOLTAGE ELECTRIC DISCHARGE ON THE CHANGE OF PHYSICO-MECHANICAL PROPERTIES OF HARD ALLOYS**

Sizonenko O.N. , Baglyuk G.A.<sup>(1)</sup>, Raychenko A.I.<sup>(1)</sup>, Taftay E.I., Lipyan E.V.,  
Torpakov A.S.

Institute of Pulse Processes and Technologies of NAS of Ukraine,

<sup>(1)</sup>Institute for Problems of Materials Science named after I.M. Frantsevich of NAS of Ukraine

**1-70 THE EFFECT OF INTERSTITIAL IMPURITY CONTENT AND EXTENSION AXIS ORIENTATION ON THE PLASTIC DEFORMATION LOCALIZATION PARAMETERS IN AUSTENITIC STEEL MONOCRYSTALS**

Barannikova S.A., Mel' nichuk V.A.

Institute of Strength Physics and Materials Science, SB RAS

**1-78 DEFECT SUBSTRUCTURE FORMATION FEATURES OF V-4Ti-4Cr – SYSTEM ALLOYS UNDER LARGE PLASTIC DEFORMATION**

Ditenberg I.A., Tyumentsev A.N., Grinyaev K.V.<sup>(1)</sup>, Chernov V.M.<sup>(2)</sup>

Institute of Strength Physics and Material Science SB RAS

<sup>1</sup>Tomsk State University

<sup>2</sup>A.A. Bochvar High-technology Research Institute of Inorganic Materials

**1-101 CALCULATION OF STRENGTH CHARACTERISTICS OF EUTECTIC ALLOYS LaB<sub>6</sub>-MeB<sub>2</sub> (Me-Ti, Zr) ON THE BASIS OF THE METHOD OF PSEUDOPOTENTIAL**

Zakaryan D.A., Kartuzov V.V., Khachatryan A.

Frantsevich Institute for Problems of Materials Science of NASU

**1-104 INVESTIGATION OF MECHANICS BEHAVIOR OF BULK METALLIC GLASS**

Zr<sub>55</sub>Cu<sub>30</sub>Al<sub>10</sub>Ni<sub>5</sub>

Slipenyuk A.N., Kuprin V.V., Kozyrev D.V., Milman Yu.V.

Frantsevich Institute for Problems of Materials Science of NASU

**1-117 STRUCTURE AND PROPERTIES OF POWDER CHROMIUM SINTERING IN MAGNESIUM VAPOR**

Slys I.G., Brodnikovskiy M.P., Kasko I.A., Golovkova M.E., Chernenko Yu.Yu.  
Frantsevich Institute for Problems of Materials Science of NASU

**1-118 LOGARITHMIC LAW OF THE DEFORMATION CURVE MATERIALS**

Verbylo D.G.

Frantsevich Institute for Problems of Materials Science of NASU

**1-123 STRUCTURAL MECHANISMS OF PLASTIC FRAGMENTATION OF NONMETAL CRYSTALS UNDER HIGH PTESSURE AND TEMPERATURE**

Olevnik G.S., Kotko A.W.

Frantsevich Institute for Problems of Materials Science of NASU

**1-125 INFLUENCE OF CONDITIONS OF ELECTROHEATING ON DURABILITY AND PLASTICITY ЦИЕЧЕHHOFO OF POWDER IRON**

Podrezov Yu.N., Koryak O.S., Minakov N.V.

Frantsevich Institute for Problems of Materials Science of NASU

**1-128 INVESTIGATION OF THE STEEL PLASTICITY IN DIFFERENT STRUCTURAL STATES BY INDENTATION**

Chugunova S.I., Vlasov A.A., Goncharova I.V.

Frantsevich Institute for Problems of Materials Science of NASU

**1-130 CORRELATION OF THE STRESS- STRAIN CURVES OBTAINED BY THE STANDARD METHODS AND BY INDENTATION**

Goncharova I.V., Milman Yu.V.

Frantsevich Institute for Problems of Materials Science of NASU

**1-146 STRUCTURAL SENSITIVENESS DUCTILE-BRITTLE TRANSITION IN MOLYBDENUM**

Koval A.Yu.

Frantsevich Institute for Problems of Materials Science of NASU

**1-148 ASSESSMENT OF SOME STRENGTH CHARACTERISTICS OF A SELF-BONDED DIAMOND MATERIAL IN INDENTATION WITH A SPHERE**

Galanov B.A., Grigorev O.N., Stepanenko A.V., Kotenko V.A.

Frantsevich Institute for Problems of Materials Science of NASU

**1-149 CONTACT STRENGTH CHARACTERISTICS, STRUCTURE AND WEAR MECHANISMS OF CERAMIC MATERIALS**

Kotenko V.A., Grigoriev O.N., Galanov B.A., Evtushok T.M.

Frantsevich Institute for Problems of Materials Science of NASU

**1-153 INFLUENCE OF THE SINTERING TEMPERATURE ON MECHANICAL AND ELECTRICAL PROPERTIES OF CERAMICS BASED ON ZIRCONIUM OXIDES AND CERIUM OXIDES**

Ushkalov L.M., Vasylyev O.D., Sameliuk A.V., Brichevskii N.N., Prischepa Ie.G.  
Frantsevich Institute for Problems of Materials Science of NASU

**1-257 JUMP DEFORMATION LEAD – INDIUM ALLOYS IN THE SUPERCONDUCTING STATE**

Krylovskiy V.S., Lebedev S.V.  
V. N. Karazin Kharkiv National University

**1-259 LOW-TEMPERATURE INSTABILITY OF PLASTIC FLOW OF ALUMINIUM AND ALUMINIUM - MAGNEZIUM ALLOYS**

Lebedev V.P., Krylovskiy V.S., Lebedev S.V., Savich S.V.  
V. N. Karazin Kharkiv National University

**1-263 DEVELOPMENT OF LOW-MODULUS BETA-ALLOYS BASED ON THE ZIRCONIUM-TITANIUM SYSTEM WITH HIGH RECOVERABLE STRAIN**

Ivasishin O.V., Karasevskaya O.P., Mordyuk B.N., Zaporozhets O.I., Skiba I.A.  
Kurdyumov Institute for Metal Physics NAS of Ukraine

**1-264 CHANGE OF THE STRUCTURAL STATE IN HAFNIUM AT LOW-TEMPERATURE DEFORMATION AND ANNEALING**

Sokolenko V. I., Lazareva M. B., Okovit V.S., Chirkina L.A.,  
Haimovich P. A., Kalinovsky V.V., Kovtun K.V.  
National Science Center “Kharkov Institute of Physics and Technology”

**1-265 CHANGE OF STRUCTURE AND PHYSICAL-MECHANICAL PROPERTIES IN ALLOY Zr-1%Nb AFTER CRYOGENIC QUASI-HYDROEXTRUSION AND HEAT PROCESSING**

Sokolenko V.I., Kalinovsky V.V., Lazareva M. B., Mats A.V., Khaimovich P. A  
National Science Center “Kharkov Institute of Physics and Technology”

**1-266 PECULIARITIES OF DEFECTS STRUCTURE FORMATION IN Zr AND ALLOY Zr1Nb AT LOW TEMPERATURE ROLLING**

Borisova I. F., Butenko I.N., Karaseva E.V., Malyhin D.G., Mats A.V., Sokolenko V.I., Frolov V.A.

National Science Center “Kharkov Institute of Physics and Technology”

**1-268 ELECTRON-MICROSCOPIC INVESTIGATION OF THE BUILT-IN ZONES IN BERYLLIUM**

Papirov I.I., Nikolaenko A.A., Shokurov V.S., Shkuropatenko V.A.

National Science Center “Kharkov Institute of Physics and Technology”, Institute of solid-state physics, materials science and technologies

**1-269 INFLUENCE OF RESIDUAL THERMAL PRESSURE ON FRACTURE TOUGHNESS CHARACTERISTICS AND WORKING CAPACITY OF HOT PRESSING BERYLLIUM**

Papirov I.I., Stoev P. I , Nikolaenko A.A., Tuzov J.V. <sup>(1)</sup>, Homutov A.M. <sup>(1)</sup>

National Centre of Science «Kharkov Institute of Physics and Technology»,

<sup>(1)</sup>«Institute of Physical and Technical problems»

**1-271 SOFTENING EFFECT AND FEATURES OF AN ELECTRONIC SPECTRUM IN Mo-Re, Mo-Re-Nb ALLOYS**

Velikodnyi A.N., Ignatyeva T.A.

Institute of solid state physics, material science and technologies NSC KIPT

**1-272 IMPACT STRENGTH TITANIUM ALLOY VT6 WITH SUBMICROCRYSTALLINE STRUCTURE**

Малышева С.П., Измайлова Н.Ф.<sup>(1)</sup> Салищев Г.А. <sup>(1)</sup>

Государственное научное учреждение Институт проблем сверхпластичности Российской академии наук

<sup>(1)</sup> ОАО «Уфимское моторостроительное производственное объединение»,

<sup>(2)</sup> Белгородский государственный университет

*Tuesday, June 15, 2010*

*Audience 2*

**14.30-18.0**

**EVENING MEETING**

***Section 4: "THE MECHANICAL BEHAVIOR OF MATERIALS ON INDENTATION"***

*Chairmen: Dub S.N., Galanov B.A.*

**4-47 YIELD POINT OF MATERIALS FOR NANOSCALE LEVEL**

Dub S.N., Novikov N.V.

Institute for Superhard Materials NAS

*20 minutes*

**4-109 DETERMINATION OF MECHANICAL PROPERTIES MODERN MATERIALS WITH USE OF NEW METHODOLOGY PROCESSING AND THE ANALYSIS OF RESULTS AUTOMATIC INDENTATION**

Firstov S.A., Gorban V.F., Pechkovsky E.P., Mameka N.A.

Frantsevich Institute for Problems of Materials Science of NASU

*20 minutes*

**4-150 CONSTRUCTION AND ANALYSIS OF THE "AVERAGE STRESS – AVERAGE STRAIN" DIAGRAM DURING INDENTATION OF SPHERE INTO LOW-PLASTIC MATERIALS**

Galanov B.A., Grigoriev O.N., Ivanov S.M., Kotenko V.A.

Frantsevich Institute for Problems of Materials Science of NASU

*20 minutes*

**4-131 SIZE EFFECT IN NANOINDENTATION**

Milman Yu.V., Golubenko A.A., Dub S.N.<sup>(1)</sup>

Frantsevich Institute for Problems of Materials Science of NASU

<sup>(1)</sup>Institute of Superhard Materials NASU

*20 minutes*

**4-72 NANOINDENTATION OF NANODIAMOND-REINFORCED POLYMER NANOCOMPOSITES**

Ioannis Neitzel, Vadym Mochalin, Yury Gogotsi

Department of Materials Science and Engineering and A.J. Drexel

Nanotechnology Institute

*20 minutes*

**COFFEE BREAK**

**30 minutes**

**4-135 CRITICAL VELOCITY OF PENETRATION FOR HARD INDENTER**

Galanov B.A., Goncharuk V.A., Milman Yu.V.

Frantsevich Institute for Problems of Materials Science of NASU

***20 minutes***

**4-103 TWO-TERM FRICTION LAW OF B.V. DERYAGIN IN SLIDING CONTACT OF ROUGH ELASTIC BODIES**

Galanov B.A., Valeeva I.K., Ivanov S.M.

Frantsevich Institute for Problems of Materials Science of NASU

***20 minutes***

**4-124 INVESTIGATION THE MECHANISM OF PLASTIC DEFORMATION OF INTERMETALLICS WITH PARTICIPATION OF Al**

Milman Yu.V., Korzhova N.P., Mordovets N.M., Legkaya T.N.<sup>(1)</sup>, Golubenko A.A., Melnik V.H.

Frantsevich Institute for Problems of Materials Science of NASU

<sup>(1)</sup>Kurdumov Institute of Metal Physics, of NASU

***20 minutes***

*Wednesday, June 16, 2010*

**9.30 -13.00**

**3-th PLENARY MEETING**

*Chairmen: Grigor'ev O.N., Koneva N.A.*

**P-4 HYDROGEN BRITTLENESS OF STEELS**

Gavriljuk V.G., Shanina B.D.<sup>(1)</sup> Shyvanyuk V.N., Teus S.M.

Kurdyumov Institute of Metal Physics, National Academy of Sciences of Ukraine

<sup>(1)</sup>V.Ye. Lashkarev Institute for Semiconductor Physics

**30 minutes**

**P-3 MATERIAL'S FRACTURE SIMULATION FOR THE LONG-TERM OBJECTS TO PROLONG THEIR LIFE-TIME**

Krasowsky A.J.

G.S. Pisarenko Institute for Problems of Strength of National Academy of

Sciences of Ukraine

**30 minutes**

**P-2 MULTIVALLEY POTENTIAL RELIEF OF DISLOCATIONS AND AUTOBLOCKING EFFECT**

Greenberg B.A., Ivanov M.A.<sup>(1)</sup>

Institute of Metal Physics, Ural Division RAS

<sup>(1)</sup>Kurdyumov Institute of Metal Physics, National Academy of Sciences of

Ukraine

**30 minutes**

**COFFEE BREAK 30 minutes**

**P-22 MODELS OF STRUCTURAL MATERIALS LIFE BASED ON A THERMAL FLUCTUATION THEORY OF STRENGTH**

Pereverzev Ye.S.

Institute for technical Mechanics of NASU and NSAU

**30 minutes**

**P-262 MARTENSITIC TRANSFORMATIONS – AN UNUSUAL MECHANISM OF PLASTIC DEFORMATION OF SOLID STATES**

Koval Yu.N.

The Kurdyumov Institute for Metal Physics, NAS. of Ukraine

**30 minutes**

**P-16 THE NON-UNIFORM DISTRIBUTION OF DISLOCATION DENSITY IN TUBES FROM ZR-BASED ALLOYS**

Perlovich Yu.A., Isaenkova M.G.

National Research Nuclear University – MEPHI

**30 minutes**

**DISCUSSION**

**LUNCH BREAK 13.00 -14.30**

*Wednesday, June 16, 2010*

*Audience 1*

**14.30-18.0**     **EVENING MEETING**

***Section 3: PHASE TRANSFORMATIONS AND STRENGTH"***

*Chairmen: Goltsov V.A., Bulanova M.V.*

**3-256 HYDROGEN MATERIALS SCIENCE PHYSICAL BASES AND URGENT MATERIALS SCIENCE TASKS OF HYDROGEN ENERGY**

Goltsov V.A.

Donetsk National Technical University

***20 minutes***

**3-15 GENERAL LAWS OF DISTRIBUTION MARTENSITIC PHASES IN THE PLASTIC ZONES AND MICROMECHANISMS OF FRACTURE OF AUSTENITIC STEELS UNDER DIFFERENT TYPES OF LOADING**

Klevtsov G.V., Klevtsova N.A., Frolova O.A.

Orenburg State University

***20 minutes***

**3-96 TERMOELASTIC PHASE AND STRUCTURAL TRANSFORMATIONS AS OBJECT OF MICROMECHANICS AND THERMODYNAMICS**

Movchan A.A., Kazarina S.A., Silchenko L.G.

Institute of applied mechanics of the Russian Academy of Science

***20 minutes***

**3-119 DETERMINATION OF DENSITY OF PROBABILITY OF PACKING DEFECTS IN AUSTENITE UNDER THE CONTINUOUS HEATING AND COOLING**

Firstov S.A., Burdin V.V.

Frantsevich Institute for Problems of Materials Science of NASU

***20 minutes***

**3-61 THE INFLUENCE OF PLASTIC DEFORMATION ON THE PHASE STATE, ELASTIC AND NONELASTIC PROPERTIES OF SUPERPLASTIC EUTECTIC ALLOYS**

Korshak V.F., Shapovalov Y.O., Pal-Val P.P.<sup>(1)</sup>, Chushkina R.A., Samsonik A.L., Kryshtal A.P.

V.N. Karazin Kharkiv National University

<sup>(1)</sup>B. Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine

***20 minutes***

**COFFEE BREAK     30 minutes**

**3-278 MARTENSITIC TRANSFORMATION AND SHAPE MEMORY EFFECTS IN AMORPHOUS-CRYSTALLINE TiNi BASED THIN RIBBONS**

Resnina N.N.<sup>1</sup>, Belyaev S.P.<sup>1</sup>, Shelyakov A.V.<sup>2</sup>, Slesarenko V.Yu.<sup>1</sup>

<sup>1</sup> Saint-Petersburg State University

<sup>2</sup> Moscow Engineering Physics Institute

**20 minutes**

**3-46 THE INFLUENCE OF COMPOSITION FEATURES ON MECHANICAL PROPERTIES AND FRACTURE STRENGTH OF CORROSION-RESISTANT STEEL ON FE-CR-NI BASE**

Maltseva L.A., Gladkovsky S.V.<sup>(1)</sup>, Sharapova V.A., Maltseva T.V., Borodin E.M.<sup>(1)</sup>

State Educational Institution of Higher Professional Education «Ural State Technical University – UPI named after the First President of Russia Boris N. Yeltsin»

<sup>(1)</sup> Institute of Engineering Science Russian Academy of Sciences, Urals Branch

**20 minutes**

**3-139 EUTECTIC ALLOYS OF Ti-Si-X SYSTEM (X– Al, Ga, Sn, Zr, B): PHASE EQUILIBRIA, STRUCTURE, PROPERTIES**

Gorna I.D., Bulanova M.V., Valuyskaya K.A., Firstov S.A.

Frantsevich Institute for Problems of Materials Science of NASU

**20 minutes**

**Wednesday, June 16, 2010**

**Audience 1**

**14.00 -17.30 Exposition posters sections "3"**

**3-94 ANALYSIS OF BUCKLING OF THIN-WALLED ELEMENTS FROM SHAPE MEMORY ALLOYS AT PHASE AND STRUCTURAL TRANSITIONS IN FRAMEWORK OF DIFFERENT VERSIONS OF THE CONSTITUTIVE RELATIONS**

Sil'chenko L.G., Movchan A.A., Movchan I.A., Kazarina S.A.

Institute of applied mechanics RAN

**3-95 PHASE TRANSFORMATIONS DURING DEFORMATION - REGULATOR STRUCTURAL STATE AND STRENGTH OF STEEL 23H15N5SM3G**

Alekseeva L.E., Burzhanov A.A., Filippov G.A.

Federal State Unitary Enterprise "ЦНИИЧерМет»

**3-96 TERMOELASTIC PHASE AND STRUCTURAL TRANSFORMATIONS AS OBJECT OF MICROMECHANICS AND THERMODYNAMICS**

Movchan A.A., Kazarina S.A., Silchenko L.G.

Institute of applied mechanics of the Russian Academy of Science

**3-98 THE FORMATION OF THE STRUCTURE OF PSEUDO-SINGLE CRYSTALS OF NITROGEN-BEARING STEEL KH18AG20 UPON  $\delta \rightarrow \gamma$  (BCC  $\rightarrow$  FCC) POLYMORPHIC TRANSFORMATION**

Khlebnikova Yu.V.

Institute of Metal Physics, Ural Division, Russian Academy of Sciences

**3-107 STRUCTURE AND MECHANICAL CHARACTERISTICS OF TITANIUM HYDRIDE AFTER OMNIDIRECTIONAL COMPRESSION**

Byakova A.V., Vlasov A.A., Iefimov M.O., Milman Yu.V.

Frantsevich Institute for Problems of Materials Science of NASU

**3-136 PHASE AND STRUCTURAL TRANSFORMATIONS IN QUENCHED AND AGED ALLOYS OF TI-SI SYSTEM (TITANIUM «STEELS»)**

Tkachenko S., Bega M., Kotko A., Datskevich O., Brodnikovskiy D., Zakiev V.<sup>(2)</sup>

Frantsevich Institute for Problems of Materials Science of NASU

<sup>(2)</sup>National Aviation University

**3-147 STRUCTURE FORMATION AND STRENGTH OF IRON – CHROMIUM MATERIAL**

Petrova A.M.

Frantsevich Institute for Problems of Materials Science of NASU

**3-201 REFINEMENT OF STRUCTURE AND STRENGTHENING OF AUSTENITIC STEELS BY FAST MELT QUENCHING**

Kositsyna I.I., Sagaradze V.V., \*Danilchenko V.E.

Institute of Metal Physics, Ural Division, RAS,

<sup>1</sup>Kurdyumov Institute of Metal Physics, NAS of Ukraine 8

**3-202 PHASE TRANSFORMATION ORTHORHOMBIC MARTENSITE AT COLD DEFORMATION AND ITS INFLUENCE ON KINETICS AGEING OF TITANIC ALLOY VT16**

Manohin S.S., Ivanov M. B , Nepryahina N.A. Kolobov Y.R., Nechaenko D.A.

Research-Education and Innovation Centre “Nanostructured Materials and Nanotechnologies”Belgorod State University

**3-203 GRAIN SIZE EFFECT OF MARTENSITIC TRANSFORMATIONS IN NANOSTRUCTURE IRON AND ITS ALLOYS**

Tokiy N.V., Varyukhin V.N., Tokiy V.V., Efros B.M., Savina D.L., <sup>(1)</sup>Pilyugin V.P.

Donetsk Physical & Technical Institute NAS Ukraine

<sup>(1)</sup>Institute of metal physics of Ural division of RAS

**3-204 HOT-PRESSED ALN-TIN COMPOSITE: HIGH-TEMPERATURE STRENGTH AND SOLID STATE WURTZITIC – CUBIC ALN PHASE TRANSFORMATION**

Fesenko I.P., Novikov N.V., Kryvoshyya Yu.M., Kuzenkov O.V.<sup>(1)</sup>, Oliinyk G.S.<sup>(2)</sup>, Shvedov L.K., Sulzhenko V.K.<sup>(3)</sup>, Sverdun V.B., Fesenko I.I.<sup>(4)</sup>

Bakul Institute for Superhard Materials, National Academy of Sciences of Ukraine

<sup>(1)</sup>National Technical University of Ukraine (KPI)

<sup>(2)</sup>Frantsevich Institute for Materials Science Problems, National Academy of Sciences of Ukraine

<sup>(3)</sup>Kurdyumov Institute for Metal Physics, National Academy of Sciences of Ukraine,

<sup>(4)</sup>Bogomolets National Medical University

**3-205 NEW HIGH-STRENGTH HARD MAGNETIC ALLOYS FOR HIGH-SPEED HYSTERESIS ENGINES**

Beloserov E.V., Ivanova G.V., Shchegoleva N.N., Mushnikov N.V., Uimin M.A.  
Institute of Metal Physics, Ural division, RAS

**3-206 GRAIN BOUNDARY WETTING BY THE SECOND SOLID PHASE IN THE ZR-NB SYSTEM**

Gornakova A.S., Semenov V.N., Kuchyeyev Yu.O., Straumal A.B.  
Institute of Solid State Physics RAS

**3-207 STRENGTHENING OF NITROGEN-CONTAINING AUSTENITIC STEELS BASED ON CR-MN IN CRYOGENIC RANGE OF TEMPERATURES**

Tereshchenko N.A., Shabashov V.A.

Institute of Metal Physics, Ural Division, Russian Academy of Sciences

**3-208 HIGH NITROGEN AUSTENITE STEELS: DEFORMATION AND PROPERTIES**

Efros B.M., Shishkova N.V., Loladze L.V., Zaika T.P., Varyukhin V.N.

Donetsk Physics & Techn. Institute of Ukraine National Academy of Science

**3-209 THE GRADIENT – HARDENED IONIC IMPLANTATION WITH NITROGEN STEEL OF 12X18H10T**

Z.A.Duriagina, N.V. Shcherbovskykh

Lviv national politehnic University

**3-210 MICROSTRUCTURE, PHASE STATE AND STEEL STRENGTH AFTER EQUAL-CHANNEL ANGULAR PRESSING AND THERMOMECHANICAL PROCESSING**

Petrova N.D., Petrov P.P., Ivanov A.M., Platonov A.A.

“The Larionov V.P. Institute of Physical-Technical Problems of the North” of the Siberian Branch of the Russian Academy of Sciences

**3-211 TERMAL EVOLUTION OF THE EDGES AND FACETS SYSTEM IN A MIGRATING GRAIN BOUNDARY HALF – LOOP AND QUESTIONS OF THE NON – STATIONARITY OF MIGRATION**

Yashnikov V. P.

Institute of Solid State Physics, Russian Academy of Sciences

**3-261 INFLUENCE OF THERMAL TREATMENT ON THE TEMPERATURE OF REVERSIBLE MARTENSITIC TRANSFORMATION IN FE-PT**

Ponomaryova S.A., Koval Yu.N.

The Kurdyumov Institute for Metal Physics, N. A. S. of Ukraine

**3-267 EFFECT OF COMPOSITION AND HEAT TREATMENT ON MARTENSITIC TRANSFORMATION IN Ni<sub>3</sub>Ta INTERMETALLIC – HIGH TEMPERATURE SHAPE MEMORY ALLOY**

Koval Yu.N., Firstov G.S., Sezonenko A.Yu., Van Humbeeck J.<sup>(1)</sup>

G.V. Kurdyumov's Institute for Metal Physics, National Academy of Sciences

<sup>(1)</sup>Department MTM, Catholic University of Leuven (Leuven)

**3-283 USING DYNAMIC MECHANICAL ANALYSIS FOR DETERMINING MECHANICAL PROPERTIES OF TITANIUM NICKELIDE**

Klubovich V.V., Rubanik V.V., Rubanik V.V. jr., Milyukina S.N.

Institute of Technical Acoustics of National Academy of Sciences of Belarus

Vitebsk State Technological University

**3-285 EFFECT OF DIMENSIONAL PARAMETERS OF ADDITIONAL CRISALLIZATION CENTRES ON THE FORMATION OF CUBIC BORON NITRIDE CRYSTALS**

Borimsky I. A.

V. N. Bakul Institute for Superhard Materials of NAS of Ukraine

**3-286 EFFECT OF PHASE TRANSFORMATION ON STRENGTH AND PLASTICITY OF AUSTENITIC STEEL UNDER COMPLEX STRESS STATE**

Zaitseva L.V., Koval'chuk B.I.<sup>(1)</sup>

Centre for Technical Inspections TECHDIAGAZ Affiliated Company

UKRTRANSGAZ National Joint-Stock Company NAFTOGAZ OF UKRAINE,

<sup>(1)</sup> National Technical University of the Ukraine "KPI"

**3-288 THE INFLUENCE OF STRUCTURAL FACTORS ON THE PHASE TRANSFORMATION GRAPHITE TO DIAMOND UNDER SHOCK COMPRESSION**

Bezruchko G.S.<sup>1</sup>, Kanel G.I.<sup>2</sup>, Razorenov S.V.<sup>1</sup>, Savinykh A.S.<sup>1</sup>, Milyavskiy V.V.<sup>2</sup>

<sup>(1)</sup> Institute of Problems of Chemical Physics RAS

<sup>(2)</sup> Joint Institute for High Temperatures RAS

**3-301 INTERATOMIC AND THE HYDROGEN INDUCED PHASE TRANSITIONS IN FCC IRON-NICKEL ALLOY**

Movchan, D.N., Shivanyuk V.N., Gavrilyuk V.G.

Kurdyumov Institute for Metal Physics. of NASU

*Wednesday, June 16, 2010*

*Audience 2*

**14.30-18.0 EVENING MEETING**

***Section 5: «SIMULATION OF DEFORMATION AND FRACTURE PROCESSES»***

*Chairmen: Kartuzov V.V., Gasanov R.A.*

**5-127 COMPUTER MODELING OF DEFORMATION AND DESTRUCTION OF REFRACTORY METALS NANOCRYSTALS BY THE METHOD OF MOLECULAR DYNAMICS**

Ogorodnikov V.V.

Frantsevich Institute for Problems of Materials Science of NASU

***20 minutes***

**5-50 MATHEMATICAL MODELS OF DEFORMATION FOR MICROPOLAR THIN ELASTIC SHELLS, PLATES AND BARS**

Sargsyan S. H.

National Science Academy of Armenia

***20 minutes***

**5-236 ANALYSIS OF DEFORMATION BEHAVIOR OF MULTILAYER CONSTRUCTION DURING LOADING EXTERNAL AND INTERNAL LAYERS**

Gasanov R.A., Gyulgazli A., Shirali I.Ya., Orudzhev Yu.A. Bekirov S.K.

Azerbaijan State Oil Academy

<sup>(1)</sup> State Oil Company of Azerbaijan Republic

***20 minutes***

**5-7 PHYSICS AND MECHANICS OF FATIGUE FRACTURE OF BODIES WITH STRESS CONCENTRATORS**

Panasyuk V.V., Ostash O.P.

Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine

***20 minutes***

**5-99 ABOUT THE NEW APPROACH TO THE DESCRIPTION OF PHASE TRANSFORMATIONS AND FRAGILITY STRONGLY NONEQUILIBRIUM SYSTEMS**

Parkhomenko A.A., Laptev I.N., Neklyudov I.M.

National Science Center “Kharkov Institute of Physics and Technology”

***20 minutes***

**5-126 TEMPERATURE DEPENDENCE OF THE FLOW STRESS IN THE PRESENCE OF DYNAMIC STRAIN AGING EFFECT**

Firstov S.A., Mameka N.A.

Frantsevich Institute for Problems of Materials Science of NASU

*20 minutes*

**COFFEE BREAK 30 minutes**

**5-243 ABOUT STRAINS AND STRESSES OF NONLINEAR ELASTIC HOLLOW SPHERE (THEORY AND APPLICATIONS)**

Morshinina D. A

Saint-Petersburg University

*20 minutes*

**5-247 CORE STRUCTURE OF SUPERDISLOCATION AND TEMPERATURE ANOMALOUS IN  $Ti_3Al$**

Yakovenkova L.I., Karkina L.E.

Institute of Metal Physics RAS

*20 minutes*

**5-248 A MECHANISM FOR IMPROVING THE IMPACT TOUGHNESS OF A FERRITIC STEEL WITH A LAYERED STRUCTURE**

Yakovleva I.L., Mirzaev D.A.<sup>(1)</sup>, Tereshchenko N.A., Tabatchikova T.I.

Institute of Metal Physics, Ural Division, Russian Academy of Sciences

<sup>(1)</sup>South-Ural State University

*20 minutes*

*Wednesday, June 16, 2010*

*Audience 2*

**14.00 -17.30 Exposition posters sections "5"**

**5-102 SHOCK WAVES AND PROCESSES OF FRACTURE IN CUBIC SILICON CARBIDE**

Bekenev V.L., Kartuzov V.V., Kartuzov E.V.

Frantsevich Institute for Problems of Materials Science of NASU

**5-132 STRESS INTENSITY FACTORS FOR THE CRACKS WHICH INTERSECT A PARALLEL PORE CHANNELS**

Borovik V.G.

Frantsevich Institute for Problems of Materials Science of NASU

**5-237 THE CALCULATION OF STRENGTH CURVED PIPELINE**  
Gasanov R.A., Gyulgazli A.S., Akberov. M.G. , Orujev Yu.A.  
Azerbaijan State Oil Academy,  
State Oil Company of Azerbaijan Republic

**5-238 SOME MECHANISMS OF DESTRUCTION OF COVALENT CRYSTALS AT LOW TEMPERATURES**  
Ukolov A.I., Nadtochy V.A.  
Slavyansk State Pedagogical University

**5-239 AGENCY OF RELIEF HARD-ALLOY OF THE SUBSTRATE ON STRENGTH OF THE JOINT WITH DIAMONDIFEROUS THE STRATUM IN TWO-LAYERED PDC**  
Bondarenko N.A., Korostyshevskij D.L., Osipov A.S.  
Institute for Superhard Materials them. V.M. Bakul National Academy of Sciences of Ukraine

**5-240 THE METHOD FOR PREDICTION OF PARIS' CURVE SHAPE**  
Baron A. A., Slyusareva O.F.  
Volgograd State Technical University

**5-241 FEATURES OF HIGH VELOCITY DEFORMATION OF ROD PROJECTILES AT PENETRATION INTO A TARGET**  
Gorelski V.A., Konjaev A.A., Tolkachev V.F.  
Research Institute of Applied Mathematics and Mechanics Tomsk state university

**5-242**  
**STRESSES AND DISPLACEMENTS IN ISOTROPIC DISK LOADING SELF-BALANCED FORCES AND MOMENTS**  
Morshinina A. A.  
Saint-Petersburg University

**5-244 MODELING OF MECHANOCHEMICAL WEAR OF AN IDEAL ELASTO-PLASTIC TUBE UNDER PRESSURE**  
Pronina Yu.G.  
Saint-Petersburg State University, faculty of Applied Mathematics and Control Processes

**5-245 DEPENDENCE OF JUNCTIONS BREAKING STRESS ON THE TYPE OF INTERSECTION REACTING DISLOCATIONS**  
Zgolich M.V., Kurinnaya R.I., Starenchenko V.A.  
Tomsk State University of Architecture and Building

**5-246 COMPUTER SIMULATION OF STRUCTURE TRANSFORMATIONS DUE TO NANOPARTICLES AGGLOMERATION**

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

Institute of Metal Physics RAS

**5-249 RESEARCH AND DEVELOPMENT OF NANOSTRUCTURED COMPOSITE MATERIALS FOR APPLICATION IN THE CONDITIONS OF SHOCK-WAVE LOADING**

Afanasyeva S.A., Belov N.N., Dudarev E.F., Skosyrskij A.B., Tabachenko A.N.,  
Jugov N.T.

Tomsk state university

5

**5-250 ROLE OF TEMPERATURE, DOSE AND POINT DEFECTS IN SIMULATING RADIATION HARDENING**

Krasilnikov V.V., Savotchenko S.E.<sup>(1)</sup>

Parkhomenko A.A.<sup>(2)</sup>

Belgorod State University

<sup>(1)</sup>Belgorod Regional Institute of Postgraduate Education and Professional Retraining of Specialists

<sup>(2)</sup>

**5-251 THE NEW CONCEPT OF SPECIFICATION OF ENDOCHRONIC THEORY OF NONELASTICITY FOR LARGE DEFORMATIONS**

Ivanov B.F., Kadashevich Yu.I., Pomytkin S.P.

Technological university of plant polymers

**5-252 KINETIC ASPECTS OF MISORIENTATIONAL STRUCTURES FORMATION IN AN ELASTIC FIELDS OF STRAIN INDUCED MESODEFECTS**

Perevezentsev V.N., Sarafanov G.F.

Nizhny Novgorod Branch of the Mechanical Engineering Research Institute

**5-253 ANALYSIS OF MICROCRACK NUCLEATION IN DISCLINATION ELASTIC FIELD SCREENED BY DISTRIBUTED DISLOCATION ENSEMBLE**

Sarafanov G.F., Perevezentsev V.N.

Nizhny Novgorod Branch of the Mechanical Engineering Research Institute

**5-254 MODELING OF TWINNING PROCESSES IN CUBIC MONO CRYSTALLS**

M.Sh. Akchurin, R.M. Zakalukin, M.V. Kovalchuk, I.I.Kupenko

The Shubnikov Institute of Crystallography of the Russian Academy of Sciences

*Thursday, June 16, 2010*

**9.30 -13.00**

**4-th PLENARY MEETING**

*Chairmen: Koval' Yu.N., Perlovich Yu.A.*

**P-48 GRADIENT STRUCTURES IN STEEL AFTER LASER TREATMENT**

Schastlivtsev V.M., Tabatchikova T.I., Yakovleva I.L.

Institute of Metal Physics, Ural Division, Russian Academy of Sciences

**30 minutes**

**II-92 STRUCTURAL DEFECTS AND DEFORMATION OF MONOCRYSTALLINE AND NANOCRYSTALLINE MATERIALS**

Noskova N.I.

Institute of Metal Physics, Ural Division, Russian Academy of Sciences

**30 minutes**

**P-14 ATOMIC MODELS OF THE FORMATION OF DISLOCATIONS, STRAIN LOCALIZATION BANDS, AND DEFORMATION TWINS IN FCC AND BCC METAL ALLOYS**

Tyumentsev A.N.

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

University

**30 minutes**

**COFFEE BREAK 30 minutes**

**P-298 EVOLUTION OF THE DEFECT STRUCTURES IN A DEVELOPMENT PHASE DURING PLASTIC DEFORMATION**

Rybin V.V.

St.Petersburg

**30 minutes**

**P-141 STRUCTURAL FORMATION AND DEFORMATION STRENGTHENING UNDER SEVERE PLASTIC DEFORMATION**

Podrezov Yu.N.

Frantsevich Institute for Problems of Materials Science of NASU

**30 minutes**

**P-270 EFFECT OF SEVERE PLASTIC DEFORMATION AND CHANGE IN STRAIN PATH ON THE MICROSTRUCTURE, TEXTURE AND MECHANICAL PROPERTIES OF INTERSTITIAL FREE STEEL**

Pereloma E.V., Hazra S.S., Gazder A.A.

School of Mechanical, Materials and Mechatronic Engineering, University of

Wollongong

**30 minutes**

**DISCUSSION**

**LUNCH BREAK 13.00 -14.30**

*Thursday, June 17, 2010*

*Audience 1*

**14.30-16.30   EVENING MEETING**

*Continuation of Section 1*

**"FUNDAMENTAL PROBLEMS OF STRENGTH AND PLASTICITY OF METALS AND ALLOYS ".**

*Chairmen: Troitskiy O.A., Prokopenko G.I.*

**1-30 ELECTRONIC MECHANISMS OF ELECTROPLASTICAL DEFORMATION OF METALS**

Troitskiy O.A.

SIJ "Institute of electroplastic deformation of metals"

**20 minutes**

**1-12 LIMIT LEVELS OF HARDENING IN NANOCRYSTALLINE VACUUM –ARC COATINGS ON THE BASE OF NITRIDES**

A.A.Andreev, V.F Gorban'<sup>(1)</sup>, I.M. Neklyudov.

NSC «Kharkiv Institute of Physics and Technology»

<sup>(1)</sup>Frantsevich Institute for Problems of Materials Science of NASU

**20 minutes**

**1-41 INFLUENCE OF STRUCTURAL FACTORS ON ELASTIC-PLASTIC AND FRACTURE PROPERTIES OF COPPER M1 UNDER SHOCK WAVE LOADING**

Garkushin G.V., Razorenov S.V., Kanel G.I.<sup>(1)</sup>, Ignatova O.N.<sup>(2)</sup>

Institute of Problems of Chemical Physics, Russian Academy of Sciences,

<sup>(1)</sup>Joint Institute for High Temperatures, Russian Academy of Sciences,

<sup>(2)</sup>Russian Federal Nuclear Center VNIIEF

**20 minutes**

**COFFEE BREAK      30 minutes**

**1-52 ENHANCEMENT OF RELAXATION AND CORROSION RESISTANCE OF ZR BASED ALLOYS USING ULTRASONIC IMPACT PEENING**

Khripta N.S., Mordyuk B.N., Prokopenko G.I., Karasevskaya O.P., Skiba I.A.

Kurdyumov Institute for Metal Physics NAS of Ukraine

**20 minutes**

**1-295 MACROSTRESSES AND STRENGTH OF CERAMIC CONDENSATE**

Pugachev A.T., Sobol O.V., Stetsenko A.N., Podtelezhnikov A.A., Churakova N.P., Koroteev A.V.

National Technical University of Ukraine “; Kharkov Polytechnic Institute”

<sup>(1)</sup>Frantsevich Institute for Problems of Materials Science. NASU

**20 minutes**

**1-154 HIGH-TEMPERATURE EUTECTIC TITANIUM ALLOYS WITH SILICIDE-BORIDE REINFORCING: THE STRUCTURE AND PROPERTIES**

Bondar A.A., Velikanova T.Ya., Podrezov Yu.N., Bilous O.A.

Frantsevich Institute for Problems of Materials Science of NASU

**20 minutes**

**1-219 FEATURES OF FRACTURE DIFFUSION BORIDE COATINGS DURING THERMAL CYCLING UNDER LOAD**

Pugacheva N.B.

Institute of Mechanical Engineering, Ural Branch of RAS

**20 minutes**

*Thursday, June 17, 2010*

*Audience 1*

**14.00 -17.30 Exposition posters sections "1"**

**1-100 THE INFLUENCE OF STRUCTURAL AND STRENGTH FACTORS IN NI-CR-AL ALLOYS ON MASS TRANSFER AT ELECTROSPARK ALLOYING OF STEEL**

Paustovsky A.V., Alfintseva R.A., Kurinnaya T.V., Sheludko V.E.

Frantsevich Institute for Problems of Materials Science of NASU

**1-114 CAST EUTECTIC ALLOYS BASED ON TERNARY Al-Mg-Si SYSTEM WITH INCREASED MECHANICAL CHARACTERISTICS**

Korzhova N., Milman Yu., Podrezov Yu., Grinkevich K., Legkaya T.<sup>(1)</sup>, Barabash O.<sup>(1)</sup>

Frantsevich Institute for Problems of Materials Science of NASU

<sup>(1)</sup>Kurdjumov Institute for Metal Physics of NASU, Kyiv, Ukraine

**1-115 C**

**EUTECTIC (L<sub>1</sub>+β) ALLOYS OF THE TERNARY Al-Ti-Cr SYSTEM FOR HIGH TEMPERATURE APPLICATION**

Legkaya T.N., Barabash O.M., Milman Yu.V.<sup>(1)</sup>, Korzhova N.P.<sup>(1)</sup>, Mordovets N.M.<sup>(1)</sup>, Voskoboynik I.V.<sup>(1)</sup>, Podrezov Yu.N.<sup>(1)</sup>

Kurdjumov Institute for Metal Physics of NASU

<sup>(1)</sup>Frantsevich Institute for Problems of Materials Science of NASU

**1-120 ADHESION AND COHESION PROPERTIES OF DETONATION INTERMETALLIC COATING FROM ALLOYS OF TERNARY Al-Ti-Cr SYSTEM**

Yarmatov I., Oliker V., Korzhova N., Podrezov Yu., Legkaya T.<sup>(1)</sup>  
Frantsevich Institute for Problems of Materials Science of NASU  
<sup>(1)</sup>Kurdjumov Institute for Metal Physics of NASU, Kyiv, Ukraine

**1-121 THE TEMPERATURE DEPENDENCE OF MECHANICAL PROPERTIES OF L1<sub>2</sub> BASE INTERMETALLIC ALLOYS OF THE TERNARY Al-Ti-Cr SYSTEM**

Podrezov Yu., Korzhova N., Evich I., Legkaya T.<sup>(1)</sup>  
Frantsevich Institute for Problems of Materials Science of NASU  
<sup>(1)</sup>Kurdjumov Institute for Metal Physics of NASU

**1-139 EUTECTIC ALLOYS OF Ti-Si-X SYSTEM (X– Al, Ga, Sn, Zr, B): Phase EQUILIBRIA, STRUCTURE, PROPERTIES**

Gorna I.D., Bulanova M.V., Valuyskaya K.A., Firstov S.A.  
Frantsevich Institute for Problems of Materials Science of NASU

**1-140 PERCULARITIES OF STRUCTURE AND MECHANICAL PROPERTIES OF AS-CAST Ti-Si-B AND Ti-Si-Zr SYSTEMS ALLOYS WITH ADDITIONAL Sn**

Valuyskaya K.A., Gornaya I.D., Bega N.D., Yevich Ya.I., Ponomarev S.S., Kovylyayev V.V., Kotko A.V.  
Frantsevich Institute for Problems of Materials Science of NASU

**1-145 MICROSTRUCTURE FEATURES OF Al-Mg-Si CASTING ALLOYS AFTER ADDITIONAL ALLOYING**

Mykhalenkov K., Korzhova N., Boyko V.<sup>(1)</sup>, Link T.<sup>(2)</sup>, Legkaya T.<sup>(3)</sup>  
Frantsevich Institute for Problems of Materials Science of NASU  
<sup>(1)</sup>Physico-Technological Institute of Metals and Alloys  
<sup>(2)</sup>Technical university Berlin  
<sup>(3)</sup>Kurdjumov Institute for Metal Physics of NASU

**1-200 MARTENSITIC TRANSFORMATIONS AT SHEAR IN HYDROSTATICAL COMPRESSED NANOSTRUCTURAL SYSTEMS**

Tokiy N.V., Varyukhin V.N., Tokiy V.V.  
Donetsk Physical & Technical Institute NAS Ukraine

**1-212 MECHANICAL PROPERTIES OF CAST EUTECTICALLOYS OF NI-AL-RE TERNARY SYSTEM**

Barabash M.Yu.  
Technical Centre, NAS of Ukraine

**1-213 STRUCTURAL CHANGES DURING THERMAL CYCLING OF EUTECTIC ALLOYS**

Kupchenko G.V., Mayon A.V., Poko O.A.  
Physico-Technical Institute of NAS of Belarus

**1-214 RESEARCH OF EUTECTIC STRUCTURES BY THE METHOD OF THE LOCAL ELECTROCHEMICAL ANALYSIS**

Rublinetskaya Y.V., Slepshkin V.V.

Samara State Technical University

**1-215 REGULARITIES OF FORMATION AND EVOLUTION OF STRUCTURE-AND-PHASE STATES DURING PLASMA STRENGTHENING AND SUBSEQUENT OPERATION**

Efimov O.Yu., Yuriev A.B., Belov E.G., Konovalov S.V., Ivanov Yu.F.<sup>(2)</sup>, Gromov V.E.<sup>(1)</sup>

West-Siberian Metallurgical Plant<sup>(1)</sup>Siberian State University of Industry

<sup>(2)</sup>Institute of High Current Electronics, Siberian Division of the Russian Academy of Sciences

**1-216 SURFACE ALLOYING OF TINI ALLOY WITH SILICON, MOLYBDENUM OR TANTALUM USING MAGNETRON SPUTTERING AND ION IMPLANTATION**

Meisner L.L., Lotkov A.I., Neyman A.A., Dement'eva M.G., Meisner S.N., Prosorova G.V.

Institute of Strength Physics and Materials Science, Siberian Branch of the Russian Academy of Sciences

**1-218 MICROSTRUCTURAL ASPECTS OF STRENGTH OF MUCUNA PRURIENS NEEDLES**

Fesenko I.I., Dvoynos A.<sup>(1)</sup>, Palma S.<sup>(1)</sup>, Schmidt C.<sup>(1)</sup>, Tkach S.V.<sup>(2)</sup>

Bogomolets National Medical University, Zoologichna Str. 2, Kyiv, 03680

Ukraine, dr\_fesenko@ukr.net

<sup>(1)</sup> Facultad de Ciencias Medicas, Universidad Nacional Autonoma de Nicaragua

<sup>(2)</sup> Bakul Institute for Superhard Materials

**1-220 ACOUSTOMICROSCOPY METHODS OF STUDY OF GRADIENT PROPERTIES METAL MATERIALS DEGREE**

Kustov A.I., Migel I.A.<sup>(1)</sup>

Voronezh State Pedagogical University

<sup>(1)</sup>Military Air University

**1-221 STUDY OF CONNECTIONS OF STRUCTURE PECULIARITIES OF METAL ALLOYS WITH THEIR BOND PERFORMANCES WITH METHODS OF ACOUSTOMICROSCOPY DEFECTOSCOPY**

Kustov A.I., Migel I.A.<sup>(1)</sup>

Voronezh State Pedagogical University

<sup>(1)</sup>Military Air University

**1-233 THE SUBSTRUCTURE-PHASE GRADIENT FORMING UNDER FATIGUE LOADING AND ELECTRIC PULSING TREATMENT IN 45G17YU3 STEEL**

Konovalov S.V., Ivanov Yu.F.<sup>(1)</sup>, Vorobiev S.V., Gromov V.E.

Siberian State University of Industry

<sup>(1)</sup>Institute of High Current Electronics, Siberian Division of the Russian Academy of Sciences

**1-235 CHANGE OF PEARLITE STRUCTURE IN HYPEREUTECTOID STEEL AFTER CYCLIC TENSION AND ITS INFLUENCE ON ELASTICITY MODULUS VALUE UNDER INDENTATION**

Makarov A.V., Savrai R.A, Schastlivtsev V.M.<sup>(1)</sup>, Tabatchikova T.I.<sup>(1)</sup>, Yakovleva I.L.<sup>(1)</sup>, Egorova L.Yu<sup>(1)</sup>

Institute of Engineering Science, Ural Division, Russian Academy of Sciences

<sup>(1)</sup>Institute of Metal Physics, Ural Division, Russian Academy of Sciences

**1-260 VISCOUS CERAMICS OBTAINED WITH SELF-SPREADING HIGH TEMPERATURE SYNTHESIS (SHS)**

Okrostsvaridze O.Sh., Tavadze G.F., Sakhvadze D.B., Badzoshvili T.V., Alaniya J.G.

Ferdinand Tavadze Institute of Metallurgy and Materials Science

**1-275 FOAM ELABORATION FROM THE SHAPE MEMORY ALLOY OF SYSTEM Cu-Al-Ni BY THE POWDER METALLURGY METHODS**

Siryj D.O., Portnichenko P.Y, Monastyrsky G.E.<sup>(1)</sup>

NTUU “Kiev Polytechnic Institute

<sup>(1)</sup> Institute Metal Physics of NAS of Ukraine

**1-276 ELABORATION OF COMPOSITES BASED ON SHAPE MEMORY MATERIALS BY COLD PRESSING OF Ni-Al AND Cu-Al-Ni POWDERS**

P.Y. Portnichenko, D.O. Siryj, G.E. Monastyrsky<sup>(1)</sup>

NTUU “Kiev Polytechnic Institute

<sup>(1)</sup> Institute Metal Physics of NAS of Ukraine

**1-277 GENERATION OF GRADIENT Pd-H ALLOYS AND PALLADIUM PLATE FORM CHANGING DURING MONO-SIDE SATURATION WITH HYDROGEN**

Lyubimenko E.N., Goltsova M.V.

Donetsk National Technical University

**1-289 MECHANICAL BEHAVIOR OF ZIRCONIA CERAMICS AS ELECTROLYTES FOR SOFC**

Vasylyev O.D., Brychevskiy M.M., Brodnykovskiy Ie.M., Samelyuk A.V., Vereshchak V.G.,<sup>(1)</sup> Akimov G.Ya.<sup>(2)</sup>

Frantsevych Institute for Problems of Materials Science,

<sup>(1)</sup>Ukrainian Chemistry & Technology University,

<sup>(2)</sup>Donetsk Physical & Technical Institute,

**1-290 PROBLEMS OF STRENGTH OF ANODES FOR SOFC**

Brodnikovskiy I., Vasylyv B.<sup>1</sup>, Sameluk A., Ostash O.<sup>1</sup>, Vasilyev O.

Frantsevich Institute for Problems of Materials Science

<sup>(1)</sup> Karpenko Physico-Mechanical Institute

**1-291 MECHANICAL BEHAVIOR OF BULK AND FILM 10SC1CESZ ELECTROLYTES**

Brychevskiy M., Vasylyev O., Vereschak V.<sup>(1)</sup>

Frantsevich Institute for Problem of Materials Science of NASU

<sup>(1)</sup> Ukrainian State Chemical & Technological University

**1-292 STRENGTH, FRACTURE TOUGHNESS, AND EDGE FLAKING OF THE  
NANOCRYSTALLINE CERAMICS FROM PARTIALLY STABILIZED ZIRCONIA**

Akimov G. Ya.

A.A.Galkin Donetsk Physical & Technical Institute N.A.S. Ukraine

**1-293 MICROSTRUCTURE AND MECHANICAL BEHAVIOR  
OF SODIUM BETA-ALUMINAS**

Prokhorov I. Yu. and Akimov G. Ya.

A.A.Galkin Donetsk Physical & Technical Institute N.A.S. Ukraine

*Thursday, June 17, 2010*

*Audience 2*

**14.30-16.30 EVENING MEETING**

***Section 7 "MATERIAL SCIENCE ASPECTS OF THE FRICTION AND WEAR PROCESSES"***

*Chairmen: Grinevich K.E., Korobov Yu.S.*

**7-225 TRIBOTECHNICAL PROPERTIES OF BORON-CONTAINING NICKEL AND COBALT COATINGS**

Tsybul'skaya L.S., Bekish Yu.N., Gaevskaya T.V.

Research Institute for Physical Chemical Problems, Belarusian State University

***20 minutes***

**7-229 STRUCTURE OF WEAR-RESISTANT METASTABLE AUSTENITE TYPE MATERIALS USING FOR SURFACING AND ARC SPRAYING**

M. Filippov, Yu. Korobov, V. Shumyakov, I. Kovgan, S. Nevezhin

Ural State Technical University-UPI

***20 minutes***

**7-258 STRUCTURAL AND PHASE MODEL OF INCREASE OF WEAR RESISTANCE OF OVERLAYING WELDING MATERIALS**

Skotnikova M.A., Tsvetkova G.V., Ivanov E.K., Sokolov A.V., Funikov S.L.,

Tsvetkov S.V.

Saint-Petersburg Machine Building State Institute

***20 minutes***

**COFFEE BREAK      30 minutes**

**7-143 HARDNESS, FRICTION AND WEAR IN DYNAMIC LOADING**

Grinkevich K.E., Milman Y.V.

Frantsevich Institute for Problems of Materials Science of NASU

***20 minutes***

**7-281 INVESTIGATION OF TRIBOLOGICAL PROPERTIES OF TITANIUM ALLOYS VT6 AND VT16 AFTER LOW-TEMPERATURE NITRIDING**

Smolyakova M.Yu., Vershinin D.S., Kolobov Yu.R.

Scientific-educational and innovation centre "Nanostructured materials and nanotechnologies" of Belgorod State University

***20 minutes***

**7-138 ABOUT REALIZATION OF NONLINEAR MECHANISMS OF ADAPTATION OF MATERIALS IN EXTREME CONDITIONS OF DRY FRICTION**

Solntsev V.P., Skorokhod V.V., Solntseva T.A.

Frantsevich Institute for Problems of Materials Science of NASU

*20 minutes*

**7-142 DEFORMATION AND FRACTURE FEATURES OF ALLOYS ON THE BASIS OF INTERMETALLIC Ti<sub>3</sub>Sn**

Bulanova M.V., Bobyr' S.A., Podrezov Yu.n., Remez M.V., Kotko A.V.

Frantsevich Institute for Problems of Materials Science of NASU

*20 minutes*

**7-299 HIGH TEMPERATURE CREEP OF COMPOSITES WITH OXIDE FIBERS**

Mileiko S.T.

Institute of Solid State Physics RAS

*20 minutes*

*Thursday, June 17, 2010*

*Audience 2*

**14.00 -17.30 Exposition posters sections "7"**

**7-110 DRY ABRASIVE WEAR RESISTANCE OF BORIDE LAYERS ON IRON-CHROMIUM ALLOYS AND STEELS**

Dybkov V.I., Goncharuk L.V., Khoruzha V.G., Samelyuk A.V., Sidorko V.R.

Frantsevich Institute for Problems of Materials Science of NASU

**7-230 SURFACE HARDENING AND WEAR RESISTANCE MANGANESE STEELS WITH METASTABLE AUSTENITE**

Filippov M.A., Burov S.V., Legchilo B.B., Antonov S.V., Muchametyarova E.N.

Ural State Technical University named The First President of Russia B.N. Eltsin

**7-231 STRUCTURE AND ABRASION RESISTANCE OF THE HIGH-E/LOW-E CBN/Si<sub>3</sub>N<sub>4</sub> CUTTING COMPOSITE**

Petrusha I.A., Nikishina M.V., Osipov A.S., Smirnova T.I., Tkach V.N.

V.N. Bakul Institute for Superhard Materials of the National Academy of Sciences of Ukraine

**7-232 OPTIMIZATION OF FRICTION PROCESS AT THE USAGE OF THE ADDITIVE TO LUBRICATING OILS CERMET**

Lyubchenko E., Aksyonova S.

National Technical University "Kharkov Polytechnical Institute"

**7-280 METHOD OF MINIMIZATION OF QUANTITY OF TRIBOELECTRIC AND TRIBOMECHANIC TESTS OF FRICTION AND DETERIORATION PROCESSES**

Rybnikov J.S., Troitsev O.A., Pravotorova E.A.

Institute of machines by A.A. Blagonravov of the Russian Academy of Sciences  
The Moscow state institute of a radio engineering, electronics and automatics

*Friday, June 18, 2010*

*Audience 1*

**9.30 – 13.30**

**MORNING SESSION**

***Section 6: "PHYSICS OF STRENGTH QUASI-CRYSTALLINE, SEMICRYSTALLINE, HIGH ENTROPIC MULTICOMPONENT ALLOYS AND OTHER NEW MATERIALS"***

***Chairmen: Firstov S.A., Konstantinova T.E.***

**6-226 ПЕНТАГОНАЛЬНЫЕ ЧАСТИЦЫ, КРИСТАЛЛИИ ГОТОВЫЕ ИЗДЕЛИЯ ИЗ НИХ**

Викарчук А.А., Дорогов М.В.

Тольяттинский государственный университет ГОУ ВПО «Тольяттинский государственный университет»

***20 minutes***

**6-122 HIGH-ENTROPY CAST METAL ALLOYS EQUIATOMIC COMPOSITION WITH INCREASED CHARACTERISTICS OF HEAT-RESISTANCE AND HOT-RESISTANCE**

Firstov S.A., Gorban V.F., Krapivka N.A., Pechkovsky E.P.

Frantsevich Institute for Problems of Materials Science of NASU

***20 minutes***

**6-116 INFLUENCE OF  $\alpha$ -ZR AND INTERMETALLIC ZRCR<sub>2</sub> PARTICLES ON STRENGTHENING OF ZR-(0.5-2.2 AT. %) CR ALLOYS**

Brodikovsky D., Zubets Yu., Krapivka M., Sarzhan G., Firstov S.

Frantsevich Institute for Problems of Materials Science of NASU

***20 minutes***

**COFFEE BREAK      30 minutes**

**6-223 PHYSICAL-MECHANICAL PROPERTIES STUDY OF EPOXY RESIN-CARBON NANOTUBE COMPOSITES BY MICROINDENTATION**

Fomenko L.S., Lubenets S.V., Koutsos V.<sup>(1)</sup>

B.I.Verkin Institute for Low Temperature Physics and Engineering, NAS of Ukraine,

<sup>(1)</sup>Institute for Materials and Processes, School of Engineering and Electronics, University of Edinburgh

***20 minutes***

**6-224 ОСОБЕННОСТИ МИКРОСТРУКТУРЫ УПРУГО-НАПРЯЖЕННОГО СОСТОЯНИЯ И ТЕРМИЧЕСКАЯ СТАБИЛЬНОСТЬ МНОГОЭЛЕМЕНТНЫХ СВЕРХТВЕРДЫХ НАНОКОМПОЗИТНЫХ ПОКРЫТИЙ**

Коротаев А. Д., Мошков В. Ю.<sup>(1)</sup>, Овчинников С. В.<sup>(1)</sup>, Тюменцев А. Н.<sup>(1)</sup>

Томский государственный университет,

<sup>(1)</sup>Институт физики прочности и материаловедения СО РАН

*20 minutes*

*Friday, June 18, 2010*

*Audience 1*

**Exposition posters sections "6"**

**9.30 -13.30**

**6-105 SOME FORMATION REGULARITIES OF YOUNG'S MODULUS VALUES FOR HIGH-ENTROPY ALLOYS**

Firstov S.A., Gorban' V.F., Krapyvka N.A., Pechkovsky E.P.

Frantsevich Institute for Problems of Materials Science of NASU

**6-106 STABILITY STUDIES OF PHASE COMPOSITION AND PHYSICOMECHANICAL PROPERTIES OF COMPLEX ALLOYS OF TITANIUM WITH THE PRESENCE OF PHASES FIVEFOLD**

Firstov S.A., Gorban V.F., Rokitskaya E.A., Krapivka N.A., Pechkovsky E.P., Danilenko N.I.

Frantsevich Institute for Problems of Materials Science of NASU

**6-108 INFLUENCE OF THE NANO-GRAIN SIZE ON CHARACTERISTICS OF THE ALLOY AT THE INDENTATION**

Gorban' V.F., Pechkovsky E.P., Eremenko A.I.

Frantsevich Institute for Problems of Materials Science of NASU

**5-133 STUDY OF THE INFLUENCE OF THE OBTAINING METHOD OF THE POWDERS ON STRUCTURE AND MECHANICAL PROPERTIES OF SEMIFINISHED PRODUCTS**

Myzika A.A., Sirko A.I., Zakharova N.P., Iefimov M.O., Neikov O.D., Chaikina N.G.

Frantsevich Institute for Problems of Materials Science of NASU

**6-134 DEVELOPMENT OF THE WELDING METHODS OF HIGH-STRENGTH ALUMINUM ALLOYS REINFORCED BY NONOSIZED QUASICRYSTALLINE PARTICLE**

Sirko A.I., Zakharova N.P., Iefimov M.O., Semenov N.V., Milman Yu.V., Fedorchuk V.E.<sup>(1)</sup>, Falchenko Yu.V.<sup>(1)</sup>, Zyakhov I.V.<sup>(1)</sup>, Ischenko A.Ya.<sup>(1)</sup>

Frantsevich Institute for Problems of Materials Science of NASU

<sup>(1)</sup>Paton Welding Institute of NASU

**6-222 СТРУКТУРА И МЕХАНИЧЕСКИЕ СВОЙСТВА КОМПОЗИТА НА ОСНОВЕ СПЛАВА АД1, УПРОЧНЕННОГО АМОРФНОЙ ЛЕНТОЙ  $AL_{87}NI_8LA_5$**

Сынков Ю.С., Моисеева Т.Н.<sup>(1)</sup>, Чайка Э.В.<sup>(1)</sup>, Костыря С.А.<sup>(1)</sup>, Ткач В.И.<sup>(1)</sup>, Сынков А.С.<sup>(1)</sup>, Маслов В.В.<sup>(2)</sup>, Бейгельзимер Я.Е.<sup>(1)</sup>

Донецкий национальный технический университет

<sup>(1)</sup>Донецкий физико-технический институт им. А.А. Галкина НАН Украины

<sup>(2)</sup>Институт металлофизики им. Г.В. Курдюмова НАН Украины

**6-227 НЕЛИНЕЙНАЯ КИНЕТИКА ФОРМИРОВАНИЯ ШЕЙКИ В ГПУ-СПЛАВАХ ЦИРКОНИЯ**

Пшеничников А.П., Полетика Т.М.

Институт физики прочности и материаловедения СО РАН

**6-228 ЦИКЛИЧНОСТЬ ЭВОЛЮЦИИ МИКРОСТРУКТУРЫ В ГПУ - СПЛАВЕ ЦИРКОНИЯ**

Полетика Т.М., Гирсова С.Л., Пшеничников А.П.

Институт физики прочности и материаловедения СО РАН

**6-279 MARTENSITIC TRANSFORMATION AND REVERSIBLE STRAIN IN TiNi ALLOY SUBJECTED TO IRRADIATION BY NEUTRONS**

Belyaev S.P., Konopleva R.F., Nazarkin I.V., Nakin A.V., Chekanov V.A  
Peterburg Nuclear Physics Institute of Russian Academy of Science

**6-289 MECHANICAL BEHAVIOR OF ZIRCONIA CERAMICS AS ELECTROLYTES FOR SOFC**

Vasylyev O.D., Brychevskiy M.M., Brodnykovskiy Ie.M., Samelyuk A.V., Vereshchak V.G.,<sup>(1)</sup> Akimov G.Ya.<sup>(2)</sup>

Frantsevych Institute for Problems of Materials Science,

<sup>(1)</sup>Ukrainian Chemistry & Technology University,

<sup>(2)</sup>Donetsk Physical & Technical Institute,

***SUMMARY DISCUSSION***

***CONFERENCE CLOSE***